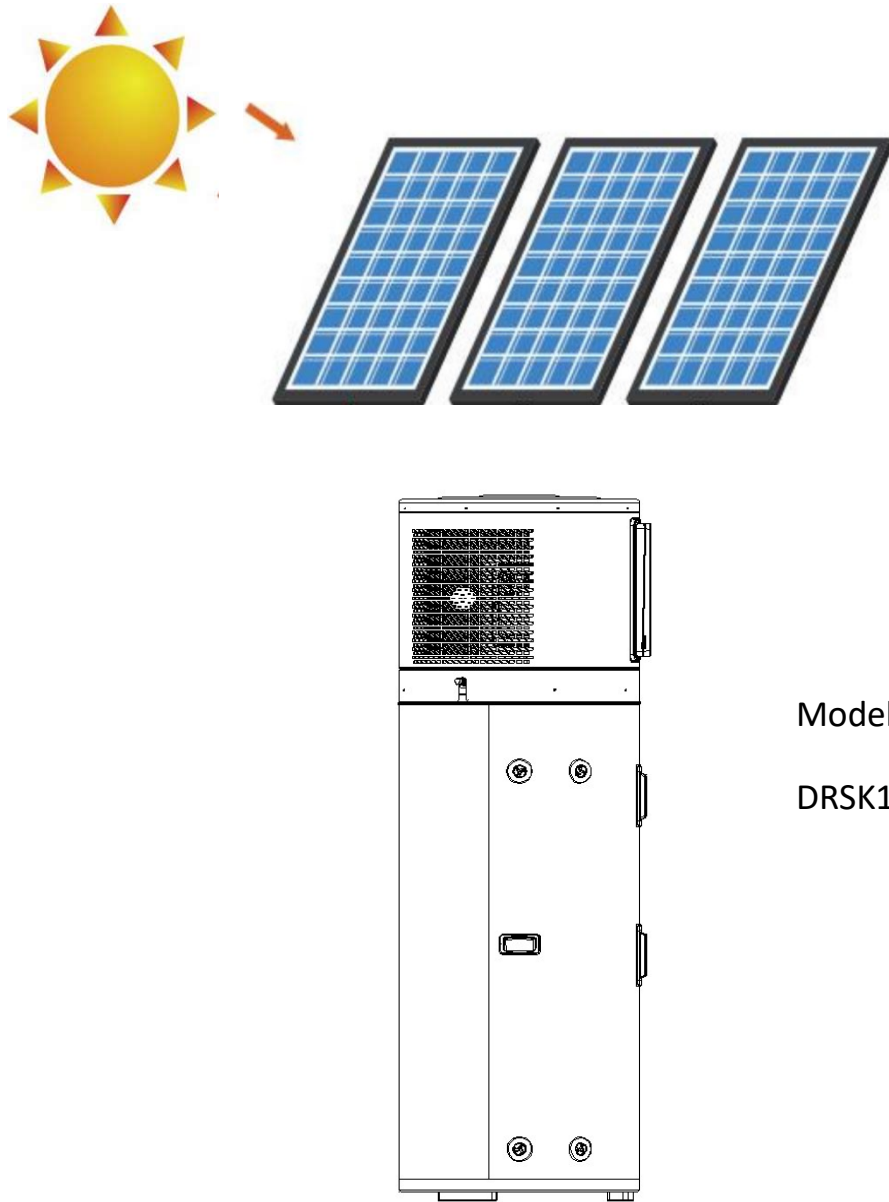


USER'S MANUAL

ALL-IN-ONE Solar Air-source Heat Pump Water Heater



Model:

DRSK1-ACDC-25/300R3

- Installation work should be done by professionals.
- For your convenience, please read this manual carefully and follow the steps in the manual.
- Please keep the manual properly for easy reference.
- The renderings are for display purposes only. The actual product may vary.

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1. SAFETY PRECAUTIONS

It's really important you read Safety Precautions Before Operation and Installation. 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.

Please read thoroughly all of the instructions before installing or operating the unit. Following safety symbol is very important, always read and obey all safety symbol:

	WARNING ➤ The signal word indicates a hazard with a medium level of risk which, if not avoided, may result in death or serious injury.
	CAUTION ➤ The signal word indicates a hazard with a low degree of risk which, if not avoided, may result in minor or moderate injury.
	DANGER ➤ You may be killed or seriously injured immediately if you don't obey instructions.

Read these operating instructions carefully and attentively before using/commissioning the unit and keep them in the immediate vicinity of the installation site or unit for later use!

WARNING

Hot water burns. As a safety precaution, young children should always be supervised around hot water fixtures.

Heat pump water heaters can store water at temperatures that can cause scalding. Water temperatures over 50°C can scald and care needs to be taken to ensure that injuries do not occur through incorrect use of your water heater.



As heat pump water heaters can generate water temperatures in excess of 60°C, regulations require that a tempering valve be fitted to the heater to prevent water temperatures going to the home exceeding a preset safe maximum. The tempering valve must be connected to the hot water outlet line from the water heater. The valve must be fitted by an authorized plumber at the time of installation or in retro fitting to existing systems.

Care should be taken to avoid coming into contact with any pipe work or fixtures associated with the water heater pipe lines. Under NO circumstances should any 'home handy man' type modifications be attempted.

- 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.
- This unit is required reliable earthing before usage, otherwise might cause injury or death.
- If the hot water system is not used for two weeks or more, flammable hydrogen gas may

accumulate in the water heater. To dissipate this gas safely, it is recommended that a non-electrically operated hot tap be fully opened for 2 minutes. During this procedure, smoking, open flames or operating electric appliances should be avoided.

- This appliance must only be installed in accordance with acceptable plumbing configurations specified in these instructions. Failure to do so may result in conditions where delivery temperature control is inadequate.
- For continued safety of this appliance it must be installed, operated and maintained in accordance with the manufacturer's instructions.
- Servicing is to be carried out only by the manufacturer's authorized agent. Collect fluid for appropriate disposal.

HOT WATER CAN BE DANGEROUS

- ~~This appliance is not intended for use by persons (including children) with reduced physical sensory or mental capabilities, or lack of experience and knowledge, that prevents them from using the appliance safely without supervision or instruction. Children should be supervised by a responsible person for their safety to ensure that they do not play with the appliance.~~

The power supply must be protected by an individual circuit breaker at the main electrical supply switchboard and rated to suit the booster size. The supply to the heat pump water heater can be operated directly from the switchboard or via a remotely mounted switch or time clock as requested by the customer. The heater must be provided with a suitable means for disconnecting the power supply.

Appliance is intended to be permanently connected to the water mains and not connected by a hose-set.

Hose-set is not to be used for connection to water mains.

- The Heat Pump Water Heater is for outdoor use only.

If you can't make sure that your house power supply is earthed well, please don't install the unit. The unit must be installed by a licensed trades person and in accordance with:



- Installation instructions;
- The installation must comply with the requirements of AS/NZS 3500.4, AS/NZS 3000, and all local codes and regulatory authority requirements. In New Zealand, the installation must conform to the New Zealand Building Code G12. Local Occupational Health and Safety (OH&S) Regulations.
- ~~AS/NZS 3500.4 "National Plumbing and Drainage Code Hot Water Supply Systems - Acceptable Solutions";~~
- ~~AS/NZS 3000 Wiring Rules;~~
- ~~Local authority regulations;~~
- ~~Building Codes of Australia;~~
- ~~Local Occupational Health and Safety (OH&S) Regulations.~~

NOTE

- This water heater must be installed by a licensed person as required by the Building Act. Only a licensed person will give you a compliance certificate, showing that the work complies with all the relevant standards and only a licensed person will have insurance protecting their workmanship for 6 years.
- This appliance may deliver water at high temperature. Refer to the Plumbing Code of Australia (PCA), local requirements and installation instructions to determine if additional delivery temperature control is required.
- 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.
- The operation of the thermal cut-out indicates a possibly dangerous situation. Do not reset the thermal cut-out until the water heater has been serviced by a qualified person.

WARNING

- For continued safety of this appliance it must be installed, Operated and maintained in accordance with the manufacturer's instructions.
- This appliance may deliver water at high temperature. Refer to the plumbing code of Australia (PCA), Local requirements and installation instructions to determine if additional delivery temperature control is required.
- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer. The appliance shall be stored in a room without continuously operating ignition source (for example: open flames, An operating gas appliance or an operating electric heater. Do not pierce or burn.
- Be aware that refrigerants may not contain an odour.



BATTERY WARNING



WARNING:

Contains button or coin cell battery.

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

If the battery compartment (if applicable) does not close securely, stop using the product and keep it away from children.

For appliances which contain coin or lithium batteries:

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

For appliances which contain button or non-lithium batteries.

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

BATTERY NOTES

If it is suspected a button/coin battery has been swallowed or otherwise placed inside any part of the body, a person should contact the Australian Poisons Information Centre on 13 11 26 immediately for 24/7 fast, expert advice.

BATTERY DISPOSAL

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

EXPLANATION OF SYMBOLS DISPLAYED ON THE INDOOR UNIT OR OUTDOOR UNIT

	WARNING	This symbol shows that this appliance used a flammable refrigerant. If the refrigerant is leaked and exposed to an external ignition source, there is a risk of fire.
	CAUTION	This symbol shows that the operation manual should be read carefully.
	CAUTION	This symbol shows that a service personnel should be handling this equipment with reference to the installation manual.
	CAUTION	
	CAUTION	This symbol shows that information is available such as the operating manual or installation manual.

1. Installation (Space)

- That the installation of pipe-work shall be kept to a minimum.
- That pipe-work shall be protected from physical damage. In the case of flammable refrigerants, shall not be installed in an unventilated space.
- Where refrigerant pipes shall be compliance with national gas regulations.
- That mechanical connections shall be accessible for maintenance purposes.
- In cases that require mechanical ventilation, ventilation openings shall be kept clear of obstruction.
- When disposing of the product is used, be based on national regulations, properly processed.

2. Servicing

Any person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorises their competence to handle refrigerants safely in accordance with an industry recognised assessment specification

3. Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.

4. Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.

5. The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater).

6. Be more careful that foreign matter (oil, water, etc) does not enter the piping. Also, when storing the piping, securely seal the opening by pinching, taping, etc.

7. Do not pierce or burn.

8. Be aware that refrigerants may not contain an odour.

9. All working procedure that affects safety means shall only be carried by competent persons.

10. Appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specific for operation.

11. The appliance shall be stored so as to prevent mechanical damage from occurring.

12. Joints shall be tested with detection equipment with a capability of 5g/year of refrigerant or better, with the equipment in standstill and under operation or under a pressure of at least these standstill or operation conditions after installation. Detachable joints shall NOT be used in the indoor side of the unit (brazed, welded joint could be used).

13. When a FLAMMABLE REFRIGERANT is used, the requirements for installation space of appliance and /or ventilation requirements are determined according to:

- the mass charge amount (M) used in the appliance;
- the installation location;
- the type of ventilation of the location or of the appliance.

14. Servicing shall be performed only as recommended by the manufacturer.

15. Unventilated areas

For appliances containing flammable refrigerants is installed in an unventilated area, please make sure that it will not stagnate so as to create a fire or explosion hazard for any refrigerant leak.

16. Qualification of workers

The manual shall contain specific information about the required qualification of the working personnel for maintenance, service and repair operations. Every working procedure that affects safety means shall only be carried out by competent persons:

Examples for such working procedures are:

- breaking into the refrigerating circuit;
- opening of sealed components;
- opening of ventilated enclosures.

Information on Servicing

1. Checks to the area

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized. For repair to the refrigerating system, the following precautions shall be complied with prior to conducting work on the system.

2. Work procedure

Works shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapour being present while the work is being performed.

3. General work area

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 around the workspace shall be sectioned off. Ensure that the conditions within the area have been made safe by control of flammable material.

4. Checking for presence of refrigerant

The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with flammable refrigerants, i.e. no sparking, adequately sealed or intrinsically safe.

5. Presence of fire extinguisher

If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry power or CO₂ fire extinguisher adjacent to the charging area.

6. No ignition sources

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 sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed.

7. Ventilated area

~~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.~~

Before entering the system or conducting any thermal work, ensure that the area is open or well-ventilated. During the course of work, a certain degree of ventilation should be maintained. Ventilation should safely disperse any released refrigerant and it is best to remove it from the external atmosphere.

8. Checks to the refrigeration equipment

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. The following checks shall be applied to installations using FLAMMABLE REFRIGERANTS:

- the actual refrigerant charge is in accordance with the room size within which the refrigerant containing parts are installed;
- the ventilation machinery and outlets are operating adequately and are not obstructed;
- If an indirect refrigerating circuit is being used, the secondary circuits shall be checked for the presence of refrigerant.
- marking to the equipment continues to be visible and legible, marking and signs that are illegible shall be corrected;
- refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

9. Checks to electrical devices

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, and adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised. Initial safety checks shall include:

- that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking.
- that there no live electrical components and wiring are exposed while charging, recovering or purging the system;
- that there is continuity of earth bonding.

10. Repairs to sealed components

- During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.
- Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.
- Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres. Replacement parts shall be in accordance with the manufacturer's specifications.

11. Repair to intrinsically safe components

- Do not apply any permanent inductive or capacitance loads to the circuit without ensuring

that this will not exceed the permissible voltage and current permitted for the equipment in use.

- Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating.
- Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

NOTE: The use of silicon sealant can inhibit the effectiveness of some types of leak detection equipment. Intrinsically safe components do not have to be isolated prior to working on them.

12.Cabling

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.

13.Detection of flammable refrigerants

- 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.
- The following leak detection methods are deemed acceptable for refrigerant systems. Electronic leak detectors may be used to detect refrigerant leaks but, in the case of FLAMMABLE REFRIGERANTS, the sensitivity may not be adequate, or may 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 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 may react with the refrigerant and corrode the copper pipe-work.

NOTE Examples of leak detection fluids are:

- a. bubble method
- b. fluorescent method agents.

If a leak is suspected, all naked flames shall be removed/extinguished.

If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak. For appliances containing flammable refrigerants, oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process. See the following instructions of removal of refrigerant.

14.Removal and evacuation

When breaking into the refrigerant circuit to make repairs - or for any other purpose conventional procedures shall be used. However, for flammable refrigerants it is important that best practice be followed, since flammability is a consideration. The following procedure shall be adhered to:

- a. remove refrigerant;

- b. purge the circuit with inert gas (optional for A2L);
- c. evacuate (optional for A2L);
- d. purge the with inert gas (optional for A2L);
- e. open the circuit by cutting or brazing.

The refrigerant charge shall be recovered into the correct recovery cylinders. For appliances containing flammable refrigerants other than A2L refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process may need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.

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.

Ensure that the outlet for the vacuum pump is not close to any potential ignition sources and that ventilation is available.

NOTE: A2L refrigerants: Such as R32, R454B refrigerant.

15.Charging procedures

In addition to conventional charging procedures, the following requirements shall be followed:

- Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
- Cylinders shall be kept in an appropriate position according to the instructions.
- Ensure that the refrigerating system is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already labeled).
- Extreme care shall be taken not to overfill the refrigerating system. 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.

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16.Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. 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.

- a. Become familiar with the equipment and its operation.

- b. Isolate system electrically.
- c. 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.
- d. Pump down refrigerant system, if possible.
- e. If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
- f. Make sure that cylinder is situated on the scales before recovery takes place.
- g. Start the recovery machine and operate in accordance with instructions.
- h. Do not overfill cylinders (no more than 80 % volume liquid charge).
- i. Do not exceed the maximum working pressure of the cylinder, even temporarily.
- j. 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.
- k. Recovered refrigerant shall not be charged into another refrigerating system unless it has been cleaned and checked.

17.Labeling

Equipment shall be labeled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing flammable refrigerants, ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

18.Recovery

When removing refrigerant from a system, either for servicing or decommissioning, it is required to follow good practice so that all refrigerants are 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 labeled 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.

19. Venting of HC Refrigerant (R290)

Venting may be carried out as an alternative to recovering the refrigerant. Because HC refrigerants have no ODP and negligible GWP, under certain circumstances it may be considered acceptable to vent the refrigerant. However, if this is to be considered, it should be done in accordance with the relevant national rules or regulations, if they permit.

In particular, before venting a system, it would be necessary to:

- Ensure that legislation relating to waste material has been considered;
- Ensure that environmental legislation has been considered;
- Ensure that legislation addressing safety of hazardous substances is satisfied;
- Venting is only carried out with systems that contain a small quantity of refrigerant, typically less than 500g;
- Venting to inside a building is not permissible under any circumstances;
- Venting must not be to a public area, or where people are unaware of the procedure taking place;
- The hose must be of sufficient length and diameter such that it will extend to at least 3 m beyond the outside of the building;
- The venting should only take place on the certainty that the refrigerant will not get blown back into any adjacent buildings, and that it will not migrate to a location below ground level;
- The hose is made of material that is compatible for use with HC refrigerants and oil;
- A device is used to raise the hose discharge at least 1 m above ground level and so that the discharge is pointed in an upwards direction (to assist with dilution);
- The end of the hose can now discharge and disperse the flammable fumes into the ambient air;
- There should not be any restriction or sharp bends within the vent-line which will hinder the ease of flow;
- There must be no sources of ignition near the hose discharge;
- The hose should be regularly checked to ensure that there are no holes or kinks in it, that could lead to leakage or blocking of the passage of flow.

When carrying out the venting, the flow of refrigerant should be metered using manifold gauges to a low flow rate, so as to ensure the refrigerant is well diluted. Once the refrigerant has ceased flowing, if possible, the system should be flushed out with OFN; if not, then the system should be pressurized with OFN and the venting procedure carried out two or more times, to ensure that there is minimal HC refrigerant remaining inside the system.

20. Transportation, marking and storage for units

- 1) Transport of equipment containing flammable refrigerants, Compliance with the transport regulations.
- 2) Marking of equipment using signs Compliance with local regulations.
- 3) Disposal of equipment using flammable refrigerants Compliance with national regulations.
- 4) Storage of equipment/appliances. The storage of the appliance should be in accordance with the applicable regulations or instructions, whichever is more stringent.
- 5) Storage of packed (unsold) equipment, Storage package protection should be constructed such that mechanical damage to the equipment inside the package will not cause a leak of the refrigerant charge. The maximum number of pieces of equipment permitted to be stored together will be determined by local regulations.

Please read thoroughly all of the instructions before installing or operating the unit. The following safety warnings are very important, always read and obey all safety symbols:

WARNING

- The unit must be earthed effectively.
- A RCD breaker must be installed adjacent to the power supply.
- Do not remove, cover or deface any permanent instructions, labels, or the data label from either the outside of the unit or inside of unit panels.
- Only qualified persons should perform the installation of this unit in accordance with local national regulations and this manual. Improper installation may result in water leakage, electric shock or fire.
- Ask qualified person for relocating, repairing and maintaining the unit. Improper installation may result in water leakage, electric shock or fire.
- Electric connection work should comply with the instructions of local power company, local electric utility and this manual.
- Never use an incorrectly fuse rated, otherwise the unit may break down and risk of electrical fire.
- Do not insert fingers, rods or other objects into the air inlet or outlet. The fan is rotating at high speed, and may cause injury. Never use a flammable spray such as hair spray, lacquer paint near the unit. It may cause a fire.
- 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.
- If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person.
- DISPOSAL: Do not dispose this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary. Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities. Contact your local government for information regarding the collection systems available.



- The water may drip from the discharge pipe of the pressure-relief device and that this pipe must be left open to the atmosphere.
- The pressure-relief device is to be operated regularly to remove lime deposits and to verify that it is not blocked.
- Danger: The operation of the thermal cut-out indicates a possibly dangerous situation. Do not reset the thermal cut-out until the water heater has been serviced by a qualified person.

CAUTION

- The earthing pole of socket must be well grounded, make sure that power supply socket and plug are dry and connected tightly.
- Before cleaning, be sure to stop the operation and turn the breaker off or pull out the power plug. Otherwise, an electric shock and injury may be caused.
- ~~Water temperature over 50°C can cause severe burns instantly or death from scalds. Children, disabled and elderly are at highest risk of being scalded. Feel water before bathing or showering. Water temperature limiting valves are required as per AS 3500.~~
- Do not operate the unit with a wet hand. An electric shock may be caused.
- The installation height of power supply should be over 1.8m, if there is any water exposure, steps must be taken to separate the power supply from water.
- A one-way valve must be installed on the water inlet side, as well as an isolation valve.
- It is normal for some water to be released from the PTR valve during operation. But, if there is a large volume of water, call your service agent for instructions. After long term use, check the unit base and fittings. If damaged, the unit may sink, resulting in injury. Arrange the drain pipe to ensure smooth draining. Improper drainage work may cause wetting of the building, furniture etc. Do not touch the inner parts of the controller or remove the front panel. Some parts inside are dangerous to touch, and damage may be caused.
- Do not turn off the power supply. System will stop or restart heating automatically. A continuous power supply for water heating is necessary, except service and maintenance. Hydrogen gas is extremely flammable, and may build up if no water is drawn of for several weeks. To reduce the risk of injury under these conditions, it is recommended that the hot water tap is opened for several minutes at the kitchen sink before using any electrical appliance connected to the hot water system. When hydrogen is present, there will probably be an unusual sound such as air escaping through the pipe as the water begins to flow. There should be no smoking or open flame near the tap at the time it is open.

2. PRODUCT INTRODUCTION

Air source heat pump water heater is driven by a small amount of electricity. Through the reverse Carnot cycle principle, it will be difficult to use the low grade heat energy in the air to improve the available high grade heat energy, used for heating water. It is a new generation of hot water making device following boiler, gas water heater, electric water heater and solar water heater.

Solar air source heat pump water heater adds solar photovoltaic power generation function on the basis of air source heat pump water heater. The direct current generated by solar energy is directly supplied to the unit so that hot water can be produced with only a small amount of electricity or without electricity. It has all the advantages of air source heat pump water heater, and its energy efficiency is higher. It is the real green, energy saving, environmental protection, comfortable and safe products.

Solar air source heat pump water heater has the following characteristics:

- 1) Self-sufficient in electricity

Advanced photovoltaic direct drive technology is adopted to make the power consumption characteristics of the unit consistent with photovoltaic power generation characteristics, so as to ensure the preferential utilization of photovoltaic energy, which is supplemented by the grid Combined with dynamic load tracking MPPT technology to maximize the real-time utilization of photovoltaic energy.

2) AC/DC hybrid technology

Through the AC/DC hybrid control technology, the intelligent seamless switch of "pure photovoltaic, pure commercial power, photovoltaic commercial power hybrid" is realized (switching time < 10ms). Even if the sunshine conditions or the power grid changes dramatically, the unit still runs stably.

3) Full DC frequency conversion technology

Through the efficient DC inverter compressor and DC fan, the full DC control system is used to achieve the best dynamic matching of motor speed, so that the unit runs in the most energy saving state.

4) Intelligent WIFI control

WIF function allows fully control, and can real-time monitor the respective AC and DC power consumption and the working state of the unit.

5) Wide voltage operation

The unit can be started in the above wide voltage range and run stably, and low frequency start, small starting current, small impact on the power grid.

6) Safety

During operation, the unit will not discharge any waste water or waste gas, and water and electricity are completely separated. It fundamentally eliminates flammable, explosive, electric shock, dry burning, carbon monoxide poisoning and other safety hazards that may exist in ordinary water heaters, and protects the health and safety of family members.

7) Power saving

Its operating COP value is as high as 4.0 (that is, 1 KWH of electricity consumption can generate heat equivalent to 4 KWH of electricity), and it is directly run by the solar photovoltaic power generating unit to heat water temperature during the day. It can use no electricity or only a small amount of electricity, so the use cost is very low.

8) Rest assured

Not only does the unit heat water quickly, but also the tank holds a large amount of water, which can meet the needs of the whole family. In addition, the thermal insulation effect of the water tank is good, so that users can use hot water at any time.

3. SPECIFICATIONS

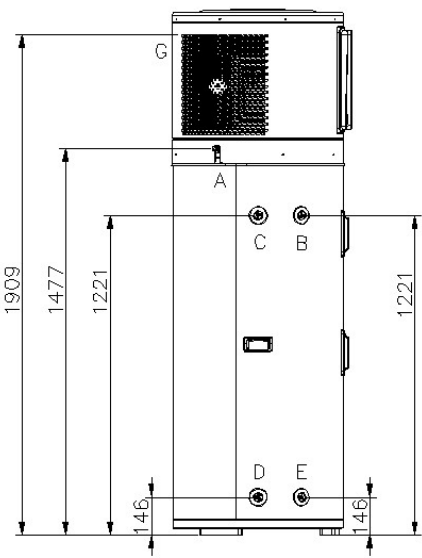
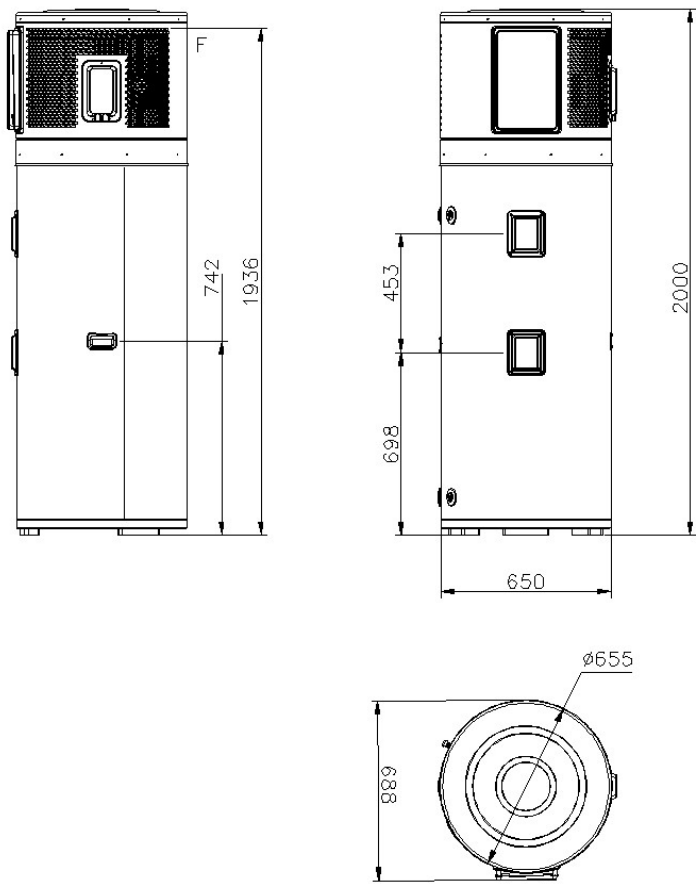
● Parameters:

Model			DRSK1-ACDC-25/300R3
Power supply AC	Rated grid power	V/Ph/Hz	220-240 / 1/50/60
Power supply DC (PV string input data)	Max. PV input voltage	V	380
	Start-up voltage	V	80
	MPPT voltage range	V	75-360
	Full load MPPT voltage range	V	200-360
	Max. input short circuit current	A	20
	Max. operating PV input current	A	13
	No.of MPPT trackers		1
	No.of Strings per MPPT tracker		1
Heating ¹ (A20/W55)	Capacity	W	2500
	COP	W/W	5.00
Sound pressure level(1m)		dB(A)	58
Max input power		W	3000
Max current(AC)		A	14.0
Refrigerant	Type/GWP		R290/3
	Charged volume	kg	0.32
Compressor	Type		Rotary
	Brand		Panasonic
Outdoor fan	Moter type		DC brushless motor
	Fan direction		Horizontal
	Output power	W	35
Water side heat exchanger	Type		Aluminium micro-channel
Air side heat exchanger	Type		Finned tube
Throttle type			Electronic expansion valve
Electric heater power		W	2000
Water tank capacity		L	290
Max water pressure		MPa	0.85
Water inlet/outlet pipe thread			G3/4"
Operating ambient temp. range	Heat pump only	°C	-7 ~ 43
	Heat pump & E-Heater	°C	-20 ~ 47
Setting water temp. range		°C	30 ~ 70
Net dimension	ΦD×H	mm	Φ650×2000
Packing dimension	L×W×H	mm	700×700×2200
Net weight		kg	130
Gross weight		kg	155
Fusible link type			T30A 250VAC

● Dimensions

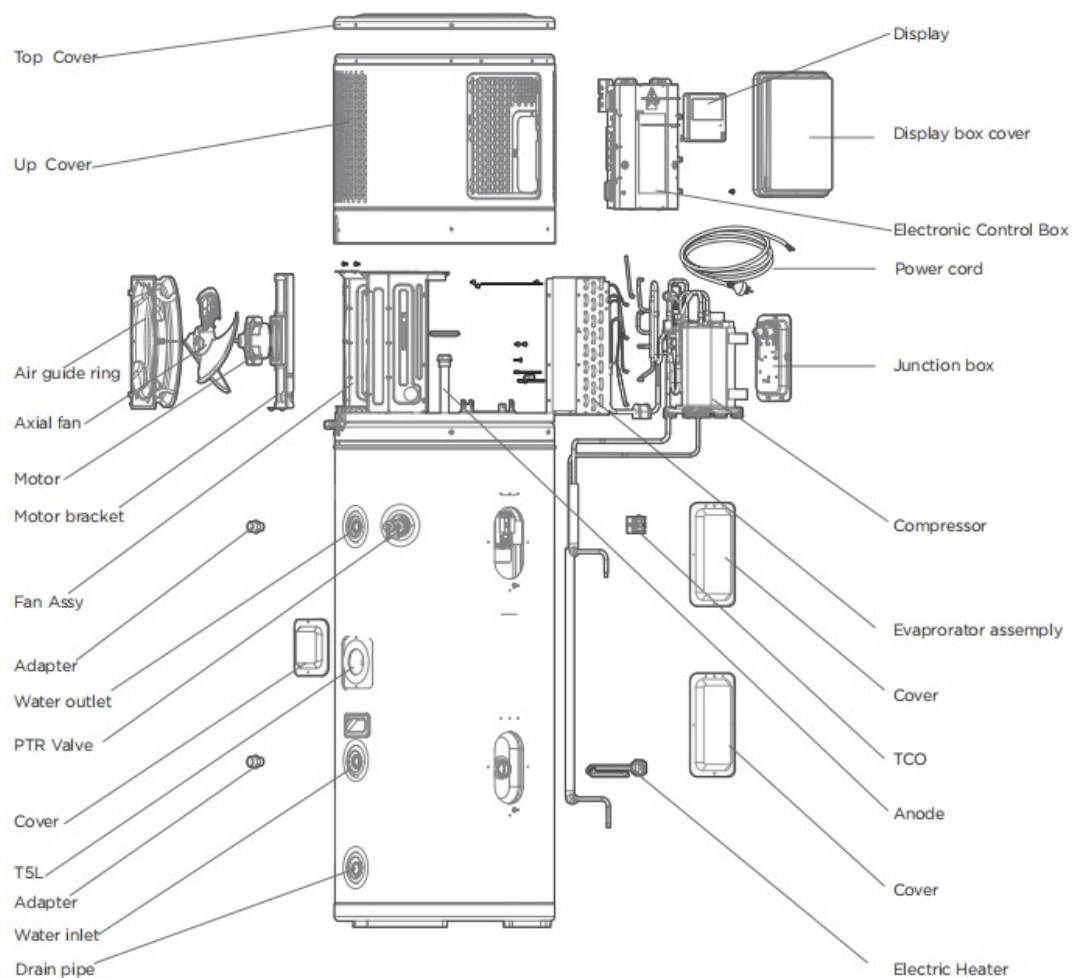
Model: DRSK1-ACDC-25/300R3

unit: mm



M	Description	Spec.
A	drain vent	/
B	PTR valve	Rc3/4
C	water outlet	G3/4
D	water inlet	G3/4
E	drain pipe	G3/4
F	air inlet	/
G	air outlet	/

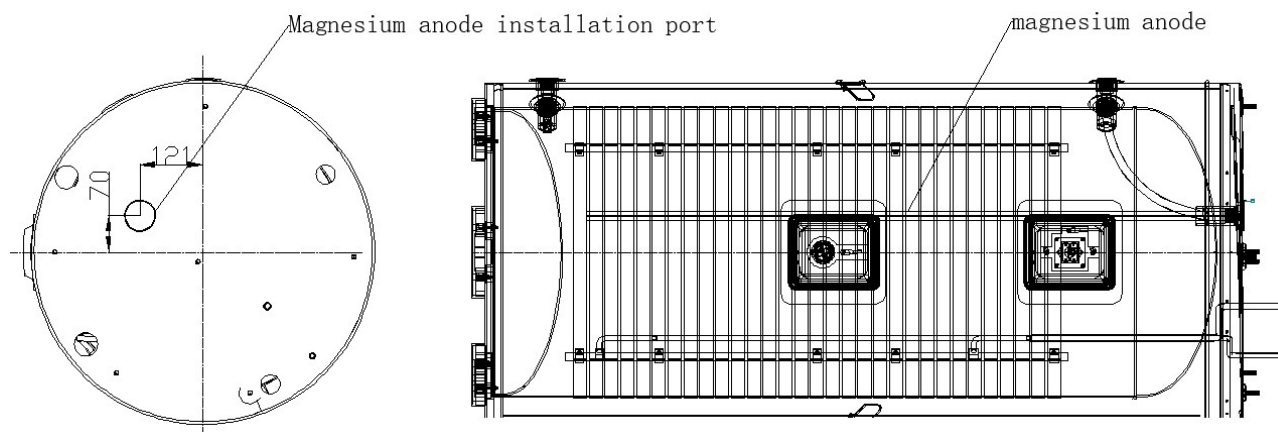
● Product Overview



When ordering repair parts please always give the following information:

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

Note: The specification of the magnesium rod assembly for the water tank is $\phi 23.3 \times 1250$, with a thread specification of G3/4. The schematic diagram of its position is as follows:



4. BASIC OPERATION PRINCIPLE

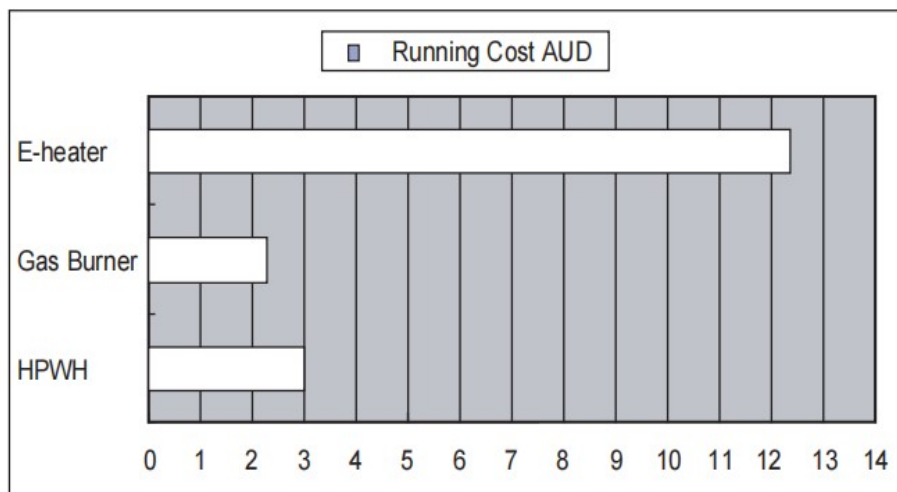
We know from experience, the natural flow of heat, moves from a higher to a lower temperature source, a heat pump can transfer heat from a lower temperature source to a higher temperature source with high efficiency.

The advantage of a heat pump water heater is that it can supply more heat energy, normally 3:1 times than input electricity power by extracting the heat from ambient atmosphere in a free charge way and transfer to Sanitary Hot Water. Compared to a traditional water heater, such as electric water heater or gas burner water heater, their efficiency is normally less than 1:1, which means you can dramatically cut off the bill of family daily SHW by the application of heat pump water heater, the following examples will show more details.

Power consumption comparison under the same condition to heat 1 ton of water from 15°C to 55°C.

The equivalent heat load $Q = CM(T_1 - T_2) = 1(\text{kCal/kg}^*) \times 1000(\text{kg}) \times (55 - 15)(^{\circ}\text{C}) = 40000 \text{ kCal} = 46.67 \text{ kW}^* \text{h}$

	HPWH	Gas Burner	E-heater
Energy Resource	Air, Electricity	Gas	Electricity
Transfer Factor	860kCal/kW*h	8905kCal/m ³	860kCal/kW*h
Average Efficiency(W/W)	4.0	0.8	0.95
Energy Consumption	11.67kW*h	5.6m ²	49.13 kW*h
Unit Cost	0.25 AUD/kW*h	13.5AUD/GJ	0.25 AUD/kW*h
Running Cost AUD	2.92	2.27	12.28



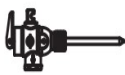
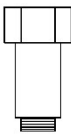
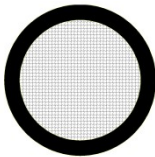
NOTE

- Above calculations are based on ideal conditions, the final amount will be different the actual running will vary with conditions, such as running period, ambient temperature, etc.

5. BEFORE INSTALLATION

Unpacking

1. Accessories

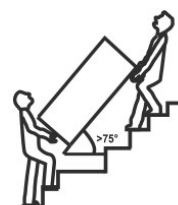
Accessory Name	Qty.	Shape	Purpose
Use's manual	1		Owner's & Installation Manual
Fixed strap	1		Fixed water tank
Condensed water drainage pipe	1		Drain condensate water
Laryngeal clamp	1		Fixed condensate drainage pipe
PTR valve	1		Temperature and pressure safety valve
PTR valve insulation cotton	1		Insulate the TP valve
Adapter	2		Connect the inlet and outlet water pipes
Check valve	1		Connect the inlet water pipes
Filter screen	1		Install it between Adapter and 2

Note: Accessories not included in the list, such as water inlet/outlet adapter, tempering valve, Expansion Control valve, pressure valve, and non-return/one-way valve, must be purchased from local market and installed separately.

CAUTION

- If the adapter in the accessory is not installed as required, the corrosion of water pipe joints is not covered by the warranty.

2. How to transport



- In order to avoid scratch or deformation of the unit surface, apply guard boards to the contacting surface. No contact of fingers and other things with the vanes. Don't incline the unit more than 75° in moving, and keep it vertical when installing.
- This unit is heavy, it need to be carried by two or more persons, otherwise might cause injury and damage.

Location requirements

- Enough space for installation and maintenance shall be preserved.
- The air inlet and outlet should be free from obstacles and strong wind.
- The base surface should be flat, surface should be inclined no more than 2° and able to bear the weight of the unit and suitable for installing the unit without increasing noise or vibration.
- The operation noise and air flow expelled shall not affect neighbors.
- No flammable gas is leaked nearby.
- It is convenient for piping and wiring.
- If it is installed in indoor space, it might cause indoor temperature decrease and noise, please take preventive measures for this.
- If the unit has to be installed on a metal part of building, make sure the well electric insulation which should meet the relevant local electric standard.

CAUTION

- The ambient air temperature must also be considered when installing this unit, in heat pump mode the ambient air temperature must be above -7°C and below 43°C . If the ambient air temperature falls outside these upper and lower limits, the electrical elements will activate to meet the hot water demand and the heat pump will not operate.
- The unit should be located in an area not subject to freezing temperatures. The unit located in unconditioned spaces (i.e., garages, basements, etc.) may require the water piping, condensate piping, and drain piping to be insulated to shelter against freezing.

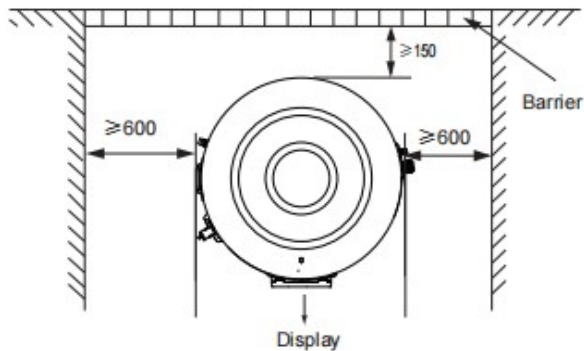
Installing the unit in any of the following places may lead to malfunction (If it is inevitable, consult the supplier prior to purchase).

- The unit should be located in an area not subject to freezing temperatures. The unit located in unconditioned spaces (i.e., garages, basements, etc.) may require the water piping, condensate piping, and drain piping to be insulated to shelter against freezing.
- The site contains mineral oils such as lubricant of cutting machines.
- Seaside or 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 cover.
- Places like kitchen where oil may permeate system.
- Place where strong electromagnetic fields exist.
- Place where flammable gases or materials exist.
- Place where acidic or alkaline gases exist.
- Other special environments.

WARNING

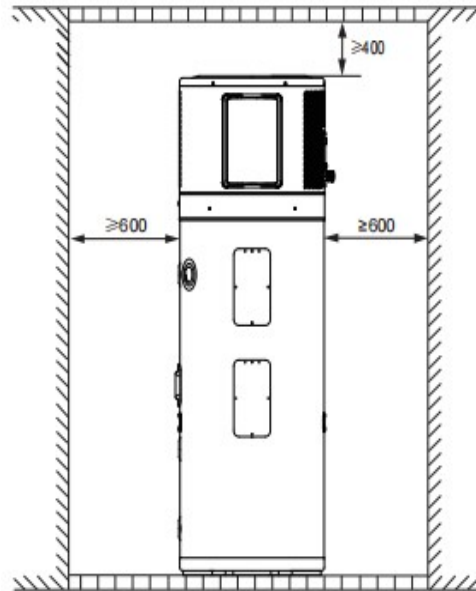
- The unit must be securely fixed, otherwise, noise and vibration may result.
- Make sure that there are no obstacle around the unit.
- In places where there are strong wind like seaside, fix the unit in a location protected from the wind.

Maintenance space requirements (unit: mm)



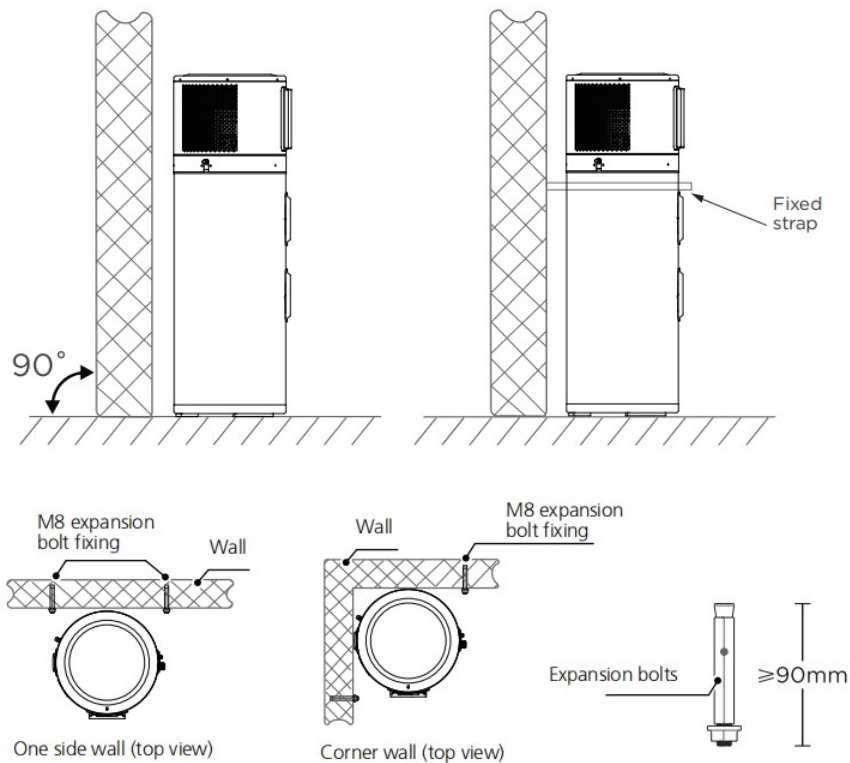
NOTE

- The minimum clearance from the appliance to the combustable surface is not less than all installation distances in the direction corresponding to the above.



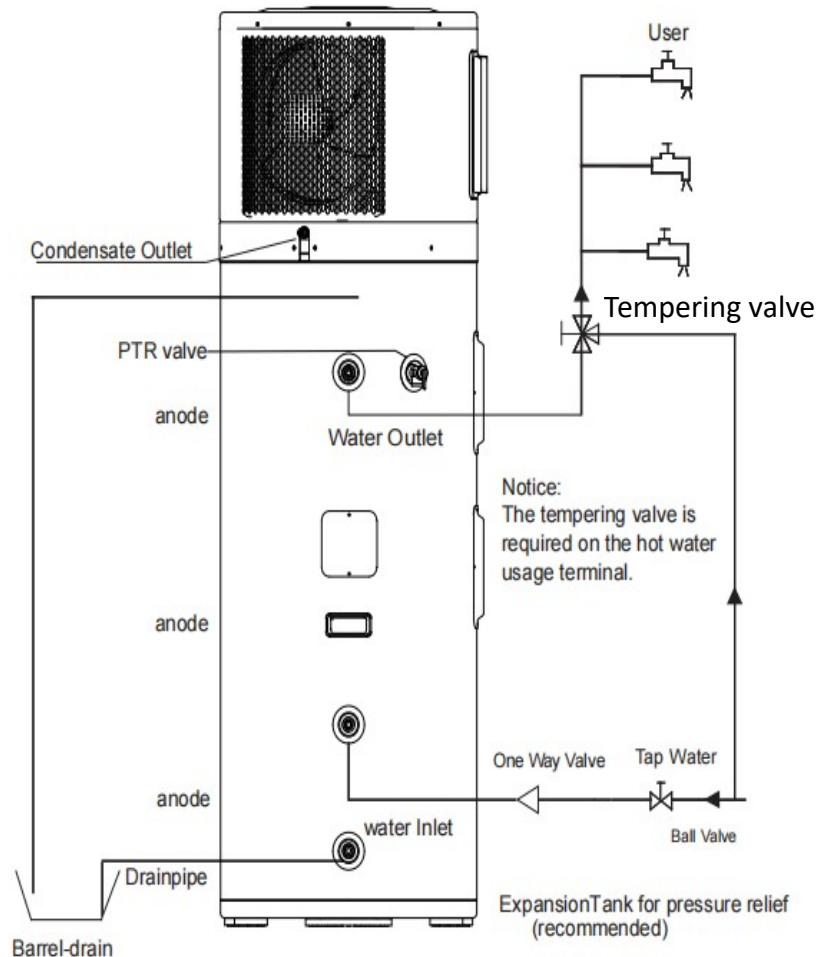
Mounting requirements

The base surface should be flat, surface should be inclined no more than 2° , otherwise the fixing strap is recommended as shown as following figures:



6. INSTALLATION

The circulating air for every unit should be more than 350m³ /h. Make sure there is enough Installation space. Refer outline dimensional drawing.



Description of the function of valve components:

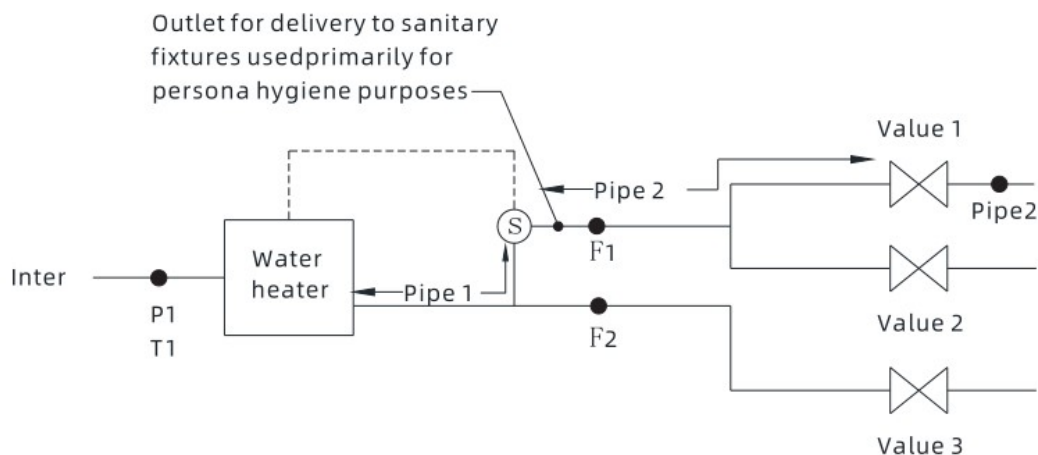
- **PTR valve:** It features dual pressure and temperature relief protection to prevent safety accidents such as bursting and leakage due to excessive internal pressure/temperature in the water heater;
Note: The model number of the PTR valve attached to the unit accessory is: W-PTR20, Technical parameters: operating pressure 850kPa, operating temperature 99°C, rated power 46KW;
- **One way valve:** Prevent water from flowing backward, while assisting in stabilizing the pressure within the inner tank, to avoid issues such as damage to the water heater and abnormal water pressure caused by backflow;
- **Ball valve:** The basic accessories for water heater pipeline installation are designed to achieve functions such as rapid water inlet and outlet control, maintenance water shutoff, and emergency water shutoff;
- **Tempering valve:** Mix the high-temperature hot water from the water heater with cold tap water in a certain proportion to precisely adjust the water temperature suitable for use, while also providing auxiliary functions such as anti-scalding and pressure stabilization;

Note:

- a. The heat pump's water outlet temperature may exceed 50°C . According to AS/NZS 3500 standards, installing a tempering valve is mandatory.
- b. The temperature of the water exiting the mixing valve should not exceed 50°C to prevent burns!

Note:

- Accessories such as tempering valves, expansion control valve, pressure valve, and one way valve, must be purchased and installed separately.
- DN20 piping is recommended. The distance between the heater and the outlet should be larger than 0.5 m. All hot water pipework must be insulated in accordance with AS/NZS 3500. The outlet temperature must be verified before commissioning.
- We suggest using a high - performance or solar rated tempering valve to ensure more precise hot water delivery temperatures.
- Your prior hot water system may not have been equipped with a tempering valve. Consequently, you might observe a variation in the hot water temperature. This is a normal occurrence and aligns with the new regulatory requirements. Should you have any apprehensions, kindly reach out to your installer.
- To comply with AS/NZS 3500 regulations, it is imperative to have a tempering valve installed. As shown in the figure, The length of Pipe 1 must be at least 150 mm.



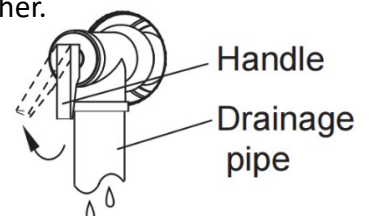
Water System Piping

Water inlet or outlet pipes: The spec of the water inlet or outlet thread is G3/4" (external thread). Pipes must be heat-resistant and durable.

1) Installation of the pipe for PTR valve: The valve connecting thread is RC3/4" (internal thread). After installation, it must be confirmed that the drainpipe outlet is exposed in the air.

CAUTION

- Piping water system as the above figure. In case of installing where outside temperature falls below freezing point, insulation must be provided for all hydraulic components.
- The PTR valve should be checked every half year to make sure that there is no restriction of the valve. Please beware of hot water from the valve. The drainage pipe should be well insulated in order to prevent water inside pipe from freezing in cold weather.



- PT valve is tightened with a 68N.m torque wrench. Apply sealant to the first 3 turns of screw thread before installation; After installation, the outlet of the drain pipe shall be installed face down, and the thread turns that are not screwed into the PT valve shall be less than 3 turns.

WARNING

Do not dismantle the PTR valve.

Do not block off the drainage pipe, it will cause explosion and injury.

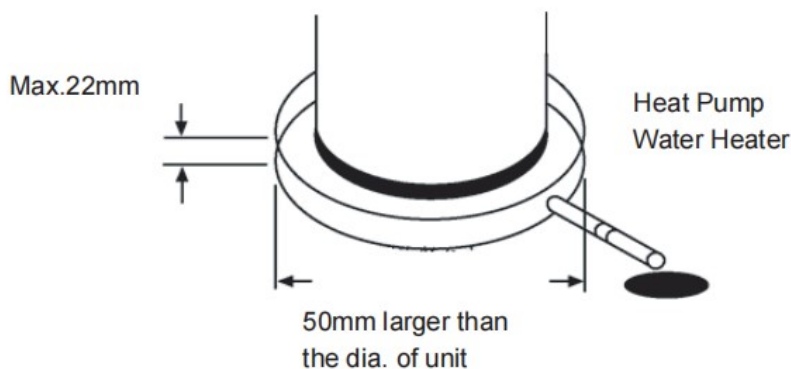


2) Installation of the One Way Valve: The One Way Valve thread is G3/4". It is used to prevent water from flowing backwards.

3) After connection of the water system piping work, turn on the cold water inlet valve and hot water outlet valve and bleed all air from the tank. When water flows smoothly out from water outlet pipe (tap water outlet), the tank is full, turn off all valves and check pipeline to make sure there is no any leakage.

4) If the inlet water pressure is less than 0.15MPa, a pump should be installed at the water inlet. To guarantee the safety usage of tank, a Pressure Limiting Valve (PLV) should be installed in the water inlet pipe, if the water pressure exceeds 0.5MPa.

5) 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:



Electric Connection

CAUTION

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

1. Specifications of Power Supply

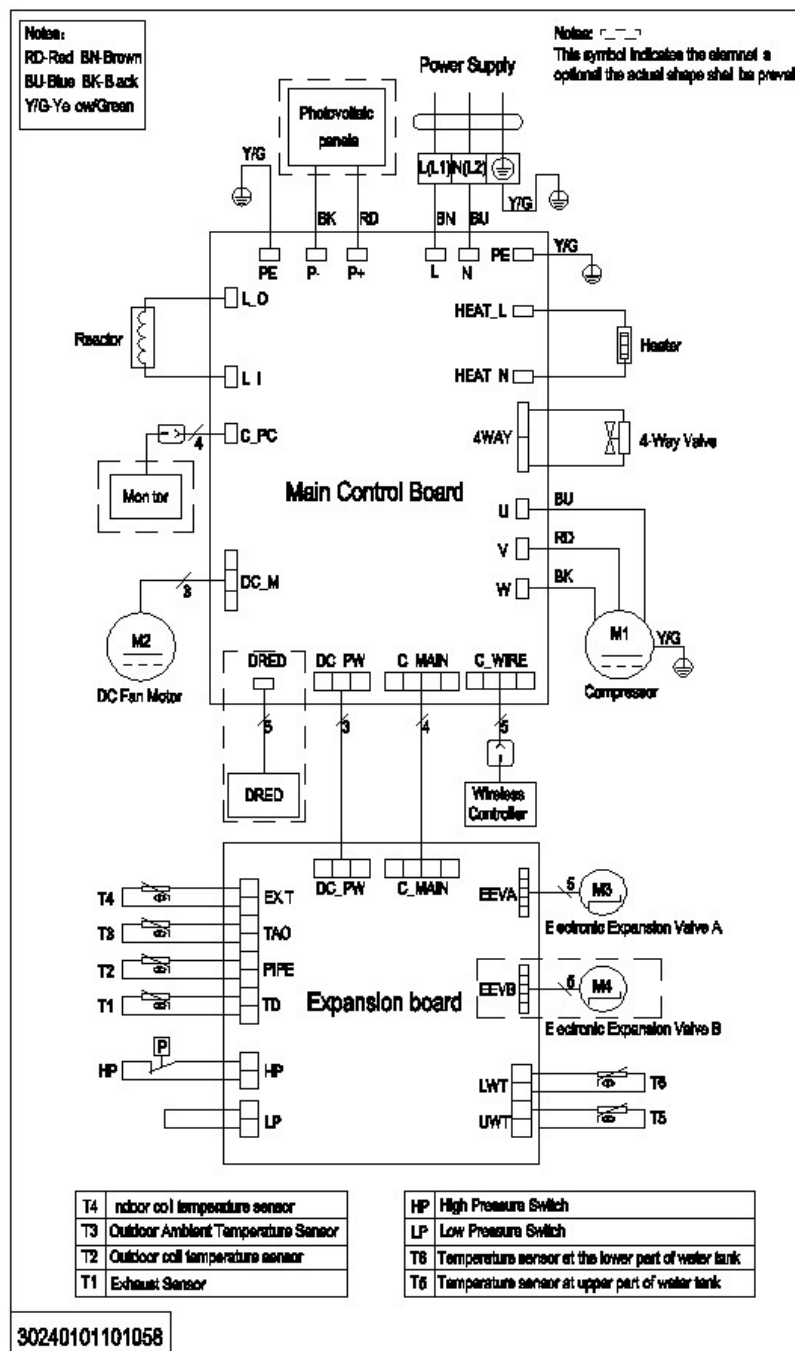
Model Name	DRSK1-ACDC-25/300R3
Power Supply	208-240V~ 50Hz
Min. Diameter of Power Supply cord (mm ²)	2.0
Earth cord (mm ²)	2.0
Manual Switch(A) Capacity/Fuse(A)	30/25
Creepage Breaker	30 mA ≤0.1sec

- Please choose the power cord according to above table, and make sure it comply with local electric standard.
- Recommended power cord mode is H05RN-F or H07RN-F.

WARNING

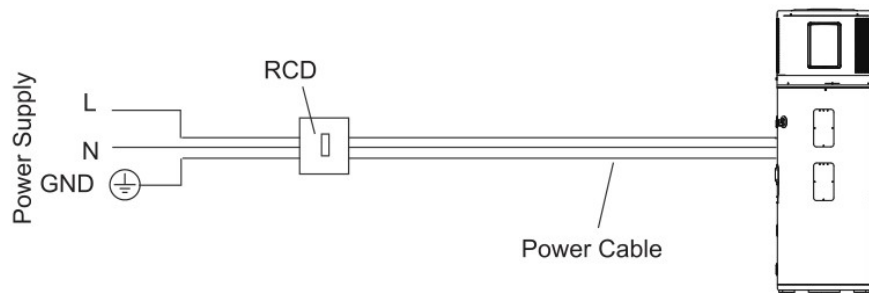
The unit must be installed with an RCD near the power supply and must be effectively earthed.

2. Wiring diagram



Note: if there is any change due to product improvement, the unit's internal label shall prevail.

3. Electric leakage protector



Installation checklist

1. Location

- The flooring beneath the water heater must be able to support the weight of the unit when filled with water (more than 430kg).
- Located outdoors and in a vertical position. Sheltered from freezing temperatures.
- Provisions made to shelter the area from water damage. Metal drain pan installed and piped to an adequate drain.
- Sufficient room to service the water heater.

NOTE

- For optimal efficiency and serviceability, the following clearances should be maintained: 800mm on the air inlet side, 800mm on the air outlet side, 600mm in the back, and 600mm in the front.

- Sufficient air for the heat pump to function, the water heater must be located in a space $>15\text{m}^3$, and must have unrestricted air flow.
- Water Quality.
 - 1) Bad quality water will produce more scale and sand, so this kind of water should be filtered.
 - 2) The water quality should be analysed before system running, to measure the PH value, conductivity, chloride ion concentration and sulphate ion concentration.
 - 3) The acceptable water quality standard is showed as below table.

PH	Hardness	Conductivity	Sulphate	Chlorine	Ammonia	Silicon	Iron	Ca
7-8.5	< 50ppm	<200 $\mu\text{V}/\text{cm}$ (25°C)	None	< 50ppm	None	< 50ppm	< 0.3ppm	< 50ppm

- 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 may affect the operation of the unit and require frequent cleaning.
- The ambient air temperature must be above -7°C and below 43°C . If the ambient air temperature falls outside these upper and lower limits the electrical elements will be activated to meet the hot water demand.

2. Water System Piping

- PRT (Temperature and pressure relief valve) properly installed with a discharge pipe run to an adequate drain and sheltered from freezing.
- All piping properly installed and free of leaks. Unit completely filled with water. Tempering valve installed per manufacturer's instructions.

3. Condensate Drain Line Installation

- Must be located with access to an adequate drain or condensate pump.
- Condensate drain lines installed and piped to an adequate drain or condensate pump.

4. Electrical Connections

- The water heater requires 230V AC for proper operation.
- Wiring size and connections comply with all local applicable codes and the requirements of this manual.
- Water heater and electrical supply are properly grounded.
- Correctly sized overload fuse or circuit breaker protection installed.

5. Post Installation Review

- Understand how to use the User Interface Module to set the various modes and functions.
- 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.

7. INSTALLATION OF SOLAR PV MODULES

Installation of Solar Modules

Solar Modules must be installed in accordance with all applicable codes. Some of them are the local building codes, the Building Code of Australia, AS/NZS 4777 and AS /5033. They must be installed by a licenced, competent person.

Solar Array Maximum Voltage

The maximum Voltage Open Circuit (VOC) must be calculated to account for low temperature voltage rise. Failure to do may damage the equipment and void warranty.

For guidance see AS/NZS 5033 4.2 PV array maximum voltage.

The maximum Voltage Open Circuit for this equipment is 380 Vdc.

For example, if the lowest recorded temperature is 4 to 0 degrees C and the VOC of a module is 44.2 Vdc, one would multiply 44.2 by 1.1 equalling 48.62 volts.

Dividing the maximum VOC input of 380 Vdc by 48.62 yields the maximum number of solar modules 7.81. Rounding down yields 7 modules max at that low temperature.

**VOLTAGE CORRECTION FACTORS FOR CRYSTALLINE
AND MULTI-CRYSTALLINE SILICON PV MODULES**

Lowest expected operating temperature °C	Correction factor
24 to 20	1.02
19 to 15	1.04
14 to 10	1.06
9 to 5	1.08
4 to 0	1.10
-1 to -5	1.12
-6 to -10	1.14
-11 to -15	1.16
-16 to -20	1.18
-21 to -25	1.20
-26 to -30	1.21
-31 to -35	1.23
-36 to -40	1.25

Solar Array Maximum Current

Paralleling of the solar array is not recommended as the maximum rated Array Short circuit current is 20 amps.

Galvanic Considerations Outdoor Unit

The outdoor unit is to be treated as a non-galvanically isolated regulator. The solar isolation switches must be rated for the full array voltage and current. If connected to the AC supply, the outdoor unit must be connected to the 230-volt AC distribution board via a type A or B residual current and overcurrent device

Solar Module Installation

This manual contains information regarding the installation and safe handling of solar photovoltaic module(s). All instructions should be read and understood before attempting to install. If there are any questions, please contact our sales department for further explanation. The installer should conform to all safety precautions listed in this guide when installing the modules. Local codes and regulations must be followed.

This manual does not describe specific structures and installation procedures.

An approved solar technician must be consulted to determine the following:

- The specifications of the solar photovoltaic system
- Cable material
- Connecting components
- Bracket and support
- Supporting parts
- Switching and circuit protection



Solar modules are large and require careful handling. Only a qualified technician should install Solar Modules. Solar arrays are current limited sources. Use appropriate protection measures when working on them. They contain hazardous DC voltages.

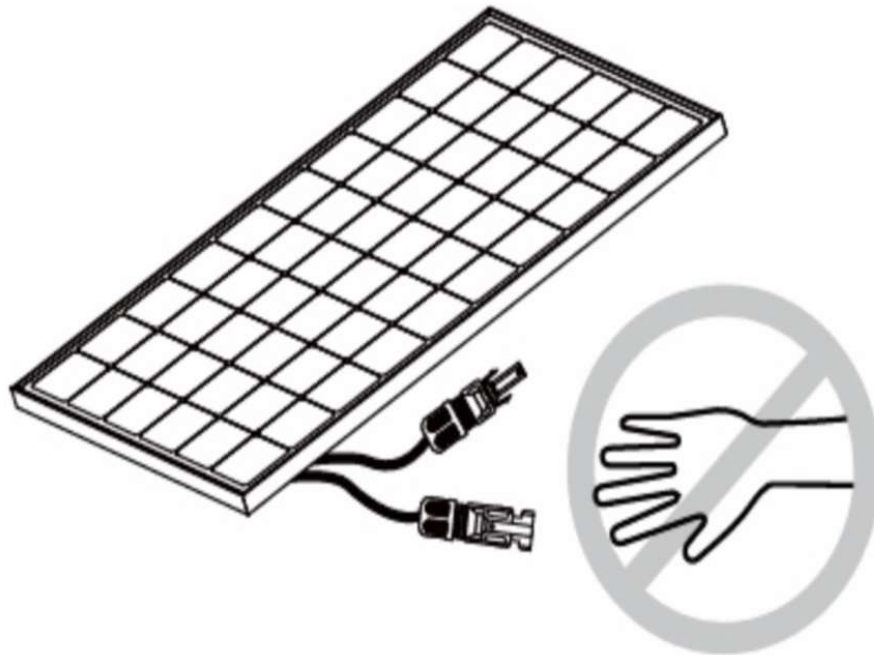
Installation of Solar Modules should be performed only by qualified persons, who are familiar with the mechanical and electrical requirements.

All electrical connections should be made with approved MC-4 type connectors, and from the same manufacturer. (AS/NZS 5033 clause 4.3.7 (k))

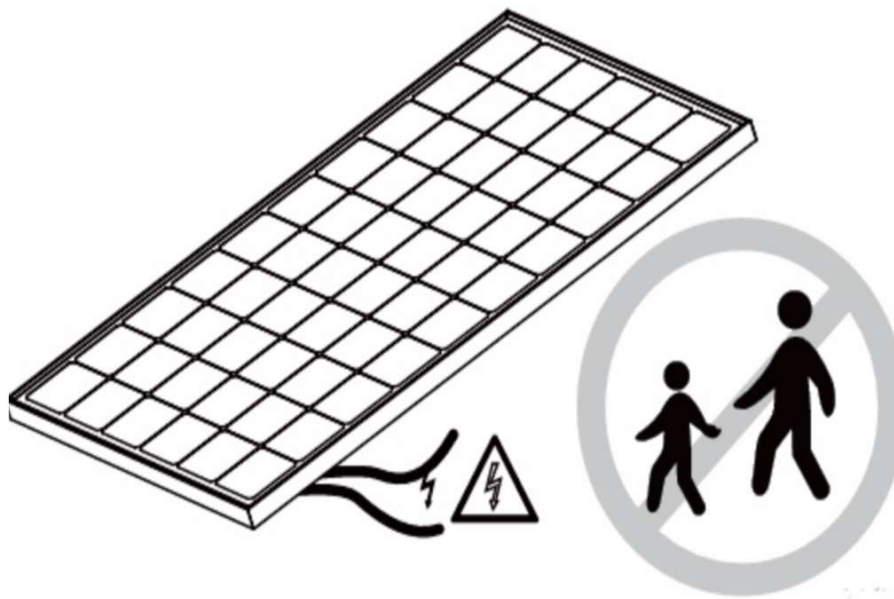
One individual solar module generates DC voltage greater than 30V when exposed to sunlight. Contact with a DC voltage of 30V or more is potentially hazardous. Do not touch the contacts of electrical terminals.



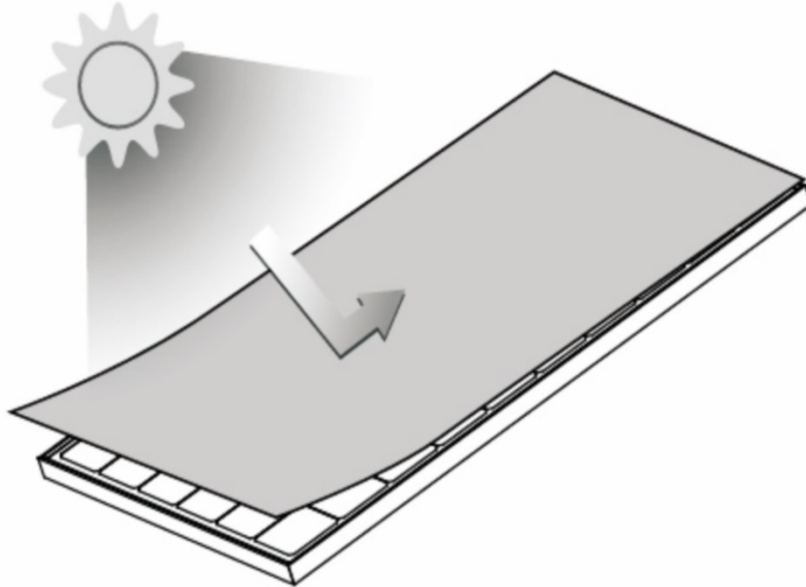
Do not touch the module contacts.



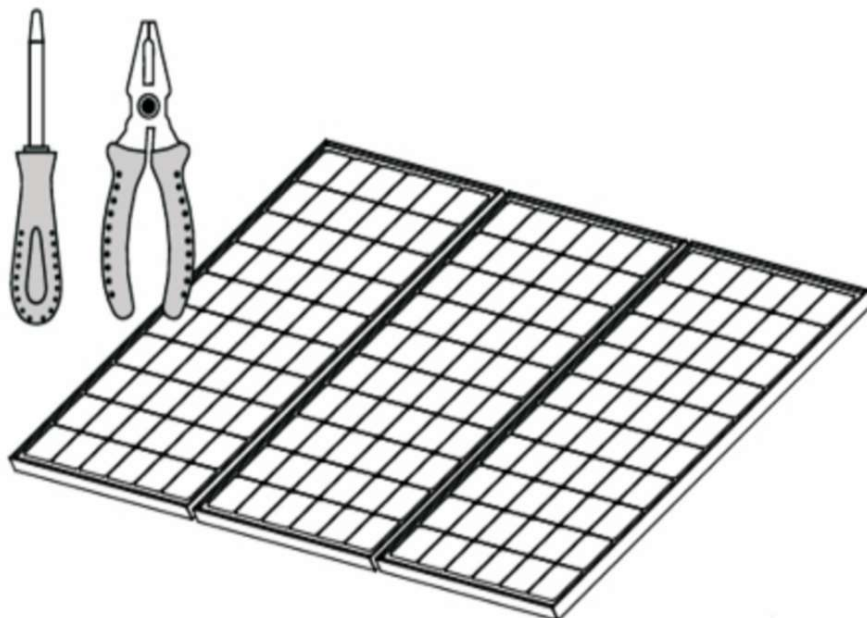
Keep children away from the system while transport and installing mechanical and electrical components.



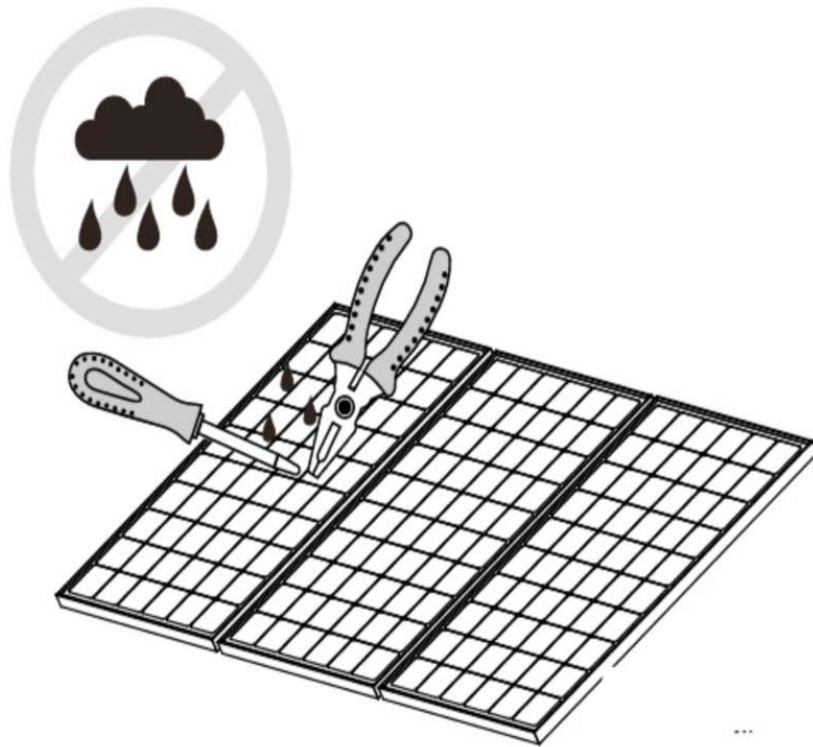
Completely cover the module with an opaque material during installation to keep electricity from being generated. Do not touch the ends of live wires. Do not wear metallic rings, watchbands, ear, nose lip rings or other metallic devices while installing or troubleshooting photovoltaic systems.



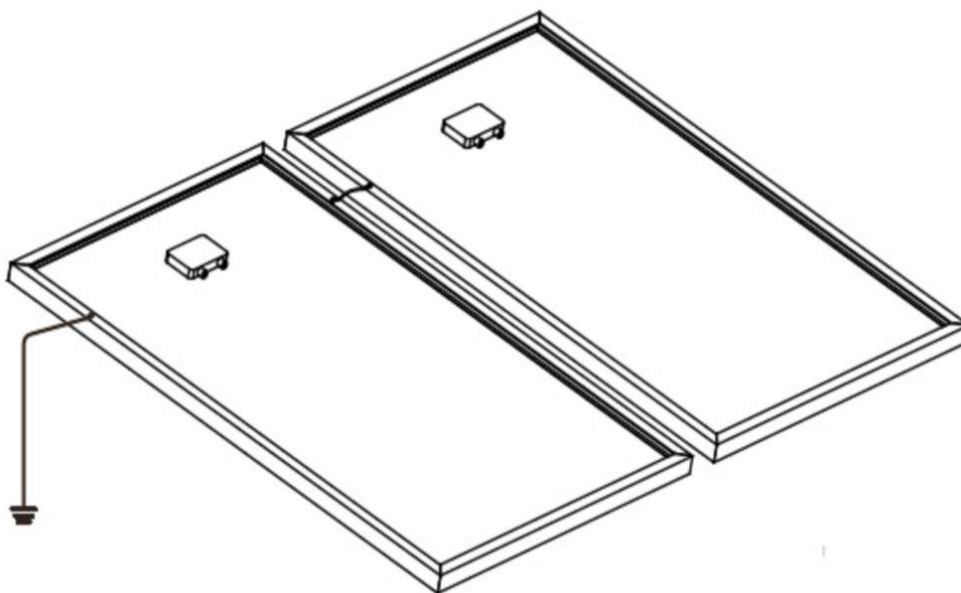
Use only insulated tools that are approved for electrical installations.



Do not work on solar modules in wet conditions.



The module frame must be properly earthed. Removal on any one module must not interrupt the earthing of the remaining modules.



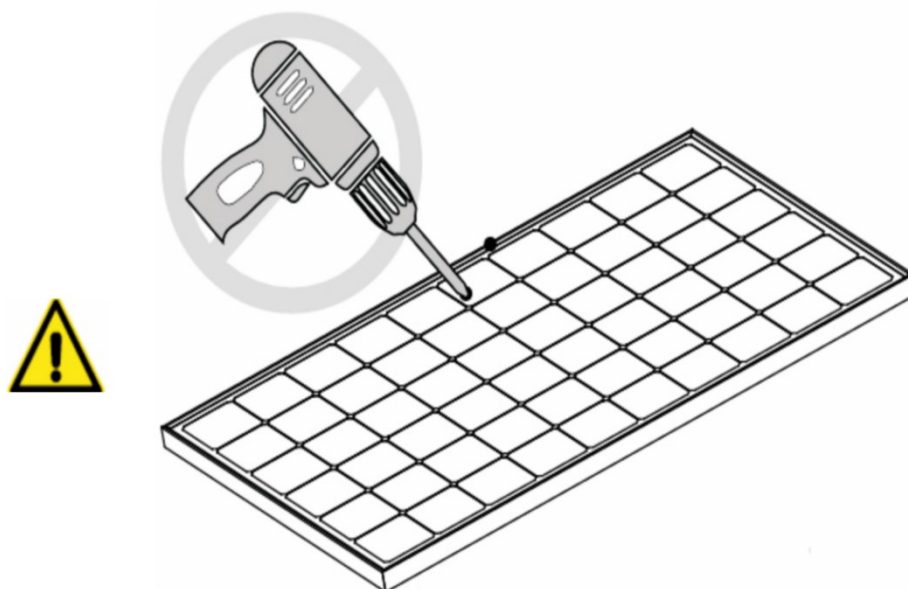
Solar Array Mechanical installation

Selecting an installation place:

- Select a suitable place for installation of the solar modules. The modules should not be shaded during the solar window part of the day.
- The module should be facing north in the southern latitudes for best power generation.
- An approved solar technician should be consulted to determine the best orientation of the solar panels.

Selecting the proper support frame:

- Always observe the instructions and safety precautions included with the support frame to be used with the modules.
- Never attempt to drill holes in the glass surface of the module. It will void the warranty.
- Do not drill additional mounting holes in the frame of the module. It will void the warranty.

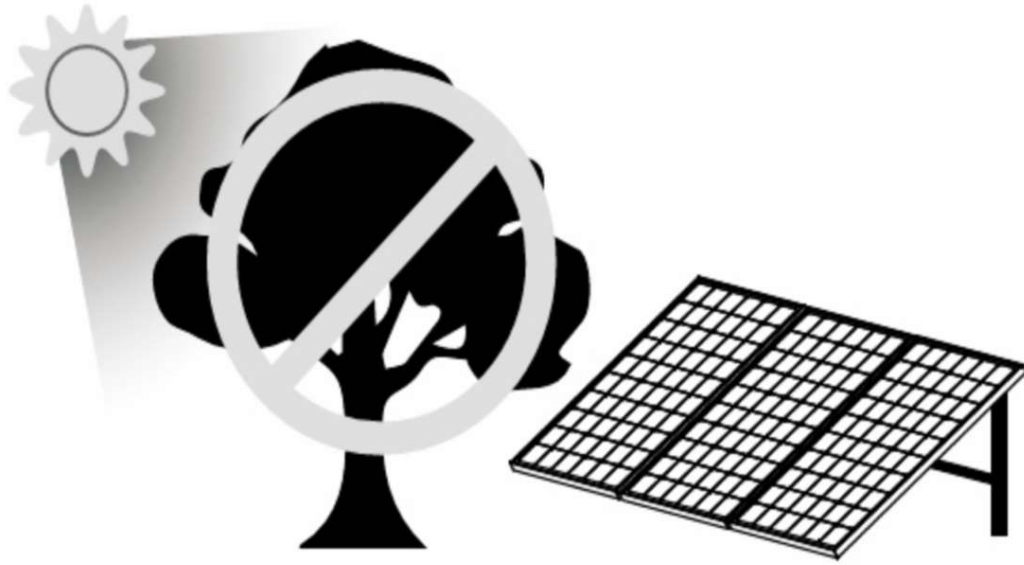


- Modules must be securely attached to the mounting structure using four mounting points for normal installation. If additional wind or snow loads are considered for the installation additional mounting points should also be used.
- The support frame must be made of durable, corrosion resistant and UV resistant material.
- The heat expansion and cold contraction of the support frame should have no effect on its usage and performance.

Ground mounting:

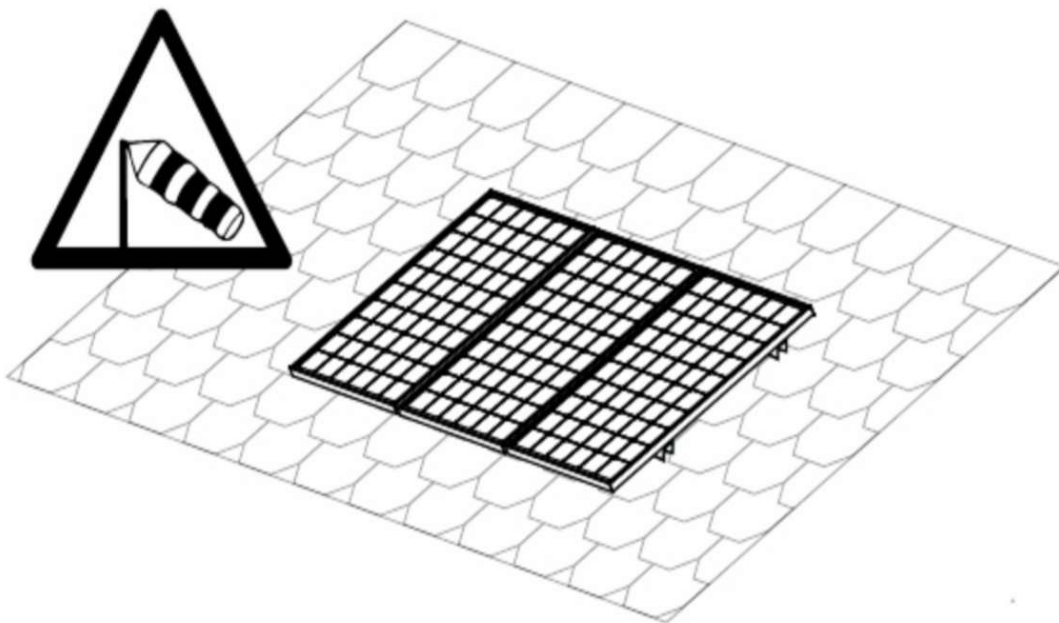
- Select the height of the mounting system to prevent the lowest edge of the module from being covered by snow in winter in areas the experience heavy snowfalls. In addition,

assure the lowest portion of the module is placed high enough that it is not shaded by plants or trees and is free from the effects of sand and stone driven by wind.

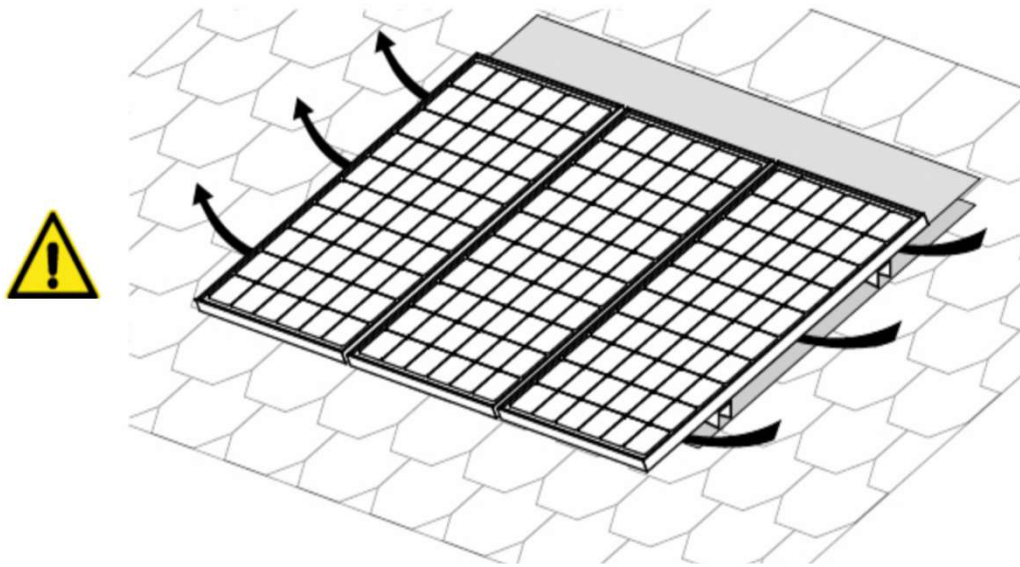


Roof Mounting:

- When installing the modules on a roof ensure that they are securely fastened and cannot fall because of wind or snow loads.
- When installing on a roof, ensure that the roof construction is suitable. In addition, any roof penetration required to mount the module must be properly sealed to prevent leaks.
- The roof installation of solar modules may affect the fireproofing of the house construction and it may be necessary to use an earth ground fault circuit breaker.

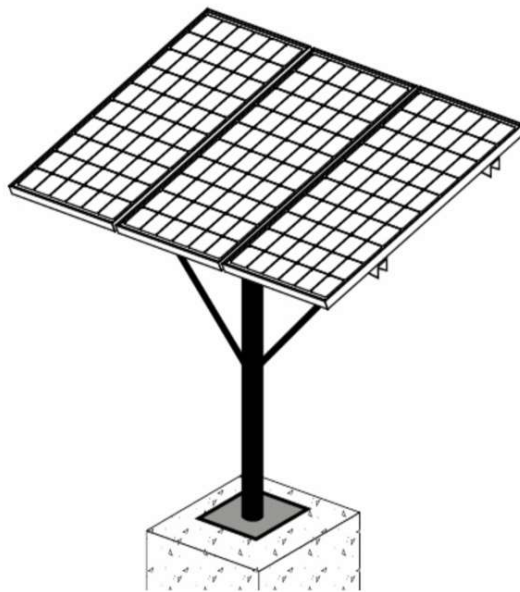


- Provide adequate ventilation under a module for cooling. 50 mm minimum between the module and the mounting surface.



Pole mounting:

- When installing the modules on a pole, choose a pole and module mounting structure that will withstand anticipated winds for the area. The pole must have a solid foundation.



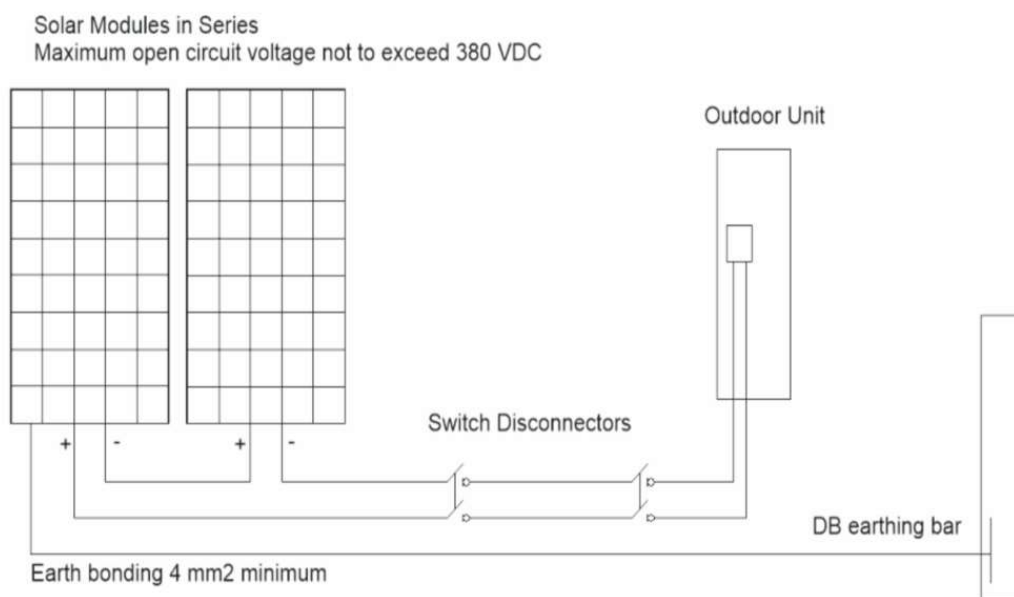
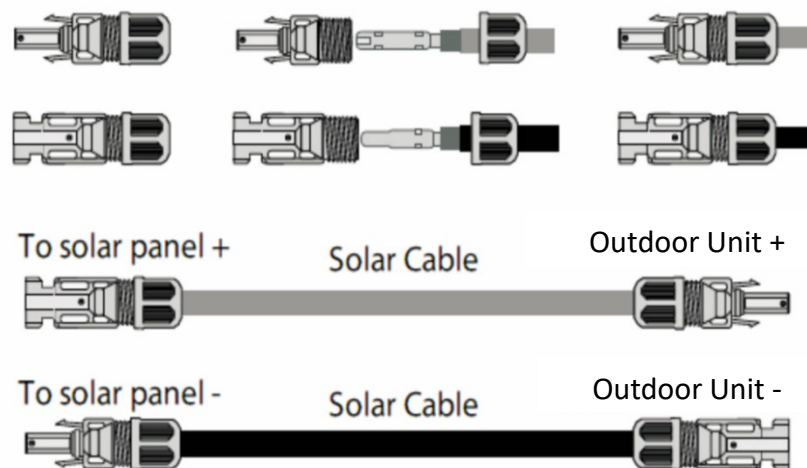
Solar Array Wiring

The array is formed of modules in series. The switch disconnecter must be approved for disconnecting solar DC under load.

The MC-4 connectors must be approved and from the same manufacturer at each join. Mismatching connectors can cause failure and possible fire.

General installation:

- Do not use modules of different configurations in the same system.
- The solar photovoltaic array consists of a maximum of 10 modules of 270 watts or 8 modules of 370 watts.
- The solar array total system voltage must not exceed 380 volts DC open circuit. If installed in an area that experiences temperatures lower than 20 degrees C the Voltage open circuit will rise and a calculation must be done by a qualified technician.
- Both sides of an MC 4 type connection must be of the same type and manufacturer.
- Multistrand solar wire, having a minimum cross section of 2.5 sq mm or larger must be used.
- Cable installation must comply with all local and national codes and regulations.
- A switch disconnecter rated for DC must be used between the array and the outdoor unit. If not adjacent to the array a separate switch must be installed at the array.



Earth Fault Protection Solar DC

Roof mounted DC PV arrays located on dwellings must be provided with DC earth fault protection per US Electrical code NEC 2005 Article 690.5. Earth fault protection isolates the Neutral conductor. (in DC this is usually the negative wire) from earth when a ground fault occurs.

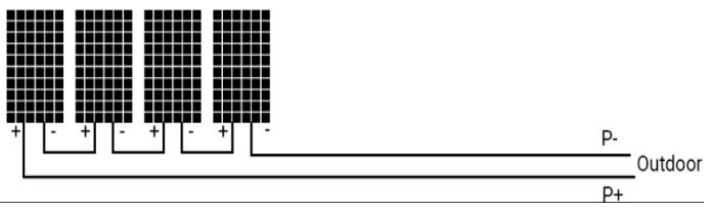
Solar Disclaimer

Because the use of this manual and conditions or methods of installation, operation, use and maintenance of the photovoltaic (PV) product are beyond our control, we do not take any responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with such installation, operation use or maintenance. Nor responsibility is assumed by us for any infringement of patents or other rights of third parties, which may result by using the PV product. No license is granted by modification or otherwise under any patent or patent rights.

The information in this manual is based on company knowledge and experience and is believed to be reliable, but such information including product specification (without limitations) and suggestions do not constitute a warranty, expressed or implied.

We reserve the right to change the manual, the PV product, the specifications, or product data sheets without prior notice.

Recommended amount of photovoltaic panels

Model	Connection of photovoltaic panels	Recommended amount
DRSK1-ACDC -25/300R3		(280-360W) 4 pcs (360-450W) 3 pcs

8. OPERATION INSTRUCTIONS

8.1 Control System Specifications

1) Operating conditions

- Voltage: 220–240V~/50Hz. Ambient temperature: -20~47°C.
- Relative humidity: 0~95%RH.
- Temperature accuracy: $\pm 1^{\circ}\text{C}$.

2) Operating modes

Operating modes of the system: Economy mode [ECONOMY], Hybrid mode [HYBRID], and Electric heater mode [E-HEATER].

● **Economy mode:**

According to the working mode of the heat pump, when there is a heating demand, the heat pump compressor system will first heat the water to the maximum temperature or only then start the electric water tank heater for further heating. The compressor and the electric water tank heater will not operate simultaneously;

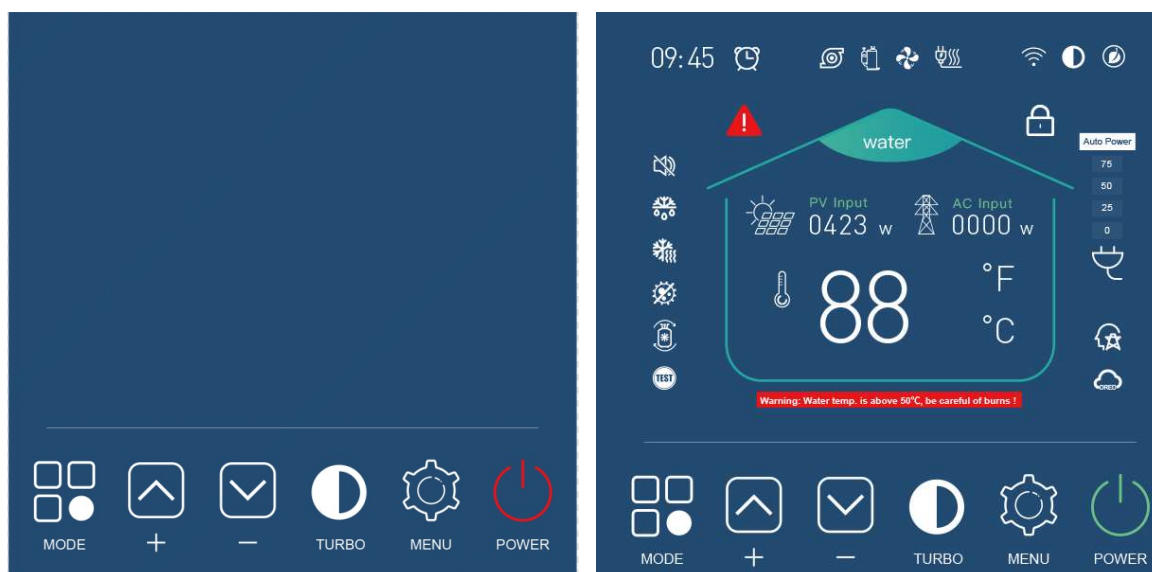
● **Hybrid mode:**

Operates in heat pump mode. When there is a heating demand, and the ambient temperature is extremely low or the heat pump has been running for a long time without reaching the set temperature, the electric water tank heater will start operating (both the electric heater and the heat pump compressor system can operate simultaneously).

● **Electric heating mode**

Operates in heat pump mode, where both the electric heating of the water tank and the heat pump compressor system can be activated when there is a heating demand.

8.2 Interface Display

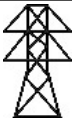


Remark:

- Left figure is the main interface in the shutdown state.; while the right figure illustrates the main interface after startup.
- There will be a buzzing sound when pressing the key;
- The main display area displays the inlet water temperature by default. If operate “+” or “-”, the set temperature will be displayed for 5 seconds.

8.3. Main Interface Display and description

Icon	Icon name	Display content
	WiFi	When the WiFi network is successfully configured, the corresponding icon is displayed.(Icon flashes during network configuration)
	Timing	When the timer function starts, the corresponding icon is displayed.
	Child lock	When the child lock function is turned on, the corresponding icon is displayed. When the child lock function is turned off, the corresponding icon is displayed.
	Fault	When a fault occurs, the corresponding icon is displayed. The relevant information about the fault will be displayed in the banner below the main interface.
	AC Power supplementary mandatory	AC power supply TURBO is forcibly turned on, and the corresponding icon is displayed. It is valid only once, that is, up to temperature shutdown or shutdown and then boot the function will automatically exit.
	Mode Flag	Display the current operating mode. When the mode is switched, the corresponding icon will be displayed following the switch.
	Compressor Running	When the compressor starts running, the corresponding icon is displayed.
	Pump Running	When the pump starts running, the corresponding icon is displayed.
	Fan Running	When the fan starts running, the corresponding icon is displayed.
	Auxiliary electric heater Running	When the auxiliary electric heater starts running, the corresponding icon is displayed.
	Defrost	When defrost is running, the corresponding icon is displayed.
	DC Power	Displays real-time DC(photovoltaic) input power.

	AC Power	Displays real-time AC(Grid) input power.
	Temperature	The current water temperature is displayed by default. If operate "+" or "-", the set temperature will be displayed for 5 seconds.
	Temperature Scale	When the temperature scale is switched, the corresponding icon is displayed.
	Power Limit	After enabling the power limiting function and selecting the power-limiting gear, the corresponding button icon will be selected.
	Auto Power	After entering this mode, the device can automatically shut down if it has not been used for a period of time to save energy.
	Antifreeze	When entering antifreeze mode, the corresponding icon is displayed.
	Mute Mode	When entering mute mode, the corresponding icon is displayed.
	Sterilization Mode	When the sterilization function is activated, the corresponding icon is displayed.
	Testing Mode	When entering test mode, the corresponding icon is displayed.

8.4. Main interface key description

Icon	Icon name	Key Function
 POWER	Switch Key	Short press to switch on/off status.
 MENU	Setting Key	Entering the function setting interface to set functions: WiFi, timer, fault viewing, operating parameter viewing etc.
 TURBO	AC Power Supplementary Mandatory Key	Short press to set the AC power supplementary TURBO to be forced on. The corresponding icon in the upper right corner of the screen lights up and the machine runs at maximum power. When the machine meets the temperature shutdown conditions, the function automatically exits and the icon disappears.
	Temperature Minus Key	Operating unit 1 °C/°F, lower limit 10°C/50°F.
	Temperature Plus Key	Operating unit 1 °C/°F, upper limit 60°C/140°F.
 MODE	Mode Key	Short press to enter the[ECONOMY], [HYBRID], or [E-HEATER] mode selection interface.

75 50 25 0 	Power Limit Key	Enter the power limiting function setting interface can manually turn on or off the power limit function and select the gear.
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8.5. Wired Controller Operating Instructions

8.5.1. ON/OFF

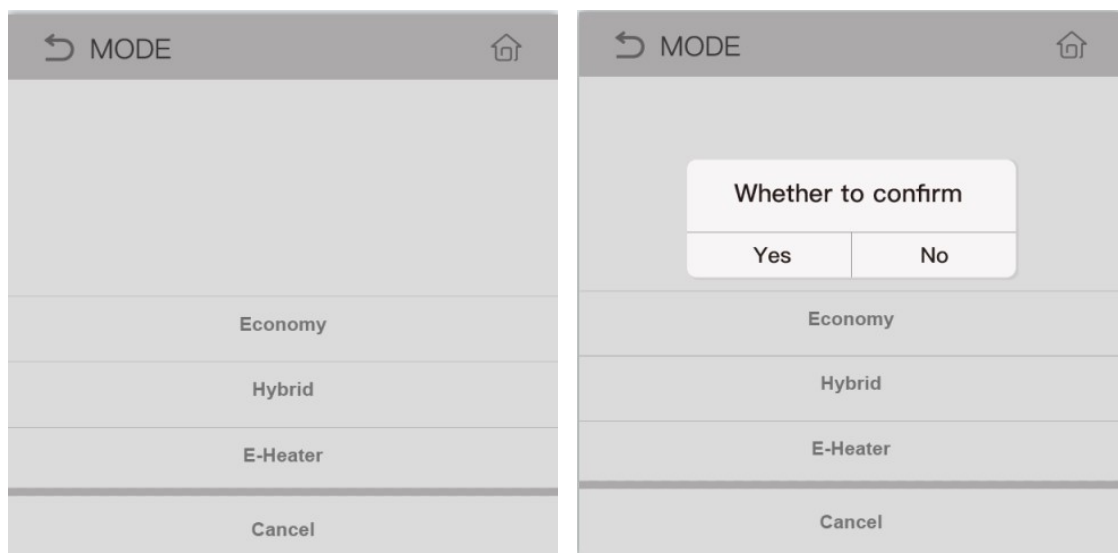
Press  in the main interface to switch the on/off interface and turn the host on and off.

8.5.2. Child Lock

Short press the child lock, the lock screen function is enabled, and the lock screen button changes to  on the main interface; short press , the lock screen function is canceled, and the lock screen button changes to .

8.5.3. Mode

Short press , the main interface enters the mode selection interface.



Enter mode selection, a confirmation box will pop up when switching modes, as shown in the figure above, switch modes only after confirmation.

8.5.4. Temperature Addition and Subtraction

Short press  or , the current temperature on the main interface changes to the set

temperature, and the set temperature can be modified through the up and down keys. If no operation is performed for 5 seconds, the water temperature will restore to display as the inlet water temperature.

Close off the mute function and the AC limit function temporarily.

Note:

The default temperature setting for the product upon delivery is 55 °C , with a startup return difference of 5 °C ;

The unit automatically reverts to the default operation mode within 24 hours of any user change to the operation mode.

8.5.5. Turbo (Mandatory supplement of AC power supply)

~~Short press  to enter the mandatory supplement of AC power supply function, AC power supply is forcibly turned on, and close off the mute function and the AC limit function temporarily, the corresponding icon is also displayed. It is valid only once, up to temperature shutdown or shutdown and then the Turbo function will automatically exit.~~短按激活 TURBO 功能，主界面出现相应图标。暂时关闭交流限制功能，强制接通交流电并且屏蔽交流电控制限或静音控制。机组将以最高频率运行。此操作只能执行一次。当达到设定温度或机组关闭时（除霜时的停机除外），TURBO 功能将自动退出或手动关闭 Turbo 功能。AC 限制函数将返回到之前的状态或静音控制。若不成立则按照正常控制流程进行。

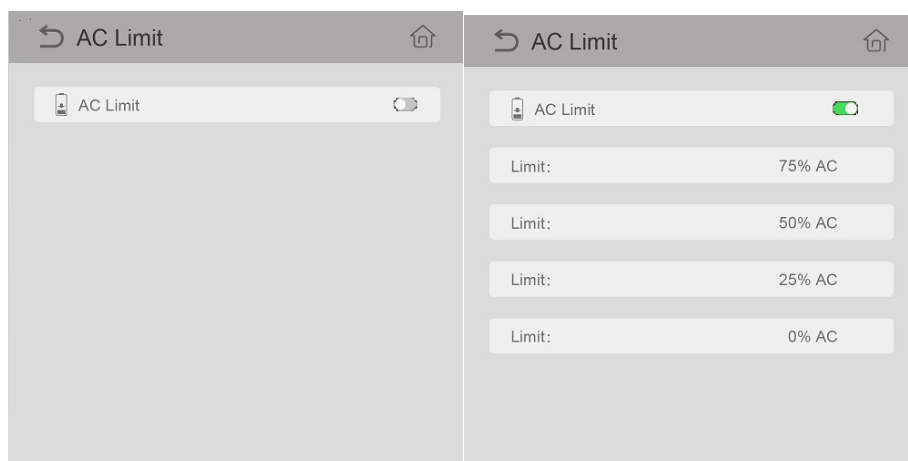
Press briefly  to activate the TURBO function, and the corresponding icon will appear on the main interface. Temporarily disable the AC limit function, force the AC power to be connected, and shield the AC control limit or mute the control. The unit will operate at the highest frequency. This operation can only be performed once. When the set temperature is reached or the unit is shut down (except for the shutdown during defrosting), the Turbo function will automatically exit or be manually turned off. The AC restriction function will return to the previous state or mute control. If it does not hold true, the normal control process shall be followed.

8.5.6. Power Management

1) AC Limit



Short press  in the main interface to enter the AC limit interface shown in figure below. If the AC limit is not turned on, the interface is shown as the left figure below. If the AC limit is turned on or in progress, the interface is shown as the right figure below.



a. Disable the AC limiting function: the machine works in AC and DC mode, and DC is used first. The machine will not stop until the water temperature has reached the target temperature.

b. Enable AC limiting function:

0%: The AC power input is about limit to 0 W. If the photovoltaic power is not enough, the machine may stop.

25%: The AC power input is about limit to 25% of the rated power, if the photovoltaic power is not enough, the unit will operate at the minimum frequency of the unit.

50%: The AC power input is about limit to 50% of the rated power, but it must meet the minimum frequency of the unit.

75%: The AC power input is about limit to 75% of the rated power, but it must meet the minimum frequency of the unit.

NOTE

- The AC Limit function is enabled by default at the factory, and the limit level is set at 25%.

2) Auto Power

Short press  in the main interface to activate the Auto Power function. It will exit when the AC limit function is turned off.

After enabling this function, when the water tank temperature is lower than the enabling temperature and the set temperature is higher than the enabling temperature, the AC will intervene until the set temperature or 50 °C (whichever is lower) is reached, at which point the unit will stop.

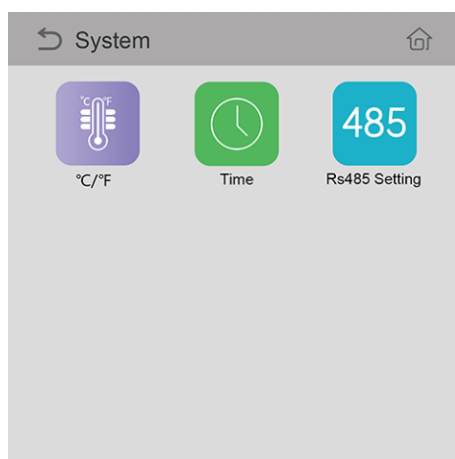
8.5.7. Menu

Short press  to enter the menu interface, as shown in figure below:



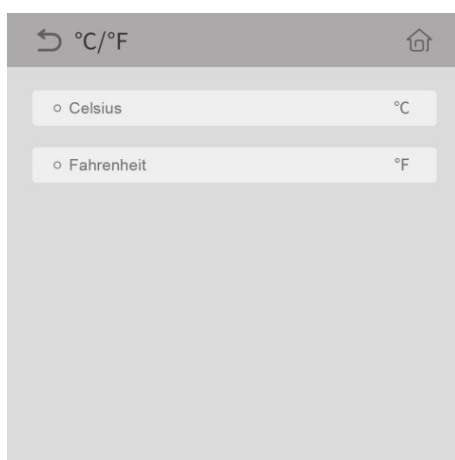
(1). System

Short press  to enter the system interface, as shown in figure below:



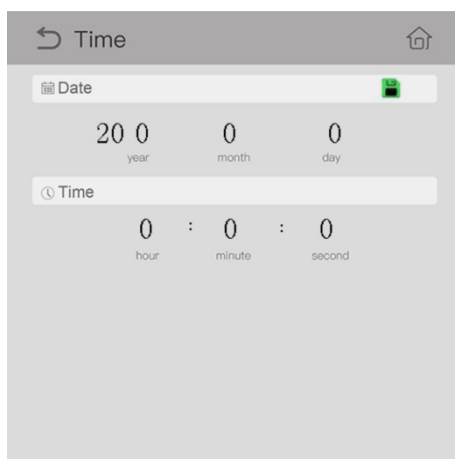
① Celsius Fahrenheit Toggle

Short press  to enter the Celsius and Fahrenheit selection interface.



② Time

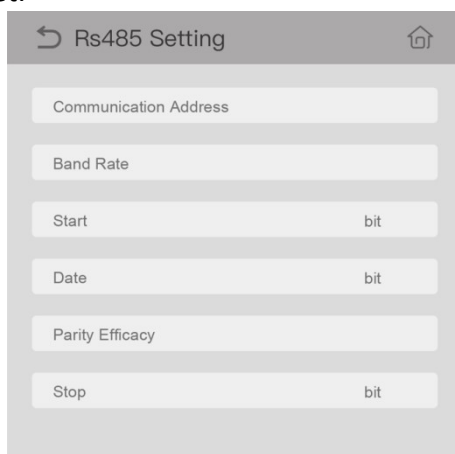
Short press  to enter the corresponding clock submenu, as shown in figure below:



After setting the time successfully, short press  to confirm and save, indicating that the setting is successful and the time on the main interface is updated synchronously.

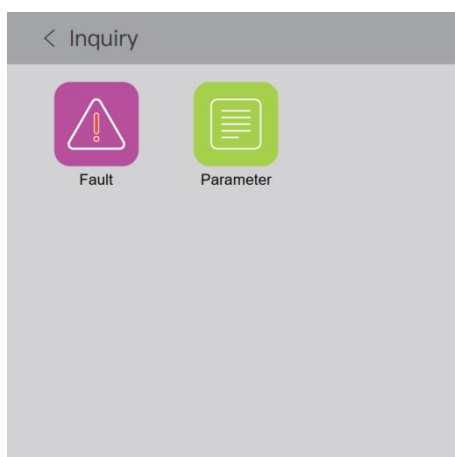
③ RS485 Setting

Short press  to enter the corresponding RS485 submenu. The current parameters are fixed and only displayed cannot be set.



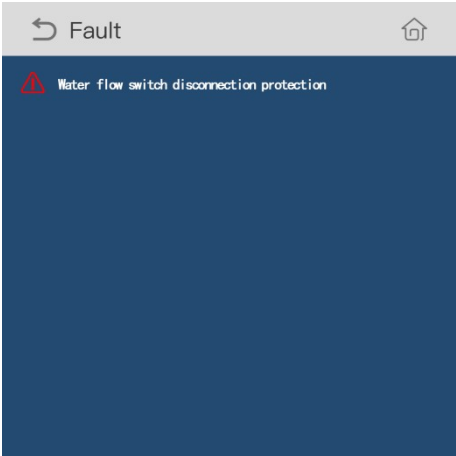
(2). Inquiry

Short press  to enter the Inquiry interface, as shown in the figure below.



① Fault

Short press  to enter the fault submenu, as shown in figure below, specific faults can be found in the interface. Users can also enter this interface through short press  in the main interface.



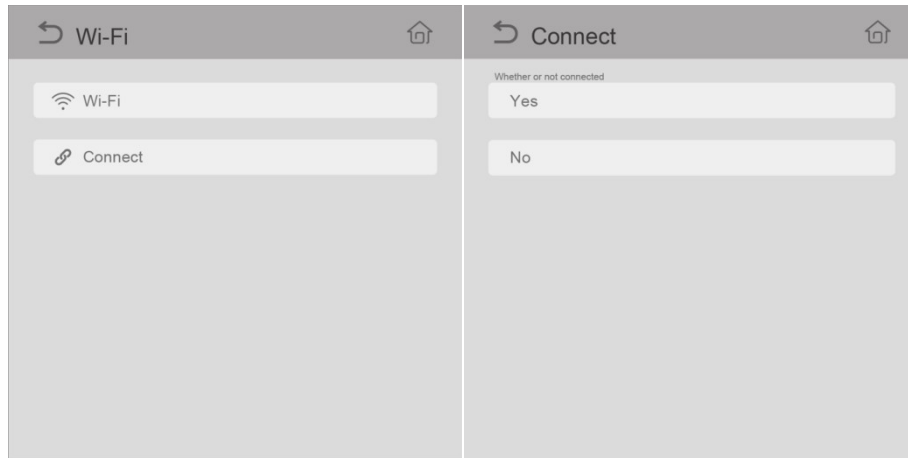
② Parameter

Short press  to enter the parameter submenu, as shown in figures below, some parameters are listed in the figures.



(3). WiFi

Short press  to enter the corresponding WiFi network configuration submenu, as shown in figure below:

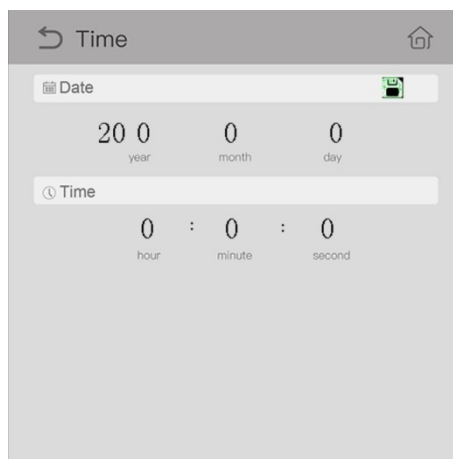


Short press Connect to enter the right figure above, which indicates whether the current distribution network is connected. Click Yes to reset the WiFi.

During the network configuration stage, the WiFi icon on the main interface of the wire controller flashes and after successful network configuration, it will be displayed for a long time. After 5 minutes of network failure, the WiFi icon goes off.

(4). Timer ON/OFF

Short press  to enter the timer submenu, as shown in the figure below:



Set the timed startup and shutdown at the same time, and the device will cycle on and off at the timed power on and off without automatically canceled.

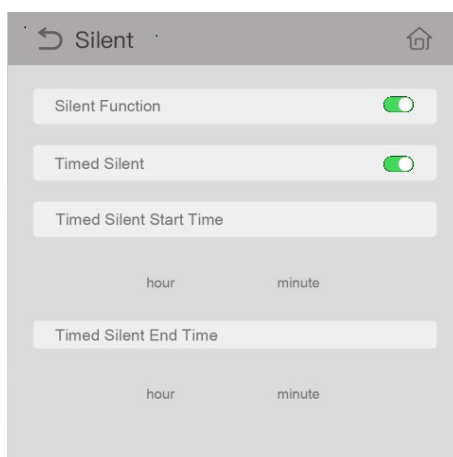
Set a timer to power on individually, once the device will only perform a timer to power on, and the timer function will be automatically canceled.

Set a timer to power off individually, once the device will only perform a timer to power off, and the timer function will be automatically canceled.

When the timer function is turned on and the machine is turned off/on manually, the timer function will not be canceled.

(5). Silent

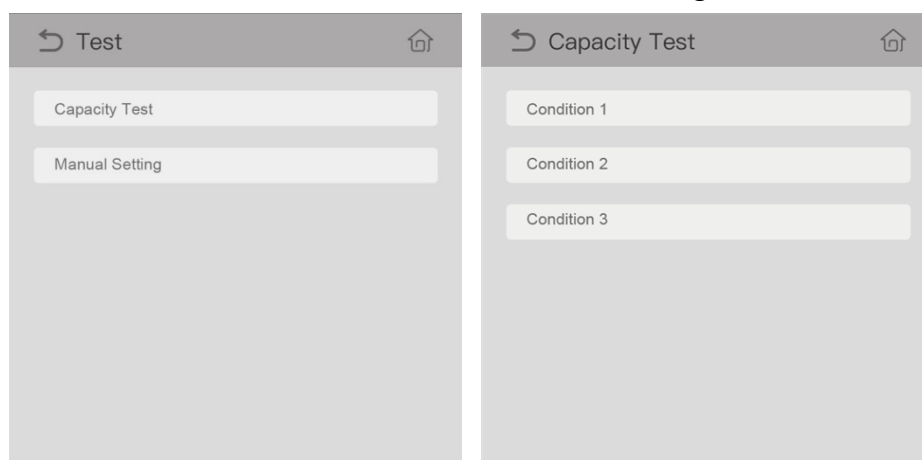
Short press  to enter the Silent interface, as shown in the figure below, users can manually set silent or timed silent.



- 1) When the master mute switch is set to off the mute function will not activate regardless of whether the timer mute setting is enabled.
- 2) When the master mute switch is enabled: If the timed mute function is activated, the device enters mute mode at the set start time and exits mute mode upon reaching the end time. If the timed mute function is not activated, the device remains in mute mode continuously.

(6). Test

Short press  to enter the test interface, as shown in the left figure below:



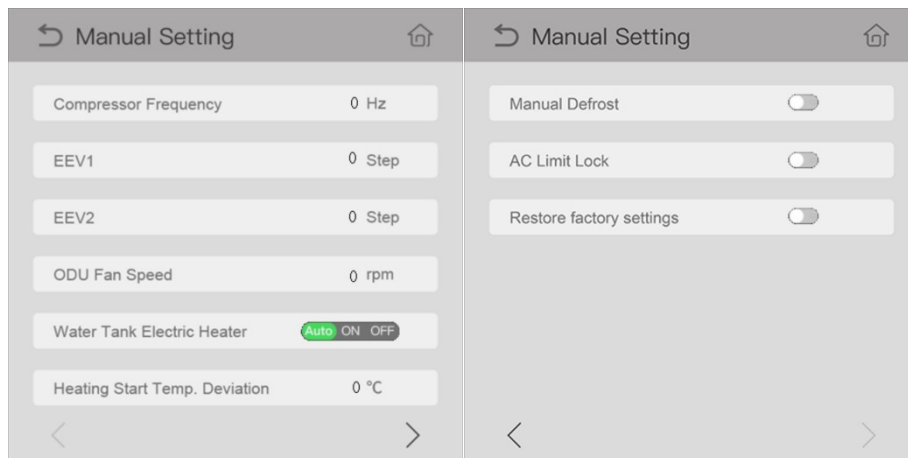
Short press “Capacity Test” option to enter the Capacity Test submenu, the optional test items are shown in the right figure above.

Short press “Manual Setting” option to enter the Manual Setting submenu, the optional setting items are shown in the figure below which can manually control the operating status of the unit or components. Users can exit the whole manual setting by shutting down or switching the mode, and exit a manual setting item by setting the value of this item to zero. If you want to enable the following options, users will need to enter a password to make the Settings. The initial password is 55555.

- 1) Manual defrost: The unit is equipped with automatic defrosting control, and users can also manually defrost by operating the wired controller. If there is frosting on the air side heat exchanger, users can manually defrost it by clicking on the “Manual Defrost” option in the right figure below.
- 2) AC Limit Lock: If you want to use the photovoltaic function to produce hot water first, you can

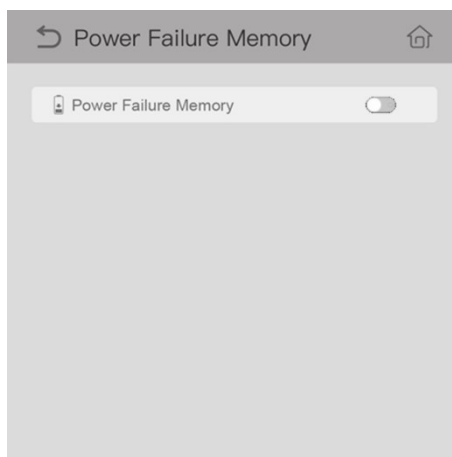
click on the “AC Limit Lock” second column on the display interface on the right.

3) Restore factory settings: If you are dissatisfied with the current setting parameters and have forgotten the original operation method, you can try to restore them by clicking on this function.



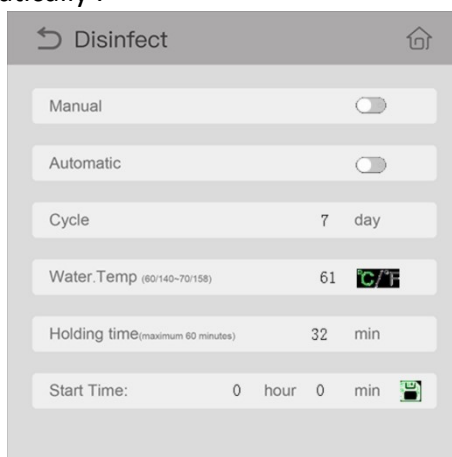
(7). Power Failure Memory

Short press  to enter the power failure memory selection interface, as shown in figure below:



(8). Disinfect (Sterilization)

Short press  to enter the Disinfect interface, as shown in the figure below, users can operate disinfection manually or automatically .



The default weekly sterilization temperature is 61℃, with a temperature deviation of 1℃ and a duration of 32 minutes.

When automatic sterilization is selected, the heat pump operates at the target sterilization temperature at zero o'clock on the first day of each week. After reaching the target temperature and maintaining it for 32 minutes, it automatically exits the sterilization process.

Note:

- The sterilization mode is set to automatic mode by default at the factory, and non-professionals should not modify it arbitrarily.
- The manual sterilization mode is used when there is no need for long-term power off, and it is only executed once. After sterilization is completed, it will automatically switch to automatic mode.

8.6. WIFI Configuration Operation

8.6.1. Installation

Please scan the following QR code to download Smart Life App. (Its icon is shown bellow on the right).



Note: Smart Life App is a third-party smart device management tool, through which you can control and manage devices in your home, experience smart life.

8.6.2. Account Login

1. To use the App for the first time, you should register via email or mobile phone number firstly just as follows. (Fig.1~Fig.4)

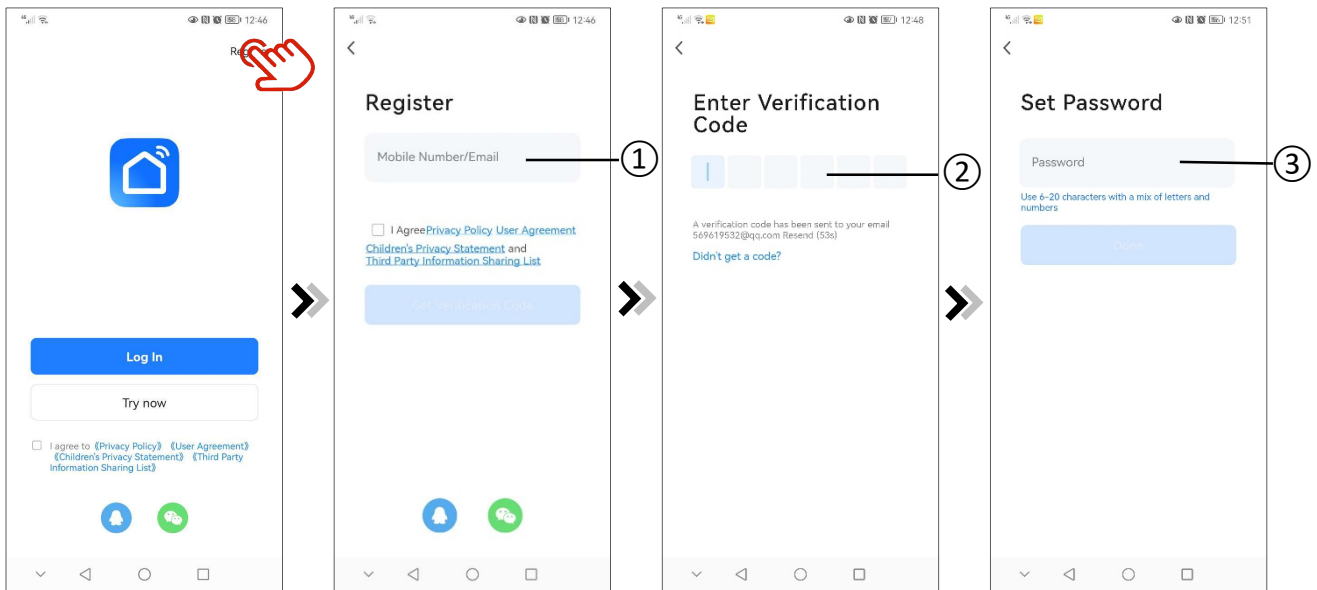


Fig.1 Home page

Fig.2 Enter account

Fig.3 Enter verification code

Fig.4 Set password

2. After registration, you can log in to the App entering the account you just registered and the corresponding password. Check the agree check box and click <Log In>. Then click <Go to App> after the first login is successful. The App homepage is displayed, indicating that no device exists. (Fig.5~Fig.8)

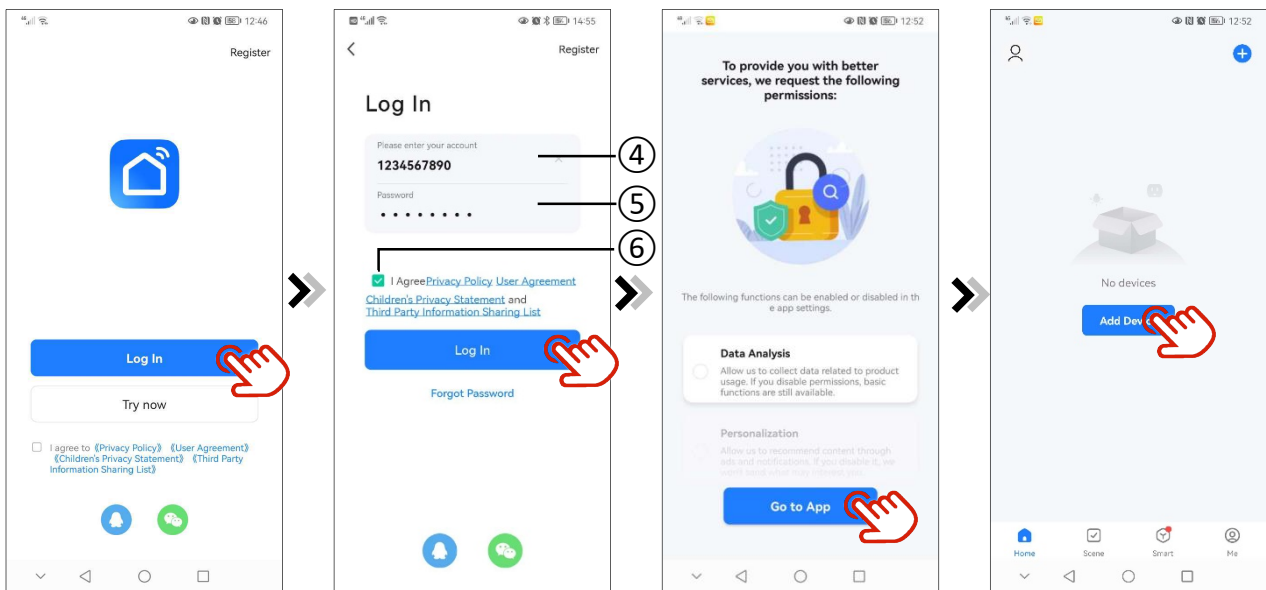


Fig.5 Home page

Fig.6 Login interface

Fig.7 Enter interface

Fig.8 App homepage

Note: You can also log in to the APP through third-party program authorization (supported programs are shown in the lower part of the home page).

8.6.3. Add Device

1. Operate the controller of the unit to trigger the network configuration; (Please refer to the

Installation Manual for more information)

Setting steps: In the main interface, short press  to enter the SET interface. Short press “Wi-Fi” icon to enter Wi-Fi interface and choose Wi-Fi item to enable Wi-Fi network function.

Note: Restart the networking mode if the device fails to connect within 5 minutes.



Fig.9. Clicking “menu” icon

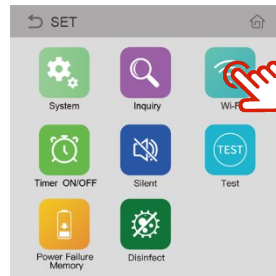


Fig.10. Clicking “WiFi” icon

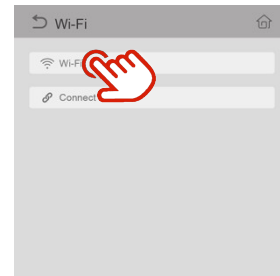


Fig.11. Clicking “WiFi” item

2. Turn on Bluetooth on your smartphone;
3. Open the App and click <Add Device> on the home page (Fig.8). If Bluetooth is not enabled on your phone, the system will prompt you to enable Bluetooth first;
4. After that, the system automatically searches for nearby devices. Click the icon of the device being added to add the device (Fig.12);
5. The device that will be added is displayed in the list. Click "+" next to the device you want to add (Fig.13). It will enter the Wi-Fi setting interface;
6. Select the Wi-Fi where the device works and enter the correct password. Then click <Next> to proceed to the next step (Fig.14);
7. The system starts to connect to the device and the connection progress bar will be displayed on the right (Fig.15);
8. Note: If the connection times out, reset the device as prompted and add the device again.
9. After the network configuration is complete, click <Done> at the bottom of the page (Fig.16). The device is added successfully;
10. The added device is displayed in the device list (Fig.17).

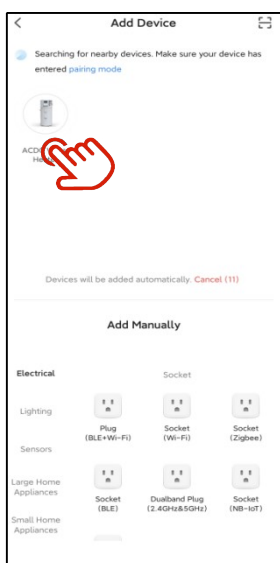


Fig.12 Searching for devices

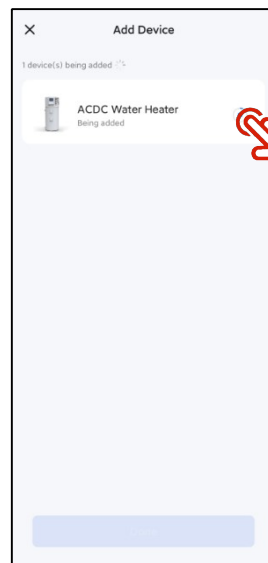


Fig.13 Select device

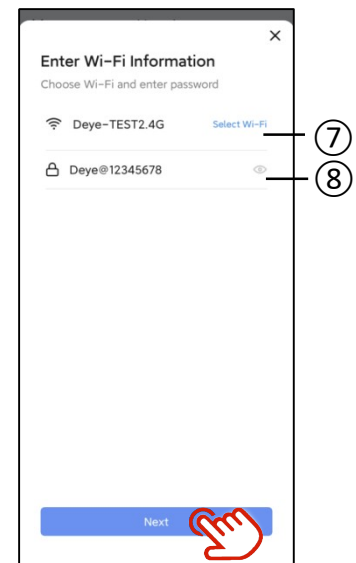


Fig.14 Connect specified WIFI

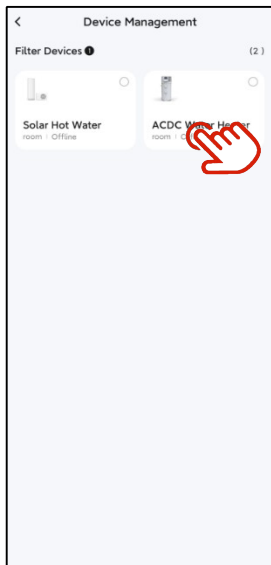


Fig.17 Added device list

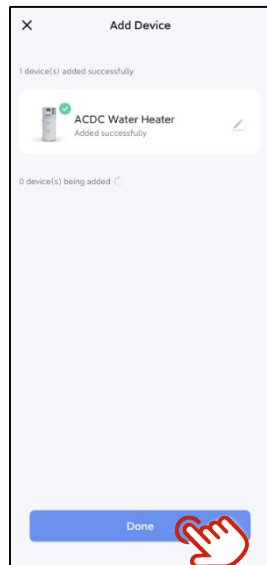


Fig.16 Device added successfully

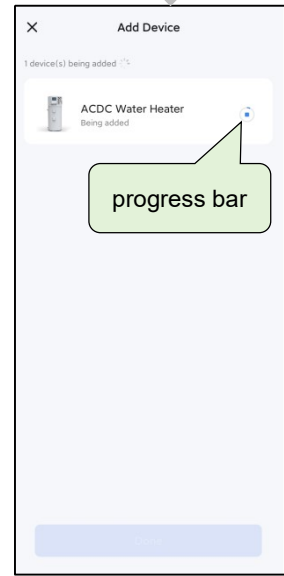


Fig.15 Connecting device

8.6.4. Device Management

Click the device in the list to enter the main interface of the device, and the device management operations are as follows:

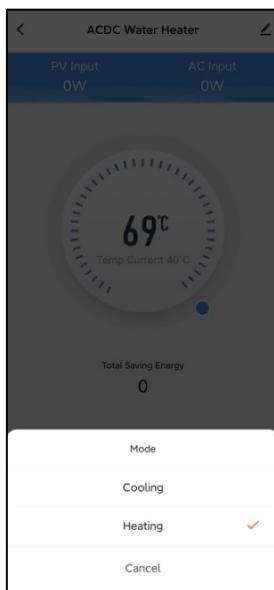


Fig.19 Mode selecting interface

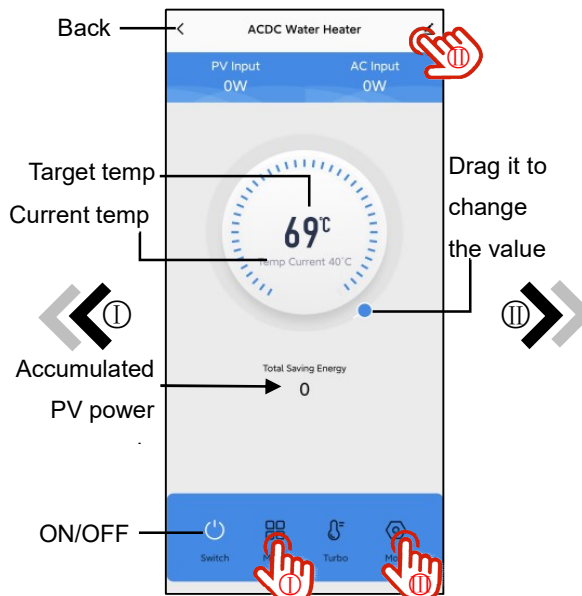


Fig.18 App main interface

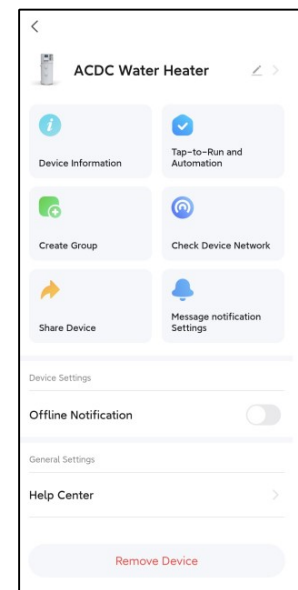


Fig.20 Device setting interface

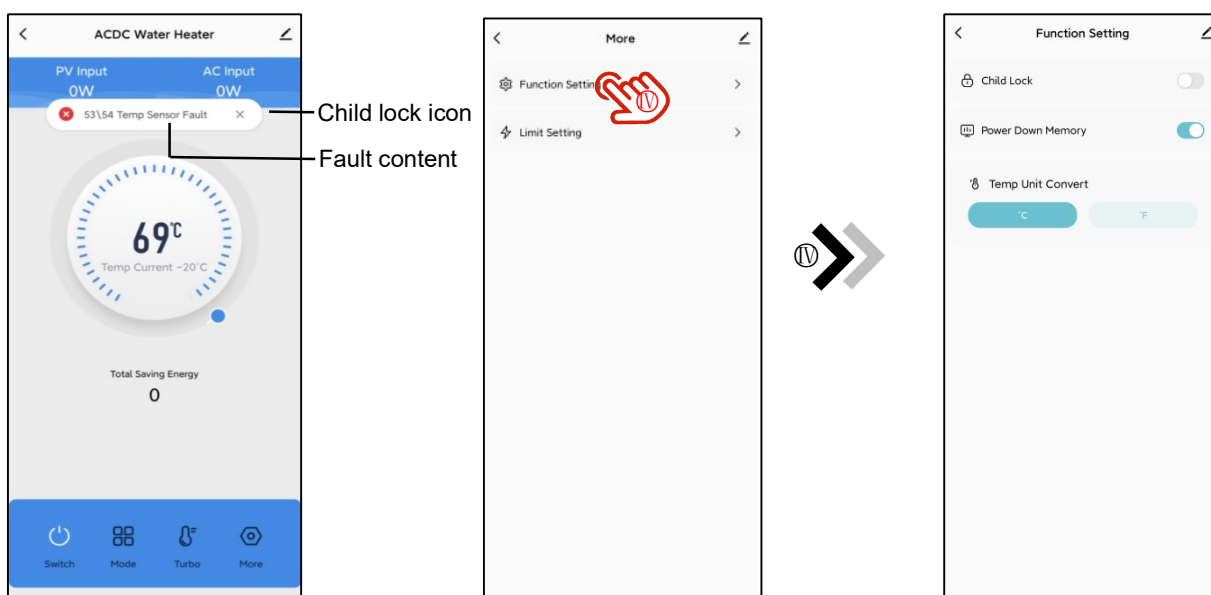


Fig.21 Troubleshooting tips

Fig.22 More (function) interface

Fig.23 Function setting interface

- The value shown in the center of the circle is the target inlet water temperature, which can be changed by dragging the position of the outer ring point. The value directly below the set temperature is the current inlet water temperature (Fig.18).
Note: The value can only be set when the unit is powered on.
- You can switch the unit among heating, cooling under mode selecting interface. (Fig.19).
Note: Since the unit normally only operates in heating mode, when cooling is selected, it is treated as a shutdown.
- The functions displayed under the More and Function Setting interface (Fig.22, Fig.23) are listed as follows:

Description	Function
Child Lock	Click it to lock or unlock the main interface of the App. (If the Child Lock function is enabled, all operations other than unlocking are invalid with the interface)
Power Down Memory	When the unit is powered on after power failure, the On/off status of the unit, setting temperature, setting mode, Celsius/Fahrenheit temperature scale and other parameters will be restored to the settings before power failure.
Temp Unit Convert	You can switch between Celsius and Fahrenheit scales.
Limit Setting	Click it to switch on/off the AC power limit function or set the AC limit gear.

- If a fault occurs during the operation of the unit, the fault content will be displayed at the top of the interface (Fig.21) and will disappear automatically after the fault is removed. For specific faults, please refer to section 11.1 < Fault list > of the Installation & user's Manual;
- When the child lock function is enabled, the corresponding icon will display in the main interface (Fig.21). Of course, you can unlock it by clicking the icon.

- You can change the device's name, set the offline notification, share devices and remove the device, etc. (Fig.20).
- The symbols and corresponding functions in the main interface of the app are described as follows:

Icon	Description	Function
	ON/OFF Switch	Click to turn on/off the unit
	Mode	Click to select cooling or heating mode
	Turbo	Click to enable the Turbo function(Mandatory supplement of AC power supply)
	More (Functions)	Click it to enter the interface for setting other functions
	Back	Click it to return up to previous page
	Setting	Click it to enter device setting interface
	Child Lock	When child lock is locked, the icon lights up. Tap it to unlock

Note:

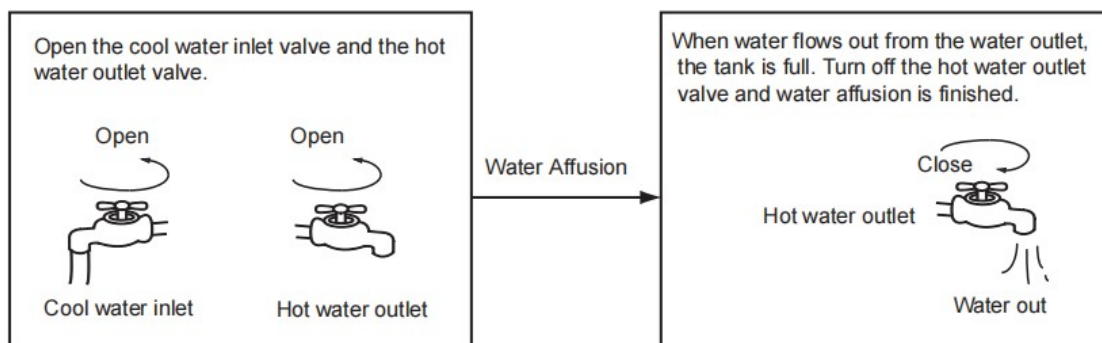
Restart the networking mode if the device fails to connect to the internet within 3 minutes. If the network configuration fails for several times and the cloud cannot be connected, check whether the WiFi password is correct, the WiFi network is 2.4 G, and the network communication is normal. if some models fail to connect to the internet, unplug the device for five seconds and then plug it in again and try again.

9. TRIAL-RUNNING

Water injection before operation

Before using this unit, please follow the steps below.

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



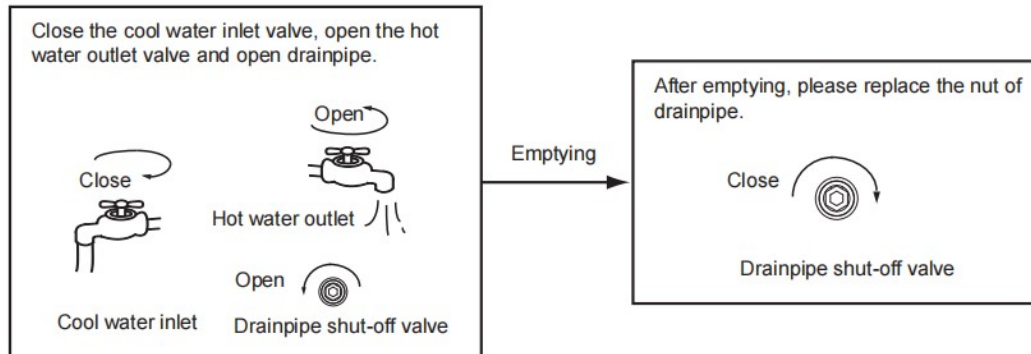
CAUTION

- Operation without water in water tank may result in the damage of auxiliary E-heater.



- In case of such damage, the manufacturer will not be liable for any damages caused by this issue.
- After powered on, the display lights up. Users can operate the unit through the buttons under the display.
- Emptying: If the unit needs cleaning, moving etc, the tank should be emptied.

Method:



- Note : Water temperatures above 50 °C may pose a burn risk to persons. Always let the water flow before bathing. It is recommended to use a temperature limiting valve.



Trial- running

1. Electrical Connections

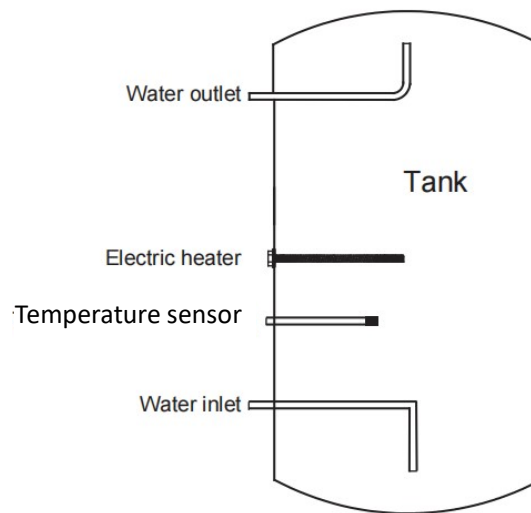
- 1) Checking list before trial-running.
- 2) Correct installation of the system.
- 3) Correct connection of water/air piping and wiring.
- 4) Condensate draining smoothly well insulation work for all hydraulic part.
- 5) Correct power supply.
- 6) No air in the water pipeline and all valves opened.
- 7) Effective RCD installed.
- 8) Sufficient inlet water pressure (between 0.15MPa and 0.65MPa) .

If the water supply pressure exceeds the rated pressure, a pressure reducing valve is to be fitted in the installation.

2. About Running

1) System Structure Figure

Unit has two kinds of heat sources: Heat pump (compressor) and electric heater. The unit will automatically select heat sources to heat water to the target temperature.



2) Water Temperature Display

The temperature shown on the display depends on the upper sensor. It is normal that the display temperature has reached to target temperature but compressor still running, because the lower water temperature does not meet to target temperature.

3) Three modes (Economy Mode, Hybrid Mode and E-heater mode) can be selected by pressing the button.

- Running Temperature Range

Setting water temperature target range: 30~ 70°C.

E-heater running ambient temperature range: -20~ 47°C.

Heat pump running ambient temperature range: -7~ 43°C.

Water temperature limits:

Model	DRSK1-ACDC-25/300R3					
Ambient temp.(T4)	$T4 < -7$	$-7 \leq T4 < -2$	$-2 \leq T4 < 0$	$0 \leq T4 < 38$	$38 \leq T4 < 43$	$43 \leq T4$
Max.Temp. (Heat pump)	—	55	62	65	62	—
Max.Temp. (E-heater)	70	70	70	70	70	70

4) Heat Source Shift

- The default heating source is heat pump.If ambient temperature range is out of heat pump operating range, heat pump will stop running, the unit will shift automatically to activate E-heater and show on the display, then if the ambient temperature goes into the running range of heat pump again, it will stop E-heater and shift automatically to heat pump again, and will be extinguished.
- If the target setting water temperature is higher than Maximum temperature (Heat pump), the unit will activate heat pump firstly to the Maximum temperature, then stop heat pump, activate E-heater to continually heat water to the target temperature.
- If manually activate the E-heater running when heat pump running, E-heater and heat pump will work together until the water temperature gets to target temperature. So to increase recovery rate, please manually activate E-heater.

NOTE

- E-heater will be activated once by pressing for economy mode or hybrid mode, if want to apply E-heater again, please push forced E-heating Combination button again.
- 经济模式
- If only use E-heater, about 150 liters water will be heated, so set higher target water temperature if ambient temperature is out of heat pump running range.

● Defrosting During Water-heating

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

● COP

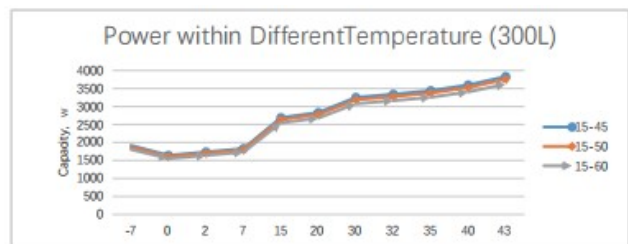
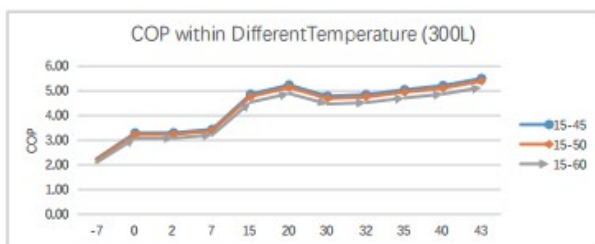
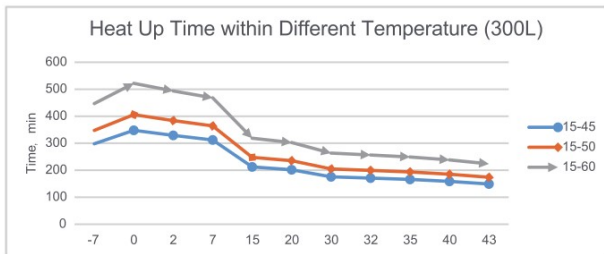
COP varies at different ambient temperature. Normally lower ambient temperature result in longer heat-up time because of lower effective performance.

- When ambient temp below 2°C, heat pump and E-heater will take different portions of heating capacity, generally the lower of ambient temperature, the lower portion of heat pump will contribute as well as the higher portion of E-heater will provide more detail please refer to Table.

● About TCO (Thermal-cutoff)

If the water temperature is higher than 85°C, the TCO will automatically shut off the power of E-heater. After that it needs to be reset manually. 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. Turn the tap on and the water will be flushed clean.



NOTE

- While the ambient temperature below than -7°C, heat pump will stop running, the unit will automatically shift to E-heater running.

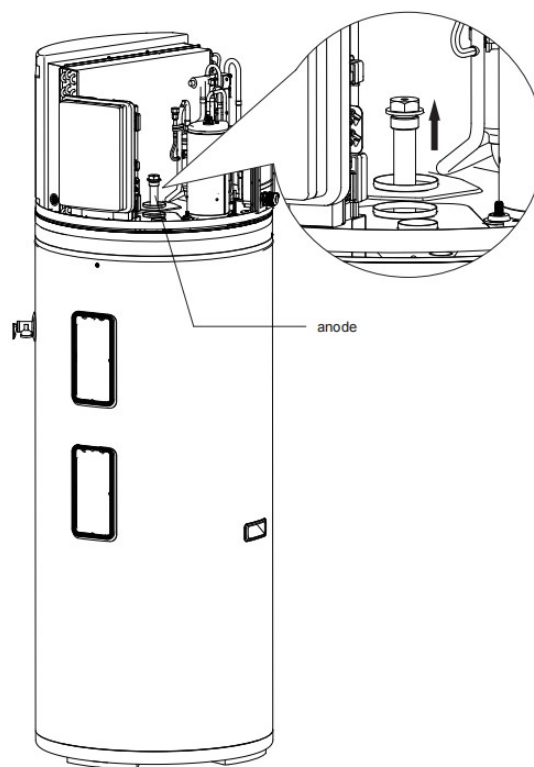
10. MAINTENANCE

Maintenance

- 1) Check the connection between power supply plug and socket and ground wiring regularly;
- 2) In some cold area (below 0 °C), if the system will be stopped for a long time, all the water should be released in case of freezing of inner tank and damage of E-heater.
- 3) It is recommended to clean the inner tank and E-heater every half year to keep an efficient performance.
- 4) Check the anode every half year and change if required. For more details, please contact the supplier or the after-sale service.
- 5) It is recommended to set a lower temperature to decrease the heat release, prevent scale and save energy if the outlet water volume is sufficient.
- 6) Before shutting the system off for a long time, please: 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.
- 7) How to change the anode;
 - Turn off the power, and turn off the water inlet valve.
 - Open hot water tap, and decrease the pressure of the inner container.

Recommended regular maintenance table

Checking Item	Checking content	Checking frequency	Action
1	air filter (inlet/outlet)	every month	Clean the filter
2	anode	every half year	Replace it if it has been used out
3	Inner tank	every half year	Clean the tank
4	E-heater	every half year	Clean E-heater
5	PTR valve	every year	Operate the handle of PTR valve to ensure that water ways are clear.
	If water does not flow freely when operating the handle, replace the PTR valve with a new one.		



11. TROUBLE SHOOTING

11.1. Fault list（待更新）

When the unit fails, the current fault code and fault content will be displayed on the wired controller according to the fault cause. Refer to the fault table for the specific definition of the fault codes.

Error code	Malfunction or Protection	Error code	Malfunction or Protection
32	Indoor coil temperature sensor malfunction	53	Upper water tank temperature sensor malfunction
22	Communication failure between wired controller and hydraulic module board	54	Lower water tank temperature sensor malfunction
3	Communication failure between main control board and hydraulic module board	60	Water pump EEPROM failure
23	Water system anti-freeze protection	61	High temperature protection of water pump module
24	High pressure switch disconnection protection	62	Water pump phase loss fault
25	Low pressure switch disconnection protection	63	Water pump startup failure
35	Ambient temperature sensor malfunction	64	Water pump stall failure
37	Exhaust temperature sensor malfunction	65	Water pump hardware overcurrent protection
19	Outdoor coil temperature sensor malfunction	66	Water pump current sampling fault
27	Communication failure between main control board and drive module	67	water pump software overcurrent protection
5	Main control board EEPROM failure	68	DC bus overvoltage protection for water pump
39	Exhaust temperature overheat protection	69	DC bus undervoltage protection for water pump
41	outdoor coil temperature overheat protection	71	Drive board EEPROM failure
42	Indoor coil temperature overheat protection	74	4-way valve current fault
91	IPM module overheating protection	75	Solenoid valve current fault
93	Compressor startup failure	82	PFC hardware overcurrent protection
L0	Oil return failure protection (insufficient light protection)	83	PFC current sampling circuit fault
LP	Low speed protection (insufficient light protection)	84	PFC software overcurrent protection

P7	Communication failure between main control board and boost board	85	DC bus overvoltage protection
P1	PV input voltage too high	86	DC bus undervoltage protection
P2	PV input voltage too low	92	Compressor phase loss fault
P3	Boost board output voltage too high	94	Compressor stall failure
P4	Boost board output voltage too low	96	Compressor hardware overcurrent protection
P5	Boost board leakage protection	97	Compressor current sampling fault
P6	Boost board overcurrent protection	98	Compressor software overcurrent protection
1	Hydraulic module board EEPROM failure	A2	Fan phase loss fault
6	Water pump communication fault	A3	Fan startup failure
44	Low outlet water temperature protection	A4	Fan stall failure
45	High outlet water temperature protection	A5	Fan hardware overcurrent protection
46	Abnormal protection for temperature difference between inlet and outlet water	A6	Fan current sampling fault
50	Water flow switch disconnection protection	A7	Fan software overcurrent protection
52	Water flow switch anti-short circuit protection	55	Low-speed protection for water pump

11.2. Typical abnormalities

Non-error tips

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

A: Unit will wait for 3 min to balance the pressure of system before start compressor again, it's a self protection logic of unit.

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

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

Q: Why sometimes the temperature shown on the display decreased but unit still keep closed?

A: To avoid unit ON/OFF frequently, unit will activate heat source only when bottom tank temperature is lower than setting temperature.

Q: Why sometimes the temperature shown on the display will decreased dramatically?

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

Q: Why sometimes the temperature shown on the display is decreased a lot, but there is still a

mount of hot water can be tapped?

A: Because the temperature probe of the lower water tank is located about half of the lower part of the water tank, when tapping hot water out, it means there is at least 1/2 tank of hot water available.

Q: Why sometimes unit shows electric heating sign on display ?

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

Q: Why does the screen remain in the locked state for a long time?

A: The child lock function needs to be manually held down for 2 seconds to activate this function.

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

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

Something about self-protection of unit

When the self-protection happens, the system will be stopped and start self-check, and restart when the protection resolved. 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; The evaporator is covered with too much dust; Incorrect power supply (exceeding the range of 220-240V).

When Error happened

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

Error phenomenon shooting

Error phenomenon	Possible reason	Solution
Cold water tapped out and display screen extinguished	1. Bad connection between power supply plug and socket; 2. Setting water temperature too low; 3. Temp. sensor broken; PCB of indicator broken.	1. Plug in; 2. Setting water temp. higher; 3. Contact service center.
No hot water tapped out	1. Public water supply ceased; 2. Cold water inlet pressure too low (<0.15 MPa); 3. Cold water inlet valve closed.	1. Waiting for public water supply recover; 2. Waiting for inlet water pressure increase; 3. Open water inlet valve.
Water leakage	Hydraulic pipeline joints are not sealed well.	Check and reseal all joints.

12. MANUFACTURER'S WARRANTY

This warranty applies to heat pumps installed in a single family dwelling only and is provided only to those acquiring the heat pump as consumers within the meaning of the Australian Consumer Law. The terms of the warranty are effective from the date the heat pump is installed. Date may be verified by requesting a copy of the compliance certificate that accompanied the installation. The compliance certificate is mandatory in all Australian states and territories.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

The default temperature setting for the product upon delivery is 55 °C , with a startup return difference of 5 °C ; The default weekly sterilization temperature is 61 °C , with a temperature deviation of 1°C and a duration of 32 minutes. (Access to the sterilization function interface: From the main interface of the remote control, click on "MENU" and select "DISINFECT". You can change the sterilization mode to manual or automatic and adjust the sterilization parameters within the sterilization function.)

Note: The unit automatically reverts to the default operation mode within 24 hours of any user change to the operation mode.

Warranty period

We warrants that the following heat pump components will remain free of defects for the specified periods from the date of installation:

Storage Tank- 5 years.

Compressor- 5years.

DC motor- 5years.

All other components supplied by the manufacturer, including valves, elements, thermostats and sacrificial anodes - 1 year.

We gives no warranty in relation to components not supplied by manufacturer, for example tempering valves and cold water valve assemblies used by installers.

Subject to the conditions and exclusions specified in this warranty, We will at its own expense repair or replace any defective heat pump component covered by this warranty as soon as reasonably practicable after the consumer has reported the defect to us.

Consumers must register the warranty

To be eligible to make a claim under this warranty, consumers must complete all details in the Installation Report & Warranty Registration form provided with the heat pump within 6 weeks of installation and send it to the address shown on the form.

Consumers must register the warranty

Upon discovering a suspected defect, consumers should immediately report the suspected defect:

- To the installer or supplier, if the suspected defect arises as a result of the installation of the heat pump or relates to any components not covered by this warranty.
- During the relevant warranty period, if you suspect that a defect is related to any component covered by this warranty, please contact the manufacturer.

Specific exclusions

To the extent permitted by law We does not accept liability under this warranty:

- 1) If any component of the heat pump has been installed, repaired, repositioned or modified by a person other than an appropriately qualified person approved by the manufacturer in accordance with installation and maintenance instructions and relevant local and statutory requirements;
- 2) For loss or damage caused by a fault or defect in the installation of the heat pump;
- 3) If corrosion has occurred because the anode has not been changed in accordance with the owner's manual;
- 4) If a cold water expansion valve, check valve and strainer is not fitted in areas where mains pressure is likely to exceed 0.65MPa;
- 5) If a cold water expansion valve, check valve and strainer is not fitted in areas where mains pressure is likely to exceed 0.65MPa;
- 6) If the inner cylinder has collapsed as a result of an incorrect filling and/or commissioning procedure;
- 7) For components not supplied by the manufacturer that are used in the installation of heat pump water heaters e.g. tempering valves, cold water valve assemblies, etc.
- 8) For extended or implied warranties not formally provided by the manufacturer;
- 9) For external labour or equipment costs (e.g. cranes and lifting devices) required for repairs;
- 10) For external labour or equipment costs (e.g. cranes and lifting devices) required for repairs;
- 11) For travel costs of service agents that exceed 30 kilometres;
- 12) For all consequential loss or damage arising from defects that can lawfully be excluded;
- 13) For any other issues not directly attributable to defects in components supplied by the manufacturer including:
 - (a) Damage caused by incorrect commissioning;
 - (b) Leakage from valves not supplied by the manufacturer;
 - (c) Leakage from the pressure temperature relief valve where the water pressure or temperature exceeds the limits specified in installation and maintenance instructions;
 - (d) Water hammer;
 - (e) External rust on the storage tank;
 - (f) Insufficient hot water because:
 - (i) The consumer refuses to use the auxiliary booster;
 - (ii) Of an incorrectly set or faulty tempering or mixing valve;
 - (iii) Of faulty or incomplete installation;
 - (iv) The water heater is too small for its required purpose;
 - (v) Of insufficient water flow as a result of "water saving" tap-ware or appliances;
 - (vi) Of blown fuses, "tripped" electrical switches or inadequate household electrical wiring;
 - (vii) Insufficient water flow caused by debris accumulating in water strainer.

After-sales contact information

After-sales contact number: (0573) 8622 2256

Company website: solarac.sales@deye.com.cn

