HARTWELL AIR

SMART COMFORT. LOWER IMPACT.

Photovoltaic DC/AC Split System Air Conditioner Installation&Owner's Manual



IMPORTANT NOTE:

Read this manual carefully before installing or operating your new air conditioning unit. Make sure to save this manual for future reference.

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Customer Support: 623-400-6077

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Table of Revisions

Table of Revisions		
Revision date	**Reason for revision**	**Revision By**

Accessories

Components Supplied		
Number	**Quantity**	**Name**
1	1	Indoor unit
2	1	Indoor unit Mounting plate(find on backside of indoor unit)
3	1	Remote Controller
4	2	AAA battery
5	1	Connecting cord
6	1	Outdoor unit
7	1	Wrapping tape wearer protection
8	1	Drain pipe 17mm diameter
9	1	Wall sleeve
10	1	Sealant putty
11	1	Installation manual
12	1	MC 4 style connector set for outdoor unit
13	1	Connecting pipe
14	1	Connecting wire
15	1	Mounting guide board
16	1	Unlock tool

Equipment description

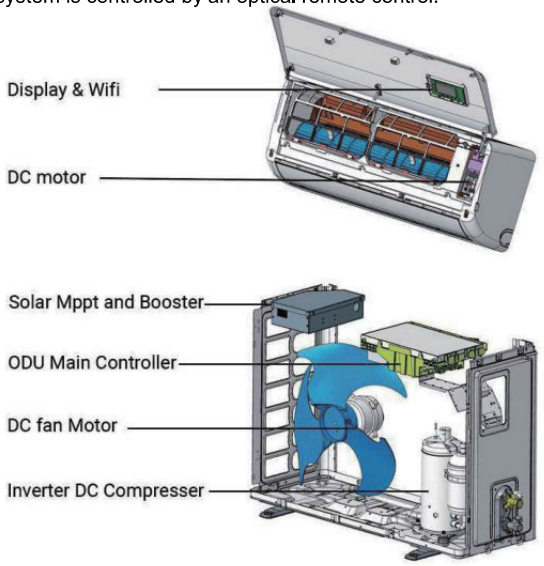
The equipment consists of an indoor unit and an outdoor unit air conditioning system. The system produces heating or cooling as required.

The system can be powered in several ways.

- By DC solar alone. It will start up and run on just the solar
- By DC solar and a small amount of AC power.
- By AC only. This would be applicable at night.

Installation is the same as a standard split system air conditioner with the addition of Solar PV modules to supply the DC input.

The system is controlled by an optical remote control.



Hybrid ACDC inverter solar air conditioner structure

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WARNING for using R32 Refrigerant

- When flamnable refrigerant are employed, appliance shall be stored in a well -ventilated area where the room size corresponds to the room area as specifies for operation .
  For R32 frigerant models:
  Appliance shall be installed, operated and stored in a room with a floor area larger than 4m^2 .
  Appliance shall not be installed in an unvertilated space, if that space is smaller than 4m^2.
  The minimun room size needed .
  <=9000Btuh units: 13m^2
  >9000Btu/h and <=12000Btuh units: 17m^2
  >12000Btuh and c=18000Btu/h units: 26m^2
  >218000Btu/h and <=24000Btu/h units: 35m^2
- Reusable mechanical connectors and flared pipe are not allowed indoors.
  (**EN** Standard Requirements)
- Mechanical connectors used indoors shall have a rate ot not more than 3g/vear at 25% of the maximumn allowable pressure. When mechanical connectors are reused indoors. sealing parts shall be renewed. When flared joints are reused indoors, the flare part shall be re-fabricated. (**UL** Standard Requirements)
- When mechanical connectors are reused indoors, sealing parts shall be renewed. When flared joints are reused indoors, the flare part shall be re-fabricated.
  (**IEC** Standard Requirements)
- Mechanical connectors used indoors shall comply with ISO 14903.

TAKE NOTE OF FUSE SPECIFICATIONS

The air conditioner's circuit board (PCB) is designed with a fuse to provide overcurrent protection.
The specifications of the fuse are printed on the circuit board such as:
T3.15AL/250VAC. T5AL/250VAC. T3.15A/250VAC, T5A250VAC, T20A/250VAC, T30A/250VAC. ets
NOTE: For the units using R32 or R290 refrigerant, only the blast-proof ceramic fuse can be used.

Operating temperature

when your air conditioner is used outside of the following temperature ranges, certain safety protection features may activate and cause the unit to disable.

Inverter Split Type

	COOL mode	HEAT mode	DRY mode
Room Temperature	16℃-32℃(61℉-90℉)	0℃-32℃(32℉-90℉)	10℃-32℃(50℉-90℉)
Outdoor Temperature	0℃-55℃ (32℉-131℉)	-15℃-30℃ (5℉-86℉)	0℃-50℃ (32℉-122℉)

When outside temperature is below 0℃ (32F), we strongly recommend keeping the unit plugged in at all time to ensure smooth ongoing performance.

Standards reference

The standards listed here may not be all applicable standards. Check local and national standards for additional applicability. Check for the latest revisions and clauses.

Standards
UL60335-1 UL60335-2 UL 1741 NEC
CSA107.1 CSA C22,1
AS/NZS 1319
AS/NZS 1571
AS/NZS 3000
AS/NZS 3500
AS/NZS 4777
AS/NZS 5033
AS/NZS 5149
IEC 62109
National construction code volume 3 plumbing code of Australia.
Australia and New Zealand Refrigerant Handling code of practice part 2
US Electrical code NEC 2005 Article 690.5 Ground fault protection

Disclaimer

This equipment requires the handling and installation of High-pressure gasses, and hazardous levels of AC and DC voltages. Only fully qualified licenced personnel may install this equipment.

Personal Protection Equipment (PPE) must be used while installing this equipment. Care must be taken that all required PPE and precautions are taken. The manufacturer and resellers of this equipment assume no responsibility for any failure to properly protect personnel. Any recommendations are only for advisory purposes.

The references to standards in this manual are advisory. Failure to follow all applicable standards will void the equipment warranty.

All Electrical work must be performed by a licenced technician according to local regulations and the instructions given in this manual.

The illustrations in this manual are for explanatory purposes. The actual shape of your units may be slightly different.

Symbols used

General Warnings beware of a hazard and take preventative measures

Freezing and frost bite, beware escaping refrigerant and take preventative measures

High voltage or Electric Shock. Make certain that all electrical circuits are not energized

Explosion risk, High pressure gasses used in testing and operation

High pressure gas bottle

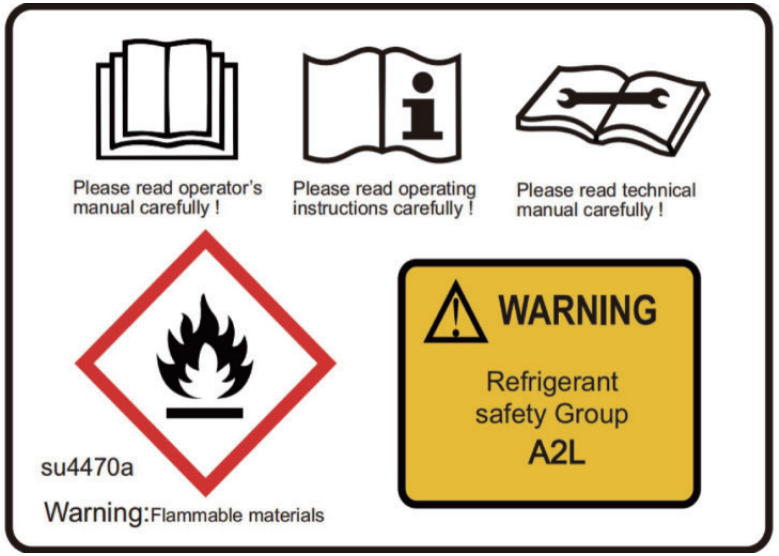
Caution risk of electric shock

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Warning

- All Electrical work must be performed by a licenced technician according to local regulations and the instructions given in this manual.
- Installation must be performed by an authorized dealer or specialist. Defective installation can cause water leakage, electrical shock, or fire.
- Before installing, modifying, or servicing this appliance, the main electrical disconnect switch must be in the OFF position. There may be more than one disconnection switch. Lock out and tag with a suitable warning label.
- Never supply power to the unit unless all wiring and tubing are completed, re-connected and checked.
- This system has hazardous electrical voltages. Ensure that all wiring is compliant with this manual and local regulations.
- The unit and the solar system must be earthed in accordance with local electrical and building codes.
- Compatible MC 4 type connectors must be used.
- Do not allow children to play with the air conditioner. Children must always be supervised around the unit.
- Contact an authorized service technician for repair or maintenance of this unit.
- Only use the included accessories, parts, and specified parts for installation. Using non-standard parts can cause water leakage, electrical shock, fire, and can cause the unit to fail.
- Install the unit in a firm location that can support the unit's weight. If the chosen location cannot support the unit's weight, or the installation is not done properly the unit may fall and cause serious injury and damage.
- For all electrical work, follow all local and national wiring standards, regulations, and the Installation manual.
- The unit must be powered by a dedicated circuit with a residual current and leakage device.
- For all electrical work, use the specified cables. Connect cables properly and clamp them securely to prevent external forces from damaging the electrical connections. Improper electrical connections can overheat and cause fire and may also cause electric shock.
- All wiring must be properly arranged to ensure that control board cover can close properly. If the control board cover is not closed properly, it can lead to corrosion and cause the connection points on the terminal strip to heat up, catch fire or cause electrical shock.
- In certain functional environments, such as kitchens, server rooms, etc., the use of specially designed air-conditioning units is highly recommended.
- For units that have an auxiliary electric heater, do not install the unit within 1 meter of any combustible materials.
- Do not install the unit in a location that may be exposed to combustible gas leaks. If combustible gas accumulates around the unit, it may cause fire.
- Do not install this air conditioner in a wet location such as a bathroom or laundry room. Too much exposure to water can cause electrical components to short circuit.
- This product must be properly earthed and installed with an earth leakage circuit breaker. Failure to do so may result in injury, electric shock, or death.
- Install drainage piping in accordance with local and national regulations and meet the requirements of the National construction code volume 3 plumbing code of Australia.
- This air-conditioning unit contains fluorinated gasses. For specific information on the type of gas please refer to the label(s) on the outdoor unit.
- De-commissioning and disposal of this unit must be performed by a certified technician, in accordance with the Australian and New Zealand Refrigerant Handling code of practice.
- When the unit is checked for leaks, proper record-keeping of all checks is strongly recommended.

- 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.
- Means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.
- 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 sources (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.



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Indoor unit mounting instructions

Prior to installation:

Before installing the indoor unit, refer to the label on the product box to make sure that the model number of the indoor unit matches the model number of the outdoor unit.

Before installing the indoor unit, you must choose an appropriate location. The following list will help you choose an appropriate location for the unit.

- Proper installation locations meet the following:
- Good air circulation
- Convenient drainage
- Noise from the unit will not disturb other people
- Form and solid location and the location will not vibrate
- Strong enough to support the weight of the unit
- At least one meter from all other electrical devices (e.g., TV radio, computer)

Do not install the unit in the following locations:

- Near any source of heat, steam, or combustible gas
- Near flammable items such as curtains or clothing
- Near any obstacle that might block air circulation
- Near doorways
- In a location subject to direct sunlight

Note about the wall hole:

- If there is no fixed refrigerant piping:
- While choosing a location you should leave ample room in the wall hole for the piping, its insulation, and the drainpipe and signal wiring. The default position for all piping is to the right side of the indoor unit. (while facing the unit).

The indoor unit contains a pre-charge of inert gas. Take care when bending tubing and discharging this gas.

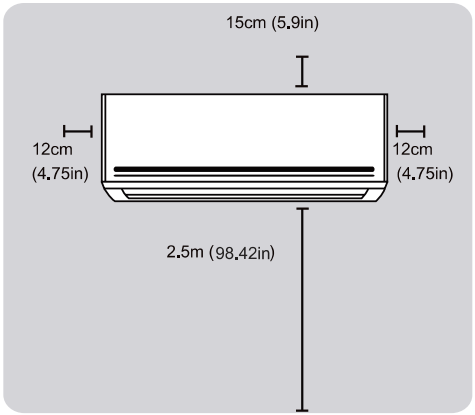
Select the location for the indoor unit. Check that the location is suitable for pipe penetration through the wall. Check that no wiring or piping will be affected by the pipe penetration location.

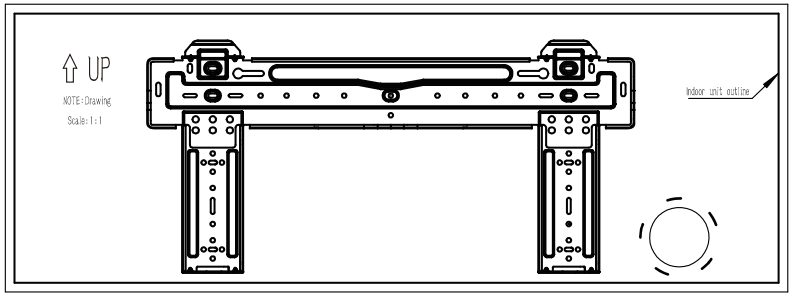
Use a stud finder to locate studs to prevent unnecessary damage to the wall. Copper pipe must be insulated independently.

Select a location that is not next to a heat source and that will allow sufficient airflow throughout the room.

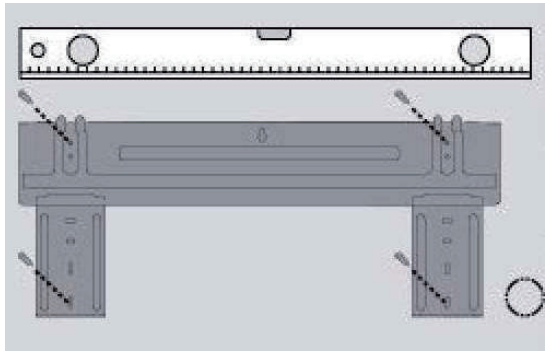
The indoor unit requires the following clearances

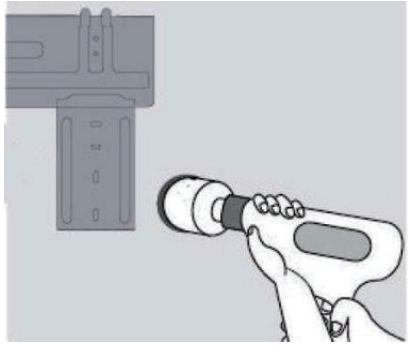
Indoor unit clearances	
Above	150 mm
Left Side	120 mm
Right side	120 mm
Below	2500 mm





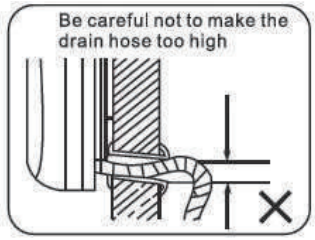
Use the installation guide board to drill bolt holes on the flat and safe wall, and drill holes with impact drills.
Install the indoor unit mounting panel on the wall to prevent unnecessary noise and vibration.
Level the installation board of the indoor unit and fix it with the appropriate anchor.





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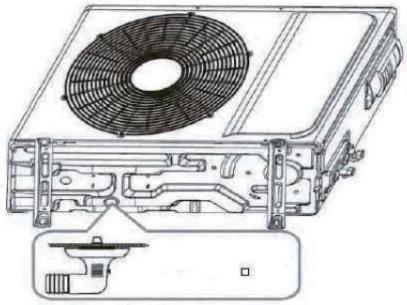
The indoor hole must be higher than the outdoor hole so that condensate water will drain.



Outdoor unit mounting Instructions

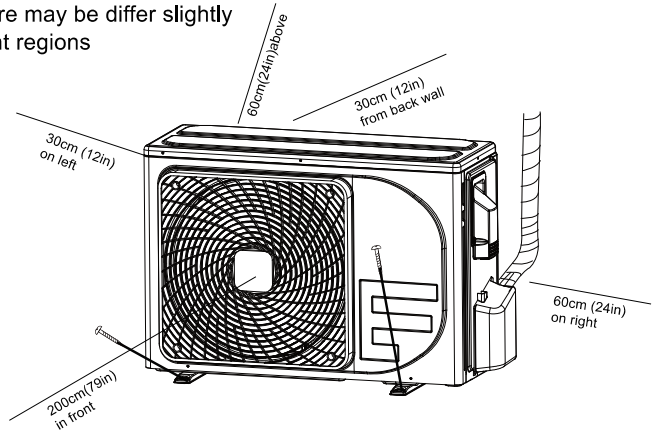
Install the condensate drain if required. The outdoor unit will condense water when the system is in heating mode. Consult local regulations for drainage connections.

Mount the unit on an approved wall mounting bracket and secure or mount the unit on a secure waterproof surface and secure.

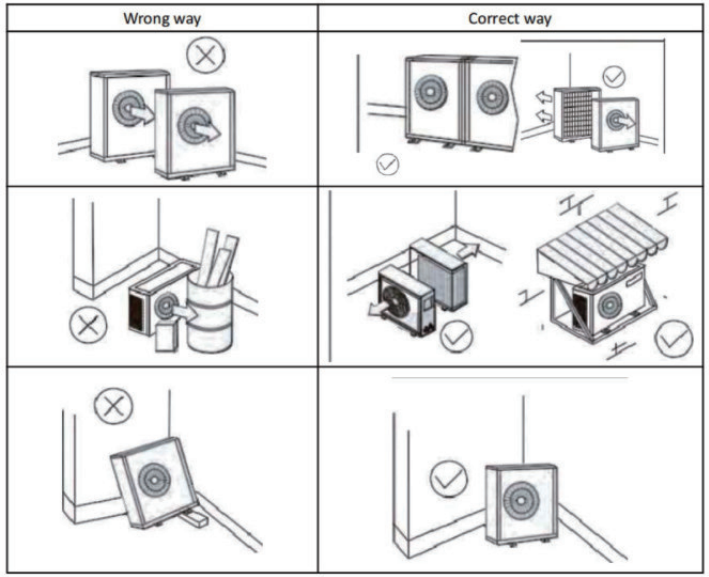


Outdoor unit required clearances

Install the unit by following local codes and regulations , there may be differ slightly between different regions



Select a location that allows for sufficient air flow, that is free of obstructions.



Refrigerant pipe Specifications

The system has a maximum ambient operating temperature of 55 degrees Celsius. The maximum pressure is **4500** Kpa / **651** Psig.

Piping must be specified in accordance with AS /NZS 1571. The minimum wall thickness is 0.81 mm for 6.35mm/1/4 inch to 12.7mm / ½ inch, and 0.91 for 15.88 mm / 5/8-inch tubing.

Refrigerant fill capacity

Refrigerant fill capacity charge volume and pressure				
Unit		DGWA3-ACDC1-12KR2(US)	DGWA5-ACDC-18KR2(US)	DGWA2-ACDC-24KR2(US)
Indoor unit		DGA3-ACDC1-12KR2(US)	DGA5-ACDC-18KR2(US)	DGA2-ACDC-24KR2(US)
Outdoor unit		DWA4-ACDC1-12KR2(US)	DWA5-ACDC-18KR2(US)	DWB3-ACDC-24KR2(US)
Refrigerant type		R32	R32	R32
Charge volume	g(oz)	780(27.5)	920(32.5)	1150(40.5)
Maximum Allowable Pressure	Kpa (PSIG)	4500 (651)	4500 (651)	4500 (651)

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Maximum Length of piping

Maximum pipe Length, Pipe sizes, Maximum head				
Unit		DGWA3-ACDC1-12KR2(US)	DGWA5-ACDC-18KR2(US)	DGWA2-ACDC-24KR2(US)
Indoor unit		DGA3-ACDC1-12KR2(US)	DGA5-ACDC-18KR2(US)	DGA2-ACDC-24KR2(US)
Outdoor unit		DWA4-ACDC1-12KR2(US)	DWA5-ACDC-18KR2(US)	DWB3-ACDC-24KR2(US)
Max pipe length	M(ft)	15(49.2)	20(65)	25(82)
Pipe sizes	Inch	1/4&3/8	1/4&1/2	1/4&1/2
Maximum Head (vertical)	M(ft)	8(26)	10(32)	10(32)

Addition of refrigerant per pipe length

Pipe length more than 5meters requires addition of refrigerant

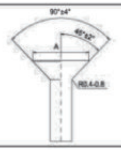
Refrigerant to be added if pipe length is greater than 5 meters				
Unit		DGWA3-ACDC1-12KR2(US)	DGWA5-ACDC-18KR2(US)	DGWA2-ACDC-24KR2(US)
Indoor unit		DGA3-ACDC1-12KR2(US)	DGA5-ACDC-18KR2(US)	DGA2-ACDC-24KR2(US)
Outdoor unit		DWA4-ACDC1-12KR2(US)	DWA5-ACDC-18KR2(US)	DWB3-ACDC-24KR2(US)
Grams per meter	9(OZ)	15(0.5)	15(0.5)	15(0.5)

Connecting the Refrigerant piping

The indoor unit contains an inert gas. Use caution when loosening the flared fittings to vent the gas.

Cut the piping to length. Take care that no foreign matter enters the piping. Slide the flare nuts onto the piping. Flare the piping using a flaring tool for refrigerant piping.

Inspect the flares checking that they are even and do not have any cracks or burrs.

Flaring Torque specifications			
Outer Diameter of Pipe (mm)	Tightening Torque (N.m)	Flare dimension(A) (mm)	Flaring shape
φ6.35(φ0.25")	18~20(180~200kgf.cm)	8.4~8.7(0.33~0.34")	
φ9.52(φ0.375")	32~39(320~390kgf.cm)	13.2~13.5(0.52~0.53")	
φ12.7(φ0.5")	49~59(490~590kgf.cm)	16.2~16.5(0.64~0.65")	
φ16(φ0.63")	57~71(570~710kgf.cm)	19.2~19.7(0.76~0.78")	
φ19(φ0.75")	67~101(670~1010kgf.cm)	23.2~23.7(0.91~0.93")	

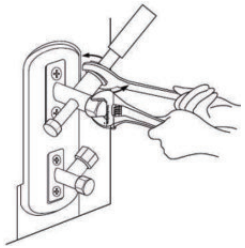
Remove the protective caps from the valves.

Align flared pipe ends with the valves and hand tighten.

Use a spanner to support the valve. (see illustration below)

While supporting the body of the valve use a torque wrench to tighten the nuts.

Repeat for the indoor unit connections.



Pressure Testing the System

Fluorocarbons refrigerant must not be put into a system for the purposes of pressure leak testing. Australian refrigerant handling code of practice 5.29

High pressure nitrogen gas bottle handling. Wear appropriate PPE including eye, ear, protection, leather gloves.

Precautions:

Air and foreign matter in the refrigerant circuit can cause abnormal rises in pressure and could cause damage to the air conditioner. Care must be taken to ensure that the refrigerant lines are free of foreign matter.

Use Dry nitrogen for leak testing.

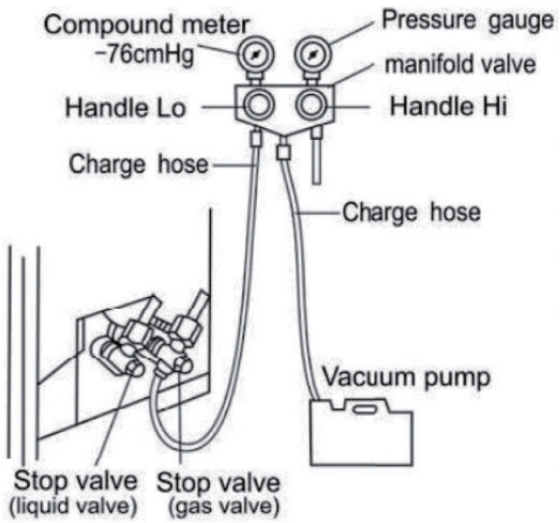
Pressurize the system to 3500 KPA/ 508 Psig and let stand for one hour. Note any pressure changes. The system must be observed over a period of one hour to ensure that no pressure drop occurs, having due regard to temperature variation throughout the system. Australian refrigerant handling code of practice 5.33

Evacuate the System

Connect the low-pressure hose from the gauge set to the Low-pressure connection on the outdoor unit.

Vacuum the system down to 500 Microns of mercury. Allow the system to stand for one hour to detect leakage. A small rise may indicate water boiling o ffin the system. A large rise above 600 microns may indicate leakage in the piping. Australia and New Zealand refrigerant handling code of practice 6.4.

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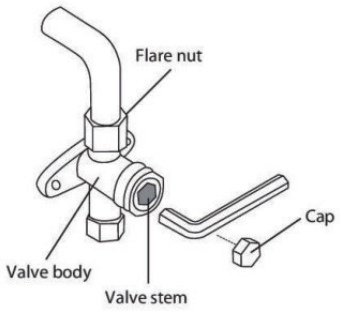
Releasing the refrigerant into the system

Check that the low-pressure hose is connected to the low-pressure side of the outdoor unit.

Check that the system has been evacuated to 500 microns. Remove the Vacuum micron gauge to prevent damage to it.

Open the low pressure and high-pressure valves by winding them out anti clockwise until seated.

The low-pressure gauge should read approximately 150 PSI.



Electrical Connections

Maximum input power AC Circuit breaker size DC input parameters				
Unit		DGWA3-ACDC1-12KR2(US)	DGWA5-ACDC-18KR2(US)	DGWA2-ACDC-24KR2(US)
Indoor unit		DGA3-ACDC1-12KR2(US)	DGA5-ACDC-18KR2(US)	DGA2-ACDC-24KR2(US)
Outdoor unit		DWA4-ACDC1-12KR2(US)	DWA5-ACDC-18KR2(US)	DWB3-ACDC-24KR2(US)
Power AC		1Ph115V/60HZ	1Ph208-230V/60HZ	1Ph208-230V/60HZ
Max input power	W	1700	2500	3500
Circuit breaker RCBO Type A or B	A	25	20	25
Power DC	VDC	90-350	90-350	150-350
	ISC	</=14Adc	</=14Adc	</=20Adc
DC MAX VOLTAGE	Voc	380	380	380

Before performing electrical Work, Read these cautions.

- All wiring must comply with local and national electrical codes and regulations.
- All work must be accomplished by a licensed electrician.
- All electrical connections must be made according to the Electrical Connection Diagram.
- If there is a serious safety issue with the power supply, stop work immediately. Explain your reasoning to the client and refuse to install the unit until the safety issue is properly resolved.
- Power voltage should be within 90-100% of rated voltage. Insufficient power supply can cause malfunction, electrical shock, or fire.
- Only connect the unit to an individual branch circuit. Do not connect another appliance to that outlet.
- The units must be properly earthed.
- All wiring must be properly connected. Loose wiring can cause failures and result in product malfunction and possible fire.
- Ensure that wires are not resting against refrigerant tubing, the compressor, or any moving parts within the unit.
- If the unit has an auxiliary electric heater, it must be installed at least one meter away from any combustible materials.
- **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**

Before performing any electrical or wiring work, turn off the main power to the system.

Connect the cable from the indoor unit to the outdoor unit using the four-conductor cable.

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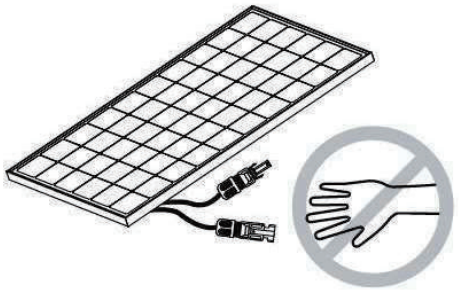
Solar modules are large and require careful handling. Only a qualified technician should inst all Solar Modules. Solar arrays are current limited sources. Use appropriate protection mea sures when working on them. They contain hazardous DC voltages.

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

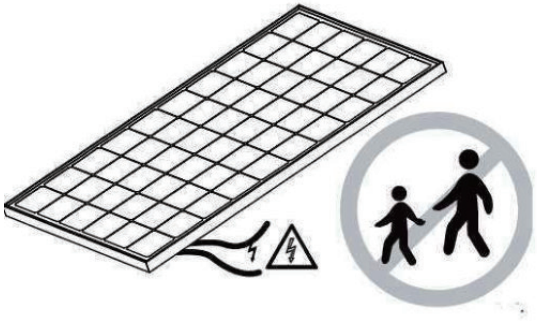
All electrical connections should be made with approved MC-4 type connectors, and from the same manufacturer. (AS / NZS 5033 clause 4.3.7 (k)

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.

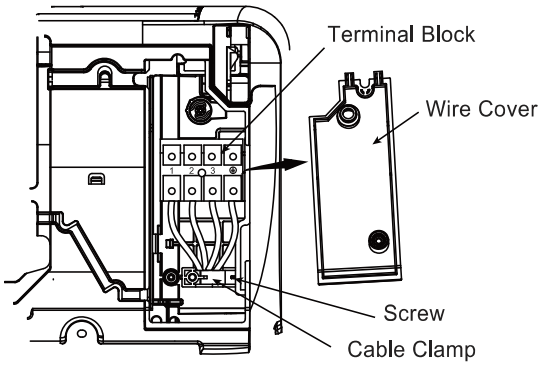
Do not touch the module contacts.



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



1）. Open front panel of the indoor unit.
2）. Using a screwdriver, open the wire box cover on the right side of the unit. This will reveal the terminal block.



3）. Unscrew the cable clamp below the terminal block and place it to the side.
4）. Facing the back of the unit, remove the plastic panel on the bottom left-hand side.
5）. Feed the signal wire through this slot, from the back of the unit to the front.
6）. Facing the front of the unit, connect the wire according to the indoor unit's wiring diagram, connect the u-lug and firmly screw each wire to its corresponding terminal.
7）. After checking to make sure every connection is secure, use the cable clamp to fasten the signal cable to the unit. Screw the cable clamp down tightly.
8）. Replace the wire cover on the front of the unit, and the plastic panel on the back.
9）. Dismount caps on the conduit panel of outdoor unit.
10）. Temperarily mount the conduit tubes(not included) on the conduit panel.
11）. Properly connect power cable to the corresponding terminals on the terminal block.
12）. Ground the unit in accordance with local codes.
13）. Be sure to size each wire allowing several inches longer than the required length for wiring.
14）. Use lock nuts to secure the conduit tubes.

CAUTION

DO NOT MIX UP LIVE AND NULL WIRES

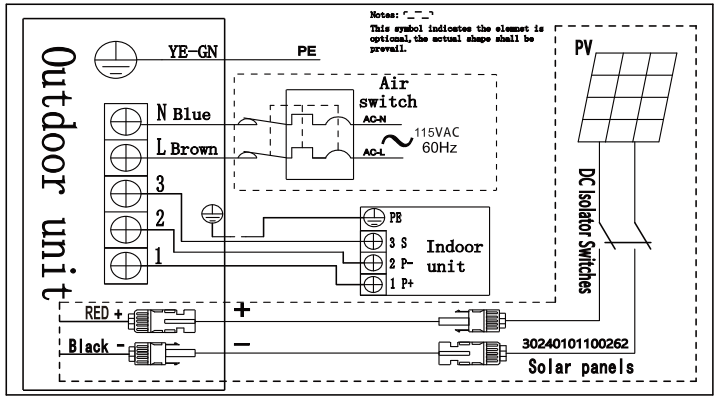
This is dangerous,and can cause the air conditioning unit to malfunction.

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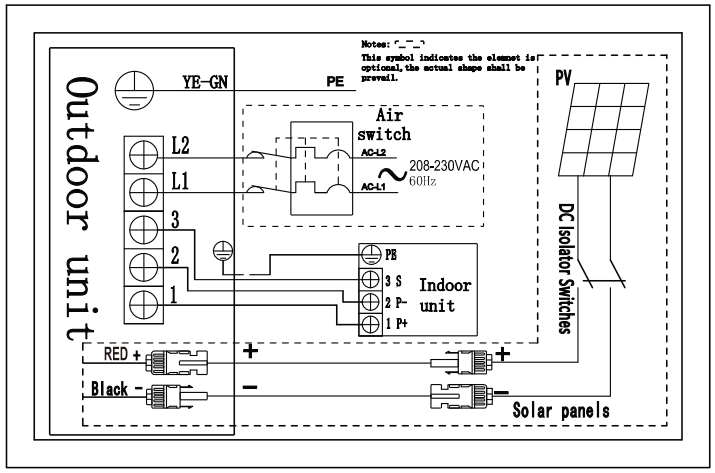
Connect AC to a dedicated circuit from the Distribution board. Note the circuit breaker must provide Residual Current Device (RCD) protection per AS / NZS 3000 clause 2.6.3.2.3.3.

Note Per AS / NZS 3000 clause 4.19, the indoor and outdoor unit AC power must be isolated by an isolation switch adjacent to the outdoor unit.

Connect the solar DC to the dc connections provided via a solar isolator mounted adjacent to the out-door unit.



DGWA3-ACDC1-12KR2(US)



DGWA5-ACDC-18KR2(US) / DGWA2-ACDC-24KR2(US)

Installation of Solar Modules

Solar Modules must be installed in accordance with all applicable codes. Some of them are the local building codes, such as NEC AS / NZS 4777 and AS / 5033 , CSA C22.1,etc . The 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 4.42 volts.

Adding 44.2 and 4.42 equals the low temperature VOC of 48.62.

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.

Solar Array maximum current.

Paralleling of the solar array is not recommended as the maximum rated Array Short circuit current is 12 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 AC distribution board via a type A or B residual current and overcurrent device.

The SOLAR PHOTOVOLTAIC SYSTEM shall be provided with overcurrent protection, sized in accordance with the PHOTOVOLTAIC MODULE over-current protection rating.

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.

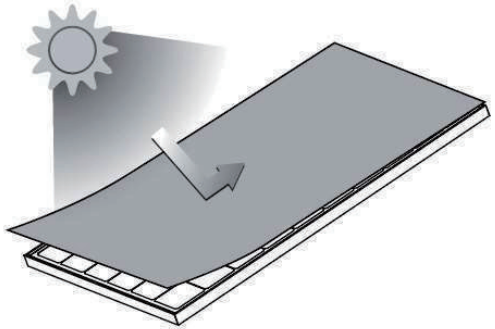
This manual does not describe specific structures and installation procedures.

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

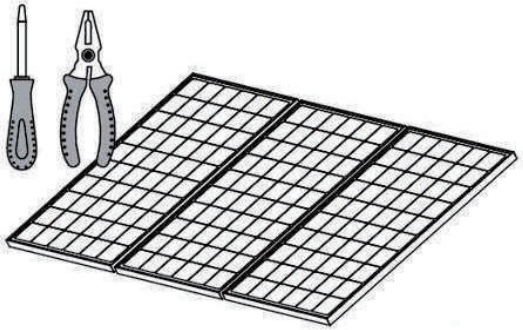
- The specifications of the solar photovoltaic system
- Cable material
- Connecting components
- Bracket and support
- Supporting parts
- Switching and circuit protection

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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



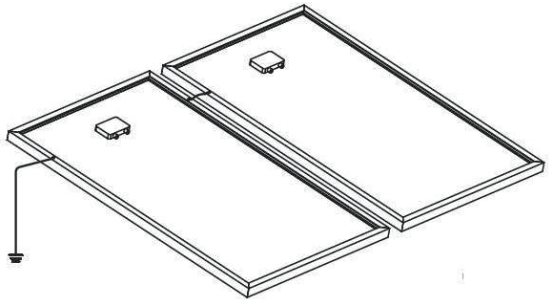
Use only insulated tools that are approved for electrical installations.



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.



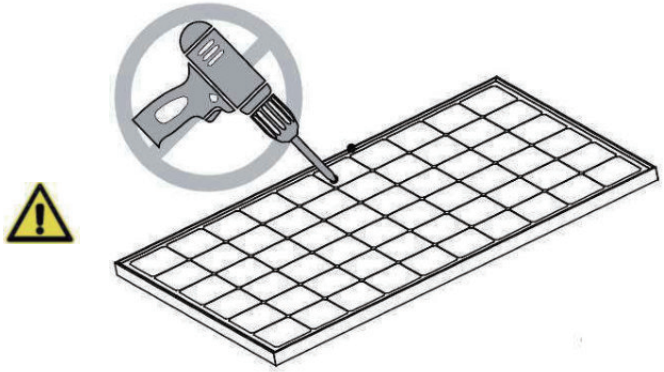
Solar Array Mechanical installation

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.



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- 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.

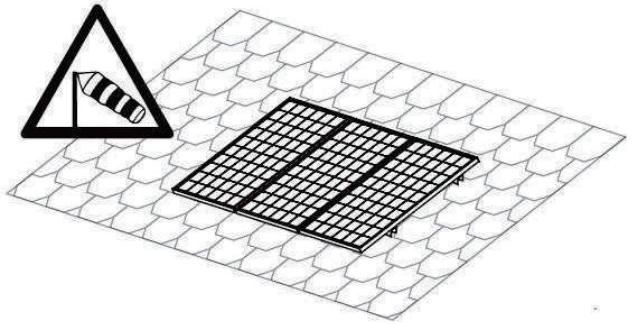


Roof Mounting:

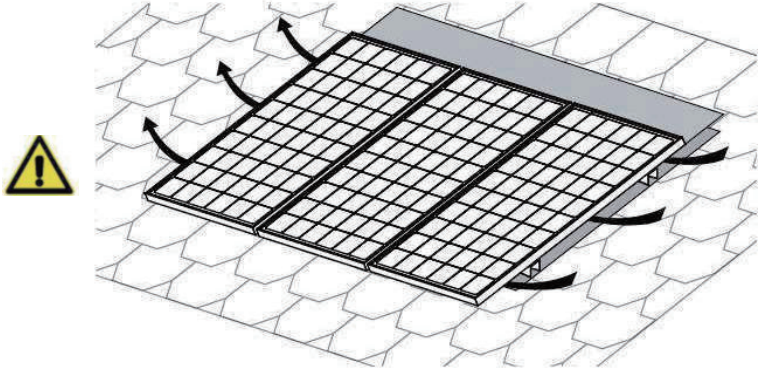
When installing the modules on a roof ensure that they are securely fastened and cannot fall because of wind or snow loads.

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.

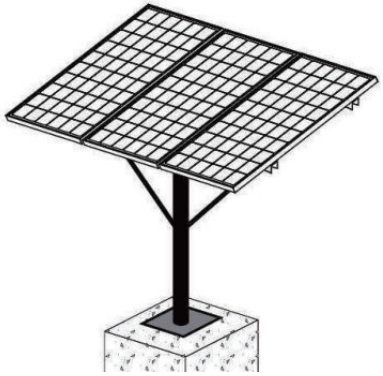


Provide adequate ventilation under a module for cooling. 50 mm minimum between the module and the mounting surface.



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

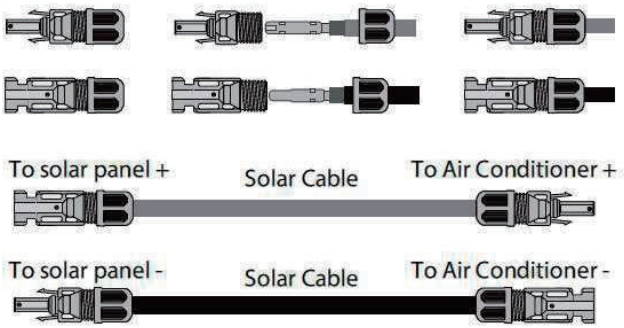
The array is formed of modules in series. The switch disconnectors must be approved for disconnecting solar DC under load.

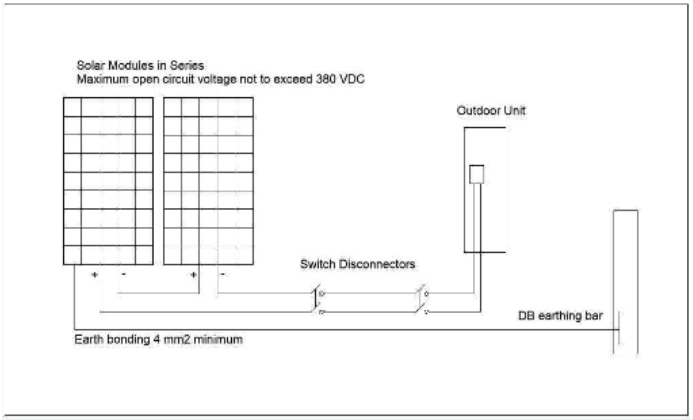
The MC 4 connectors must be approved and from the same manufacturer at each join. Mismatching connectors can cause failure and possible fire.

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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 disconnector 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.

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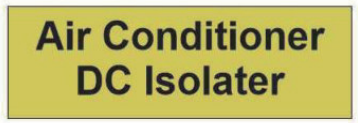
Signage

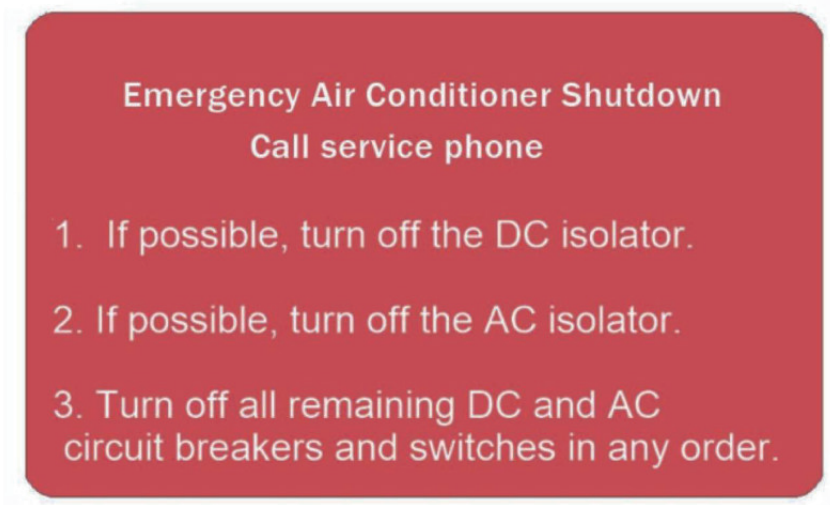
Additional Solar signage to be posted on the outdoor unit



To be posted adjacent to the AC and DC isolating Switches.







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 minimised.

Work procedure

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

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.

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 toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i. e. non sparking, adequately sealed or intrinsically safe.

Presence of fire extinguisher

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

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.

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.

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Checks to the refrigerating 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.

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.

Removal and evacuation

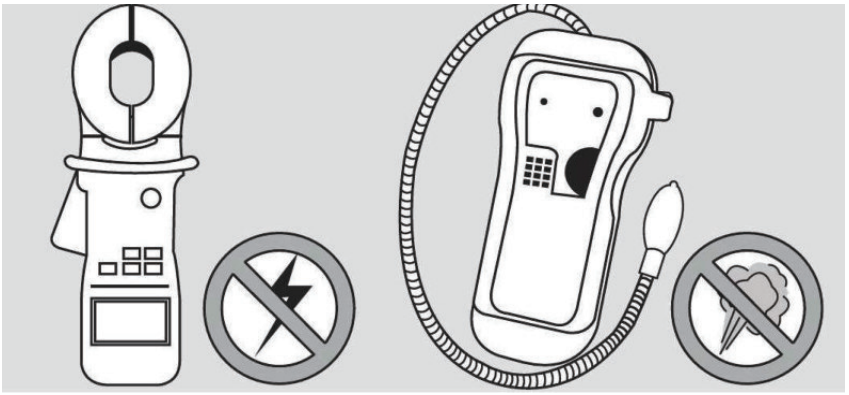
When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used. However, for flammable refrigerants it is important that best practice be followed, since flammability is a consideration. The following procedure shall be adhered to:
– safely remove refrigerant following local and national regulations;
– evacuate;
– purge the circuit with inert gas (optional for A2L);
– evacuate (optional for A2L);
– continuously flush or purge with inert gas when using flame to open circuit; and
– open the circuit.

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 minimise 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).
• 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.

Electrical and Gas Leak checks.



Gas Leak checks

Prior to the test run check for gas leaks using the following methods:

Soap and water method

Using a soft brush, apply soapy water or liquid detergent to all pipe connection points on the indoor and outdoor unit. The presence of bubbles indicates a leak. Repairs must be made prior to test running the unit.

Leak Detector method

If using a leak detector, refer to the device's operation manual for proper usage instructions.

Electrical Safety checks

After installation, confirm that all electrical wiring is installed in accordance with local and national regulations, and according to the installation manual.

Before the test run:

Check earthing

Measure earthing resistance. The earthing resistance must be less than required to trip any protection devices.

Perform an insulation resistance test.

During the test run:

Check for electrical leakage, using a low current tong meter.

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Test Run

Before the test run:

Verify that:

- The unit's electrical system is safe and will operate properly
- The gas leak checks have been performed
- Confirm that the low- and high-pressure valves are fully open

The test should run for at least 30 minutes

Connect power to the unit

Press the On/Off button on the remote while pointing it at the indoor unit. The indoor unit will respond.

Press the Press the MODE button to scroll the functions one at a time:

COOL – Select the lowest temperature. Allow to run for 5 minutes.

HEAT – Select the highest possible temperature. Allow to run for 5 minutes.

After the Test Run is completed, return the unit to normal operating temperature.

Wrap the pipe connections with insulation.

Commissioning checklist

List of Checks to Perform	PASS (√)	FAIL (×)	TEST RESULT
Solar array Voc test			
Solar array grounding fault test			
Solar array operating current test			
No electrical leakage			
Unit is properly grounded			
All electrical terminals properly covered			
Indoor and outdoor units are solidly installed			
All pipe connection points do not leak	Outdoor(2)	Indoor (2)	
Water drains properly from drain hose			
All piping is properly insulated			
Unit performs COOL function properly			
Unit peforms HEAT function propery			
Indoor unit louvers rotate properly			
Indoor unit responds to remote controller			

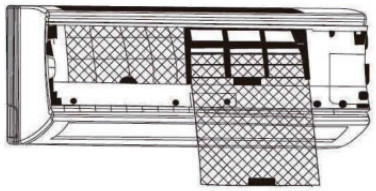
Maintenance

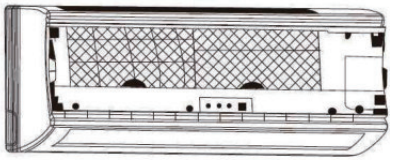
Indoor unit:

A clogged air conditioner can reduce the cooling efficiency of your unit, and can also be bad for your health. Make sure to clean the filter once every two weeks。

Turn off the air conditioner、

Open the indoor unit cover and remove the air filters.





Vacuum and wash the air filter in warm soapy water. The water should be less than 40 degrees C to prevent deformation of the air filter.

Allow the filter to dry. To prevent deformation do not place in direct sunlight. Reinstall the filter. Clean the outer shell using a soft cloth and a mild cleaning solution. Test the solution on a small area prior to use. Do not use volatile solvents such as acetone or paint thinner.

Outdoor unit





Check that the outdoor unit airflow is not obstructed by objects on or around it, and vegetation.

Examine the general condition of the outdoor unit.

Check the fan for foreign objects.

Check the fins for deformation.

Check the insulation of the piping for security and integrity. Replace damaged insulation.

Check the condition of electrical conduits. Replace any damaged wiring or conduits.

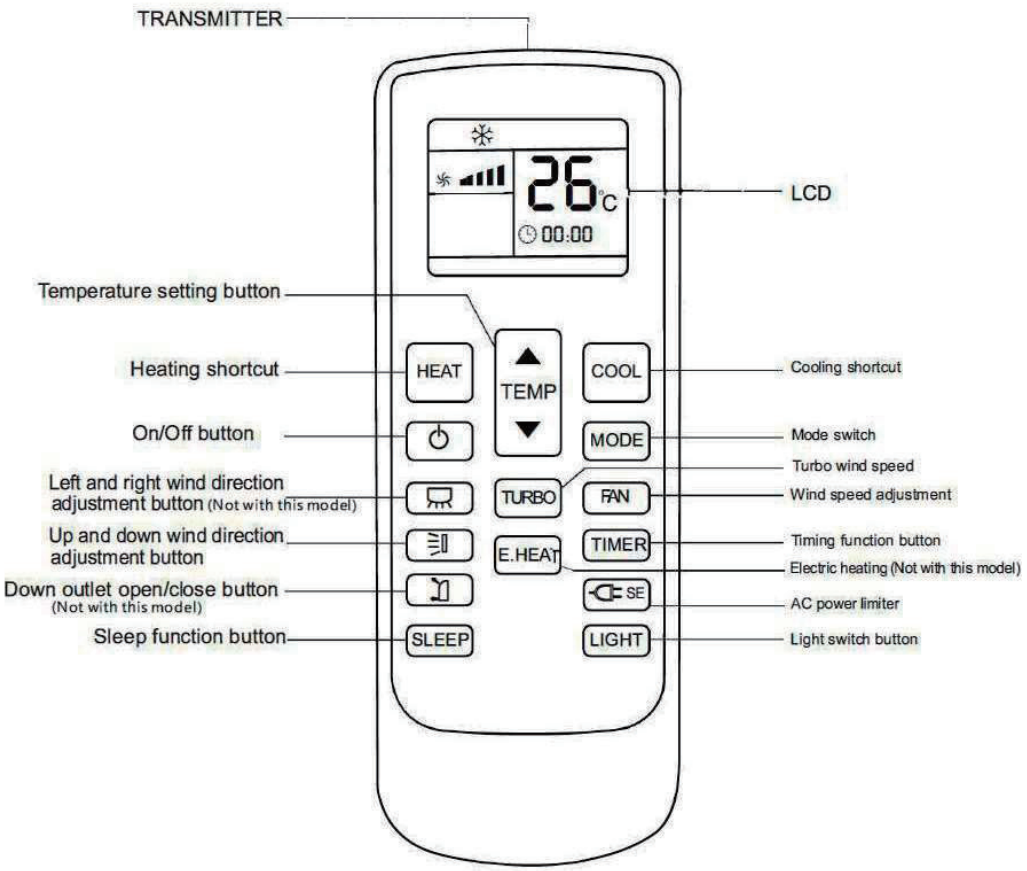
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Operation

The air conditioner has an infrared remote and an android or I phone app.

Remote control operation

Some functions may not be available in all units.



remote control continued

● “⏻” button	Press the " ⏻ " button to switch the air conditioner
● “Mode” button	Press the "Mode" button and select the "Auto/Cooling/ Dehumidifying/Air Supply/Heating" mode.
● “COOL” button	This button is used to set the air conditioner to enter the cooling mode, and the set temperature is 26˚Crun. 1. When the air conditioner is on or off, just press the button, the air conditioner will enter coolingMode and set the temperature to 26˚C. 2. In the timing on state, press this button to cancel the timing on setting and turn on in advance.Run cooling mode, set temperature to 26˚C. 3. In sleep state, press this button to run the cooling mode, set the temperature to 26˚C.
●“HEAT” button	This button is used to set the air conditioner into heating mode, and set the temperature to 24˚Crun. 1. When it is turned on or off, as long as you press this button, the air conditioner will enter the heating modeAnd the set temperature is 24˚C for operation. 2. In the timing on state, press this button to cancel the timing on setting and turn on in advance.Run heating mode, set temperature to 24˚C 3. In sleep state, press this key to run heating mode, and set temperature to 24˚C
●“TEMP” button	In cooling, heating, and dehumidification modes, press the " ▲ "," ▼ " keys to adjust the temperature degree, range 16-32˚C Note: The temperature is not adjustable in the air supply mode.
● “FAN” button	Press the "Wind Speed" button to select the wind speed of "Breeze/ Low Wind/Mid Low Wind/Stroke/High Wind/Auto". Note: There is no automatic wind speed in air supply mode.
● “SE” button	When connected to the mains, press the " ⏻ " button, the one-key power saving logo of the internal unit will turn green, and enterPower saving mode.

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Android or I phone app

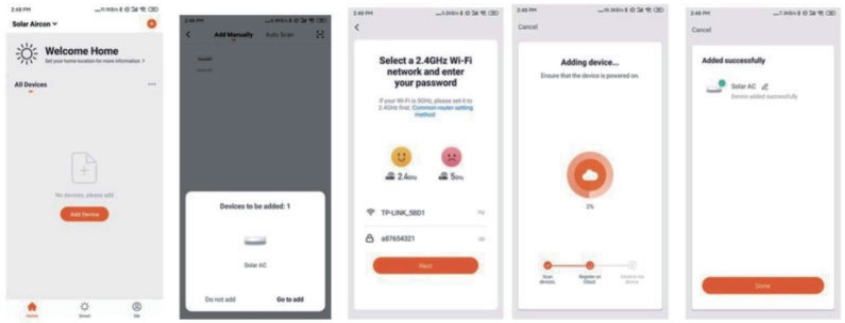
1. The indoor unit has a QR code that can be scanned to download the app.

Download the app and register your phone number.

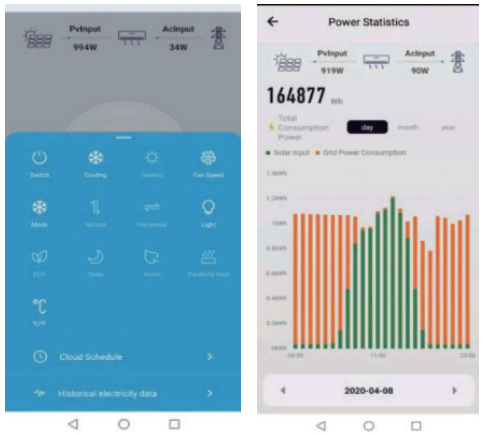
2. Turn the Solar air conditioner on, use the remote control and press the “LIGHT” button 8 times or more withing 10 seconds. When you hear “Di” the wi fiindicator should be flashing.



3. Turn the Bluetooth on your phone on and connect to the home WIFI.
4. Open the Solar Aircon app on and it should automatically detect the Solar air conditioner. Confirm the device, enter the home WIFI password and start the connection.



5. Use the app to control the air conditioner anywhere via WIFI. Observe the power saving data and view the power consumption by hour/day/month/year.



Warning disassembly of the units can result in an electric shock hazard. This unit employs multiple sources of supply and care must be taken that all supplies are turned off and energy storage devices disconnected

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Common Issues. Please check the following before contacting a repair company.

Issue	Possible Causes
Unit does not turn on when pressing the on off button	The Unit has a 3-minute protection feature that prevents the unit from overloading. The unit will not restart within three minutes of being turned off.
The unit changes from COOL/HEAT mode to FAN mode	The unit may change its setting to prevent frost from forming on the unit. Once the temperature increases, the unit will start operating in the previously selected mode again.
	The set temperature has been reached, at which point the unit turns off the compressor. The unit will continue operating when the temperature fluctuates again
The indoor unit emits white mist	In humid regions, a large temperature difference between the room's air and the conditioned air can cause white mist.
Both the indoor and outdoor units emit white mist	When the unit restarts in HEAT mode after defrosting, white mist may be emitted due to moisture generated from the defrosting process.
The indoor unit makes noises	A rushing air sound may occur when the louver resets its position.
	A squeaking sound may occur after running the unit in HEAT mode due to expansion and contraction of the unit's plastic parts.
Both the indoor unit and outdoor unit make noises	Low hissing sound during operation: This is normal and is caused by refrigerant gas flowing through both indoor and outdoor units.
	Low hissing sound when the system starts, has just stopped running, or is defrosting: This noise is normal and is caused by the refrigerant gas stopping or changing direction.
	Squeaking sound: Normal expansion and contraction of plastic and metal parts caused by temperature changes during operation can cause squeaking noises.
The outdoor unit makes noises	The unit will make different sounds based on its current operating mode.
Dust is emitted from either the indoor or outdoor unit	The unit may accumulate dust during extended periods of non-use, which will be emitted when the unit is turned on. This can be mitigated by covering the unit during long periods of inactivity.
The unit emits a bad odour	The unit may absorb odours from the environment (such as furniture, cooking, cigarettes, etc.) which will be emitted during operations.
	The unit's filters have become mouldy and should be cleaned.
The fan of the outdoor unit does not operate	During operation, the fan speed is controlled to optimize product operation.
Operation is erratic, unpredictable, or unit is unresponsive	Interference from cell phone towers and remote boosters may cause the unit to malfunction. In this case, try the following: • Disconnect the power, then reconnect. • Press ON/OFF button on remote control to restart operation.

Problem	Possible Causes	Solutions
Poor Cooling Performance	Temperature setting may be higher than ambient room temperature	Lower the temperature setting
	The heat exchanger on the indoor or outdoor unit is dirty	Clean the affected heat exchanger
	The air filter is dirty	Remove the filter and clean it according to instructions
	The air inlet or outlet of either unit is blocked	Turn the unit off, remove the obstruction and turn it back on
	Doors and windows are open	Make sure that all doors and windows are closed while operating the unit
	Excessive heat is generated by sunlight	Close windows and curtains during periods of high heat or bright sunshine
	Too many sources of heat in the room (people, computers, electronics, etc.)	Reduce amount of heat sources
	SLEEP function is activated	SLEEP function can lower product performance by reducing operating frequency. Turn off SLEEP function.
	Solar power is not enough. grid power is off, air conditioner runs only on solar panels.	Turn on the grid power.
The unit is not working	Both solar and grid power is off	Turn on grid and solar power
	Remote control batteries are dead	Replace batteries
	Timer is activated	Turn timer off
Poor heating performance	The outdoor temperature is lower than 7°C (44.5°F)	Use auxiliary heating device
	Cold air is entering through doors and windows	Make sure that all doors and windows are closed during use
Error code appears in the window display of indoor unit: • E0, E1, E2… • P1, P2, P3… • F1, F2, F3… •Lo/Lp	The unit may stop operation or continue to run safely. If the indicator light continues to display an error code, wait for about 10 minutes. The problem may resolve itself. If not, disconnect both solar and grid power, then connect it again 2 minutes later. Turn the unit on. If the problem persists, turn o ffthe unit and contact an authorized service centre	

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Error Code list

Description	Indoor display code	Remake
Indoor data wrong	01	
Indoor and Outdoor unit Communication wrong	03	
Indoor Keys stuck	04	
Outdoor data wrong	05	
Indoor fan motor wrong	06	
Indoor air temperature sensor wrong	31	
Indoor evaporator temperature sensor wrong	32	
Outdoor air temperature sensor wrong	35	
Outdoor condense temperature sensor wrong	36	
Air outlet temperature sensor wrong	37	
Indoor fan motor lost speed	51	
Compressor feedback wrong	55	
Outdoor fan motor wrong	58	
High voltage protection	72	
Current input limitation	73	
Compressor high temperature protection	75	
Low Voltage protection	76	
Demagnetization protection control failure	79	
PFC ove curent	81	
Total Power protection	82	
AD Abnormal detection	83	
Unstable current	84	
Compressor setting data wrong	85	
IPM_FO Edge fault	86	
IPM_FO Level fault	87	
IPM over temperature	91	
Compressor lack of phase	92	
Compressor lost speed	93	
IPM over voltage	94	
IPM Over current	95	
IPM current shortage	96	
Compressor oil return fail (DC solar power off)	LO	
Low power protection (DC solar power off)	LP	

AC/DC Booster Error Code：

LED Flash Times	Indoor display code	Error Description
1	P1	Pv input voltage is too high
2	P2	Pv input voltage is too low
3	P3	Output voltage is too high
4	P4	Output voltage is too low
5	P5	Leakage Protection
6	P6	Overcurrent Protection
7	P7	Communication wrong

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