SOLAR AC DC

JUST COMMON SENSE

Solar ACDC Heat Pump Swimming Pool Heater

Installation and Operations Manual

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Table of Revisions

Table of Revisions		
Revision Date	Reason for revision	Revision By
22 Jan 2022	Initial writing	George Abernathy

Model Applicability

This manual applies to the following models

Table of Models			
Model	10 Kw	13 Kw	15 Kw
Pool Heater	DSPD1-ACDC-10R2	DSPD1-ACDC-13R2	DSPD1-ACDC-15R2

Preface

To provide our customers with quality, reliability and versatility, this product has been made to exacting standards. Please read this manual carefully before you install or maintain this unit. The manufacturer and seller(s) of this product will not be held responsible if someone is injured or the unit is damaged as the result of improper installation, use or maintenance.

Equipment description

The equipment consists of a heat-pump pool heater or cooler. 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 240 Volt power.
- By AC 240 volt only. This would be applicable at night.
- By AC 240 volt only at reduced power input.

Installation is the same as a standard electric pool heater with the addition of solar power. The solar power is regulated by advanced Maximum Power Point Tracking (MPPT) to collect the highest amount of solar power possible.

The unit can control a circulating pump that can provide filtering and chemical treatment.

This unit can operate at ambient temperatures from -15 to 58 degrees Centigrade.

Accessories

Components Supplied		
1	1	Pool Heater
2	1	User and Installation Manual
3	2	Pipe connectors
4	2	MC 4 style connector set for outdoor unit

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
AS/NZS 1319
AS/NZS 817
AS/NZS 1571
AS 1926.1
AS/ NZS 3000
As/ NZS 3500
AS 4211
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

Disclaimer

This equipment requires the installation of 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.

Specifications

Solar Swimming Pool Heat Pump				
Item	Unit	10KW	13KW	15KW
Model		DSPD1-ACDC-10R2	DSPD1-ACDC-13R2	DSPD1-ACDC-15R2
Rated Grid Power(AC)		208-240V 50/60Hz	208-240V 50/60Hz	208-240V 50/60Hz
Solar Panel Power(DC)		80-380V	80-380V	80-380V
Heating Capacity(27/24.3℃)	kW	2.1-10.2	2.3-13.6	2.4-15.5
Heating Power Input	kW	0.14-1.57	0.15-2.09	0.15-2.58
COP		15.5-6.5	15.8-6.5	16.0-6.0
Heating Capacity(15/12℃)	kW	1.6-7.3	1.8-9.5	1.9-11.7
Heating Power Input	kW	0.21-1.52	0.24-1.98	0.25-2.44
COP		7.7-4.8	7.5-4.8	7.6-4.8
Max Power Consumption	kW	1.92	2.49	2.7
Max Current(AC)	A	8.4	10.9	11.8
Max Current(DC)	A	12.0	12.0	12.0
Water Proof Level		IPX4	IPX4	IPX4
Electric Shock Prevention		Class I	Class I	Class I
Compressor		Rotary	Rotary	Rotary
Water Side Heat Exchanger		Titanium	Titanium	Titanium
Air Side Heat Exchanger		Finned tube	Finned tube	Finned tube
Fan Power Input	W	55	55	55
Fan Direction		Horizontal	Horizontal	Horizontal
Water Connection	mm	48.3	48.3	48.3
Water Flow Volume	m^3/h	3.2	4.0	4.6
Water Pressure Drop(max)	kPa	5.5	8.0	10.0
Noise(1m)	dB(A)	39-51	42-53	43-54
Unit Net Dimensions(L/W/H)	mm	995×432×633	995×432×633	995×432×633
Unit Ship Dimensions(L/W/H)	mm	1063×475×695	1063×475×695	1063×475×695
Net Weight	kg	45	48	50
Shipping Weight	kg	50	53	55
Heating: Outdoor air temp: 27/24.3℃, Inlet water temp: 26℃ Outdoor air temp: 15/12℃, Inlet water temp: 26℃ Operating range: Ambient temperature: -15~43℃ Inlet Water temperature: 10~35℃				
Note: Parameters are subject to change without prior notice, please refer to the nameplate!				

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

Caution risk of Fire

Safety Precautions

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 unit. 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 severe 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.
- 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 unit 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 unit contains fluorinated gasses. For specific information on the type of gas please refer to the label(s) on the 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.
- Do not attempt to defrost the unit or clean the unit with processes other than those recommended by the manufacturer.

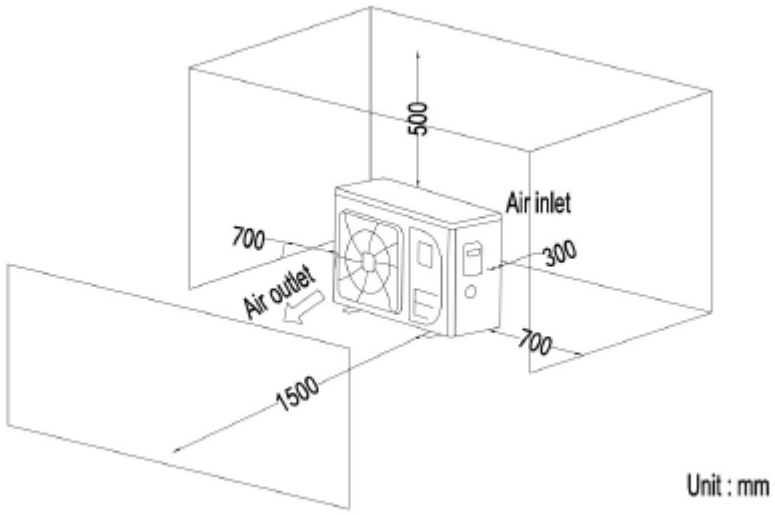
R32 refrigerant

- Appliance shall be installed, operated, and stored in a room with a floor area larger than 30 square meters and 2 meters in height.
- Appliance shall not be installed in an unventilated space.
- R32 is heavier than air and care must be taken to prevent pooling of refrigerant near ignition sources.
- This appliance should not be installed or located in areas that have open flames present. This can include areas with gas cook tops and ranges, gas water heaters and gas or wood-fired room or space heaters.
- The appliance is pre gassed and does not require any filling or leak testing.

Fuse specifications

- This appliance has a fuse on the circuit board that is a ceramic “blast proof” non rupturing fuse. The fuse must only be replaced with the same or an equivalent fuse.
- The fuse must be rated for DC voltages and currents.

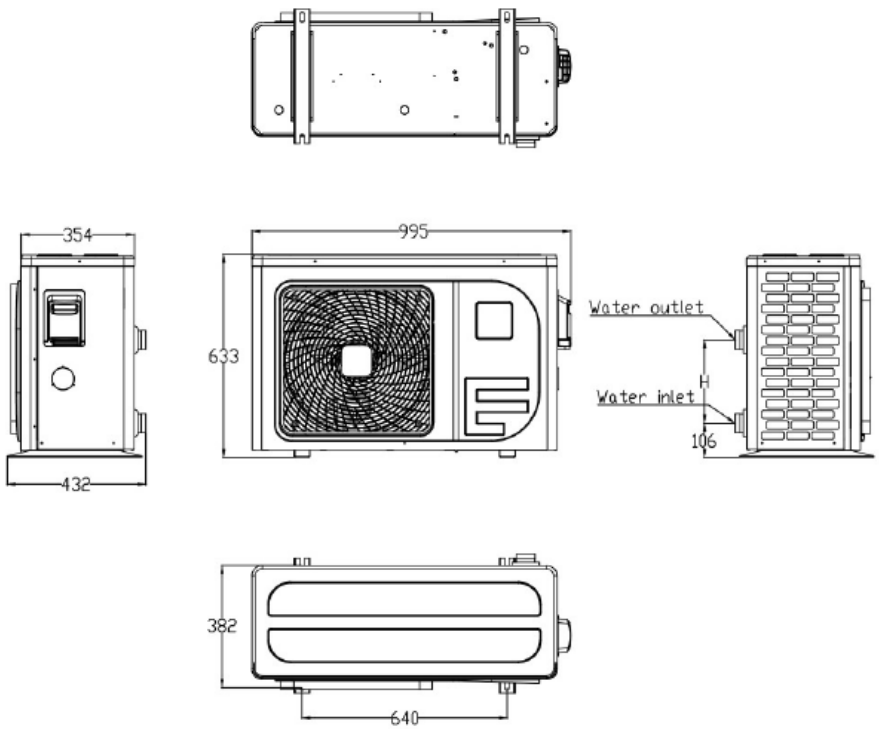
Pool Heater Clearances



Pool Heater Clearances	
Above	500 mm
Left	700 mm
Right	700 mm
Below	0 mm (clearance is required if drain is installed)
Behind	300 mm
Front	1500 mm

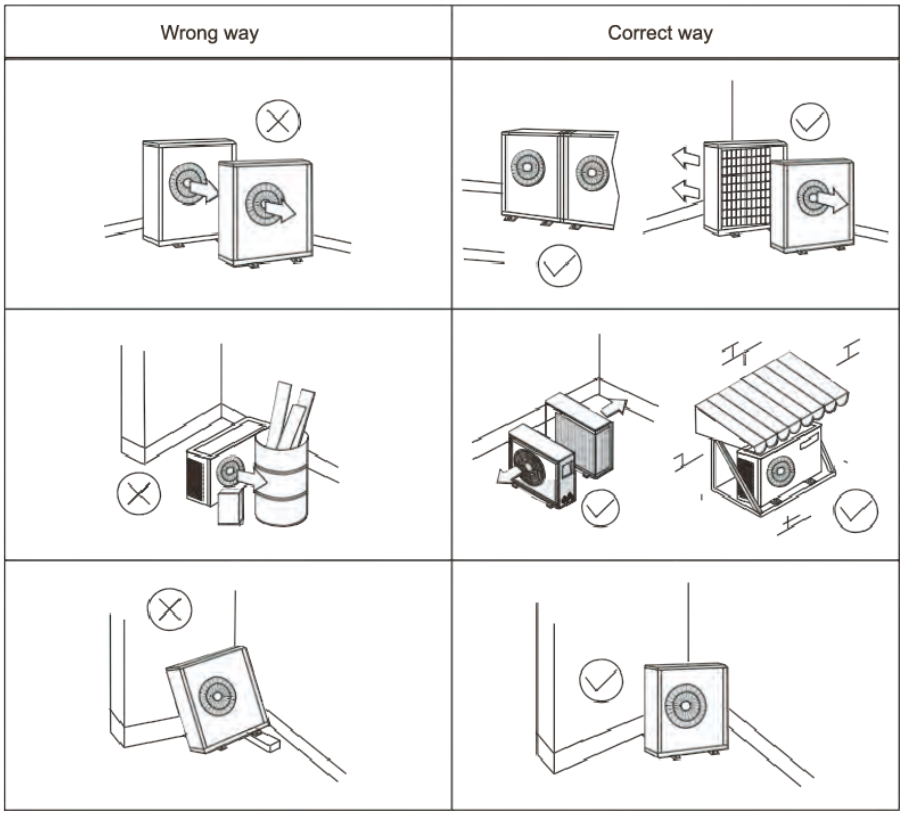
Dimensions

Pool Heater Dimensions



Dimension	Model			
	units	10 KW	13 KW	15 KW
Model number		DSPD1-ACDC-10R2	DSPD1-ACDC-13R2	DSPD1-ACDC-15R2
Height of Water Inlet	mm	106	106	106
Height of Water Outlet	mm	260	300	300

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



Location of Heat Pumps

The unit will perform well if there is an adequate supply of fresh air. If the unit is installed in a confined space it may fail to perform due to recirculated air. Do not allow the unit to be obstructed by shrubbery or debris.

The unit should be located as close to the pool as possible, bearing in mind that it cannot be installed in zones 0,1,2 unless housed in an IP 4x enclosure that can only be accessed with tools. Refer to AS/NZS 3000 clause 6.3.2.2.1

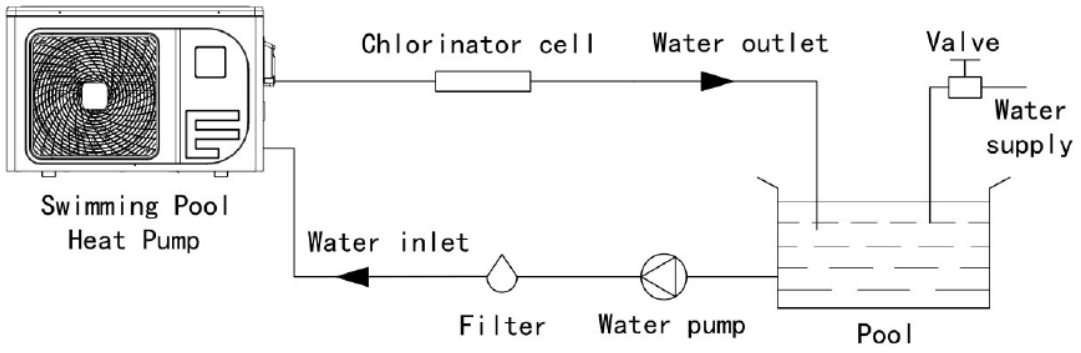
The unit must not be in, a no climbing zone. See AS1926.1

If the unit is located away from the pool, consider insulating the piping to prevent excessive heating loss.

It is recommended that the unit not be located further than 7.5 meters from the pool.

Water piping

The unit requires that water circulate through it while heating or cooling. The water should pass through the pool filter prior to entering the unit. Chemical treatments must not be added to the heat exchanger inlet.

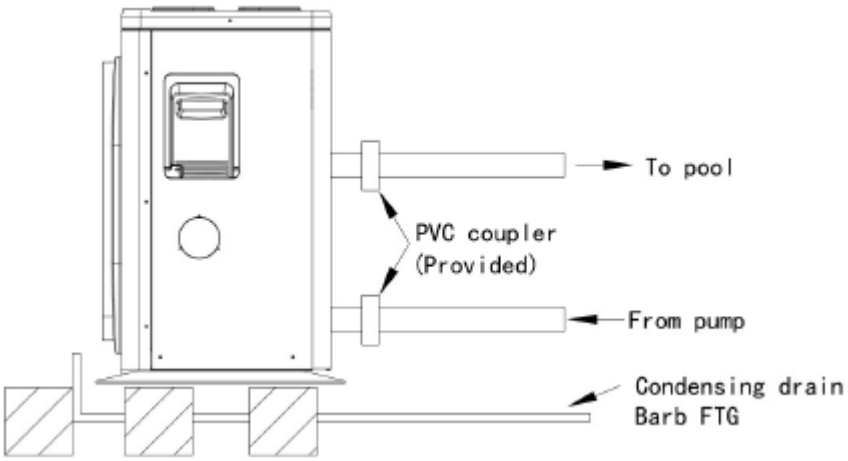


Bypass piping

Consideration should be given to installing bypass valves if there is a possibility of water siphoning from the pool, and to allow for servicing of the unit should it be required.

Pipe sizes

The unit requires a minimum size of 40 mm and can accept a 40- or 50-mm pipe.



Electrical Connections

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% pf 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.

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

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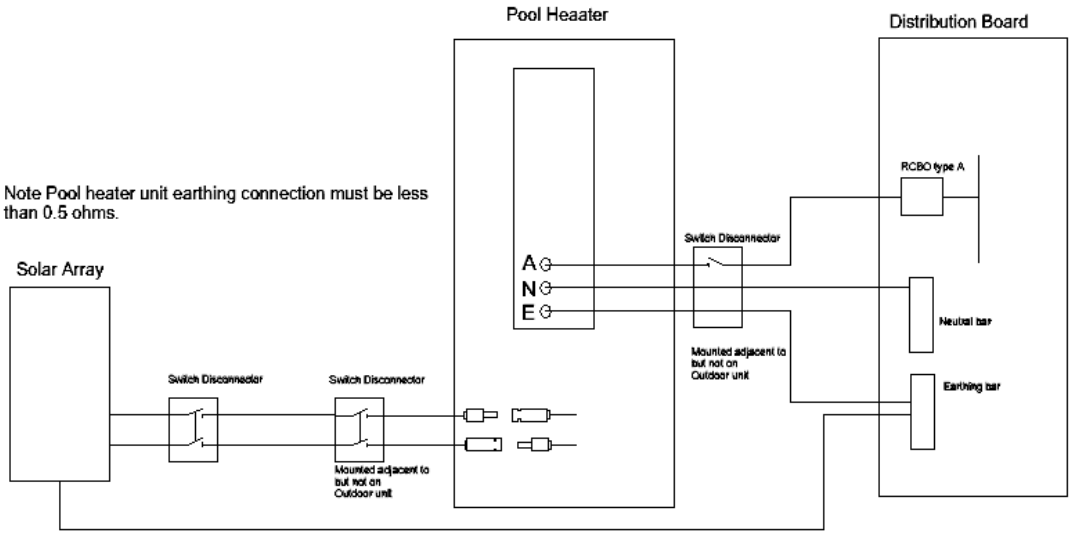
Connect 230 Volt AC to a dedicated circuit from the Distribution board. Note the circuit breaker must provide Residual Current Device (RCD) protection per AS / NZS 3000 clause 2.6.3.2.3.3.

Note Per AS / NZS 3000 clause 4.19, the indoor and outdoor unit AC power must be isolated by an isolation switch adjacent to, but not mounted on, the pool heater unit.

Connect the solar DC to the dc connections provided via a solar isolator mounted adjacent to, but not on the pool heater unit. Use only the MC4 style connectors provided with the unit.



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. The unit 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.

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

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.

Solar Arrays in Parallel

If it is desired to use smaller solar panels in parallel arrays the maximum number of arrays is 2. Additional paralleled arrays may not improve, performance, and may cause the arrays or the unit to be damaged.

Solar Array maximum current.

Paralleling of the solar array is not recommended as the maximum rated Array Short circuit current is 18 amps.

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

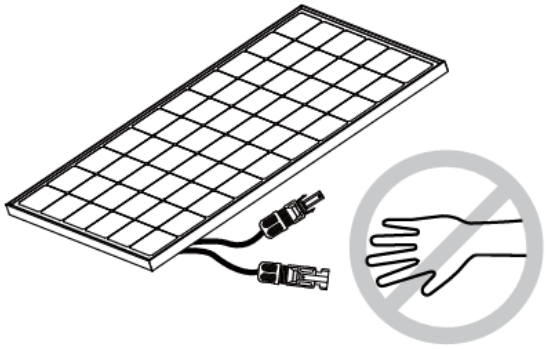
Solar modules are large and require careful handling. Only a qualified technician should install Solar Modules. Solar arrays are current limited sources. Use appropriate protection measures when working on them. They contain hazardous DC voltages.

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

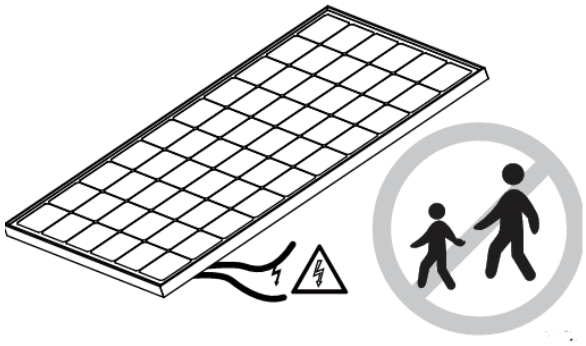
All electrical connections should be made with approved MC-4 type connectors, and from the same manufacturer. (AS / NZS 5033 clause 4.3.7 (k)

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.

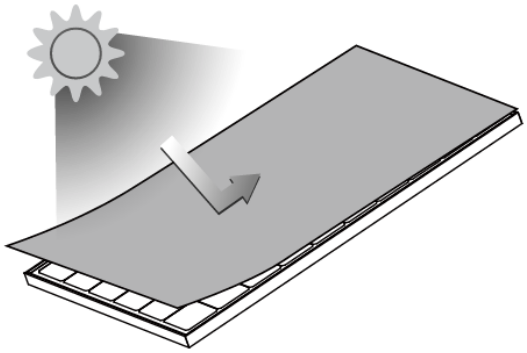
Do not touch the module contacts.



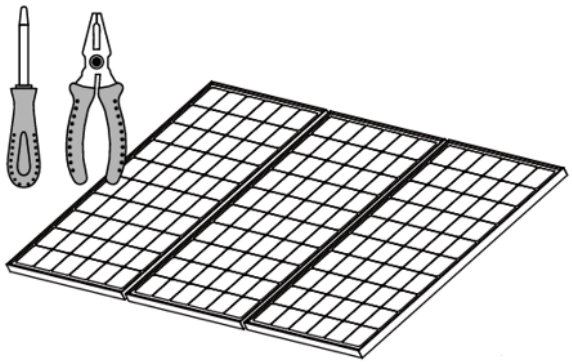
Keep children away from the system while transport and installing mechanical and electrical components.



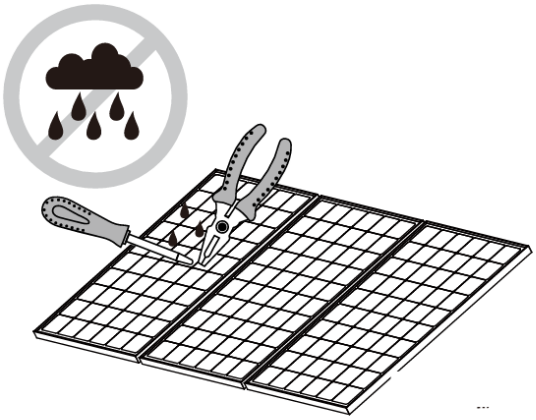
Completely cover the module with an opaque material during installation to keep electricity from being generated. Do not touch the ends of live wires. Do not wear metallic rings, watchbands, ear, nose lip rings or other metallic devices while installing or troubleshooting photovoltaic systems



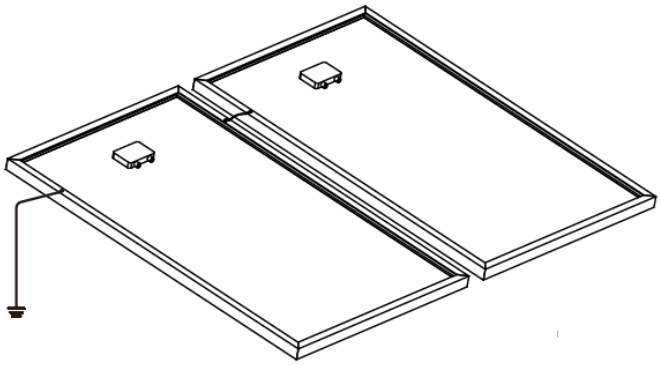
Use only insulated tools that are approved for electrical installations.



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.



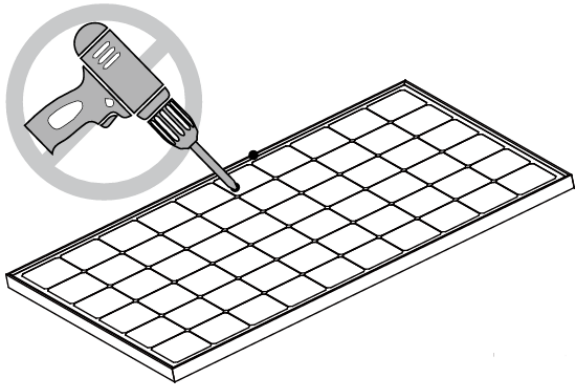
Solar Array Mechanical installation

Selecting an installation location:

- 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:

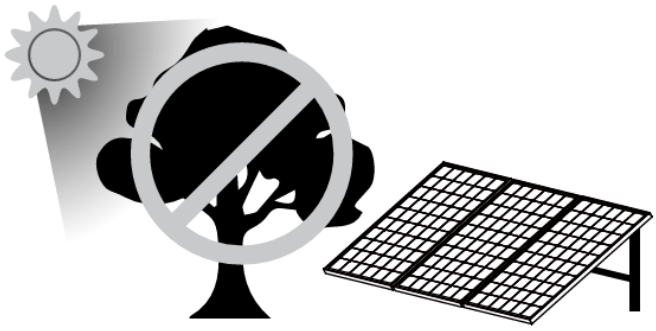
- Always observe the instructions and safety precautions included with the support frame to be used with the modules.
- Never attempt to drill holes in the glass surface of the module. It will void the warranty.
- Do not drill additional mounting holes in the frame of the module. It will void the warranty.



- 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.

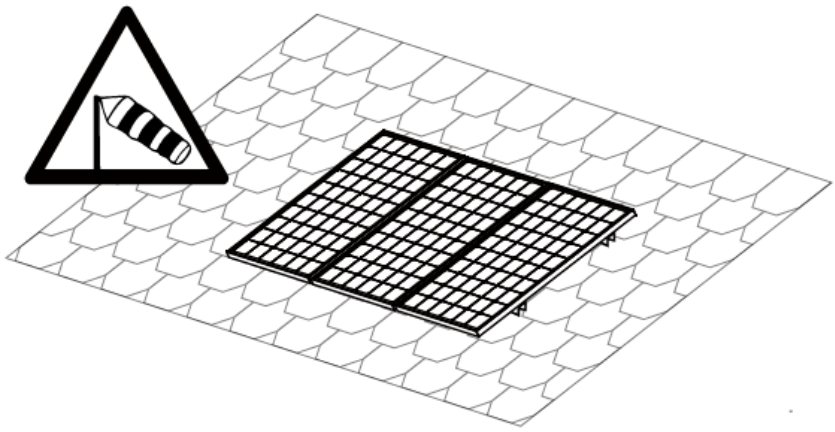
Ground mounting:

- 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.



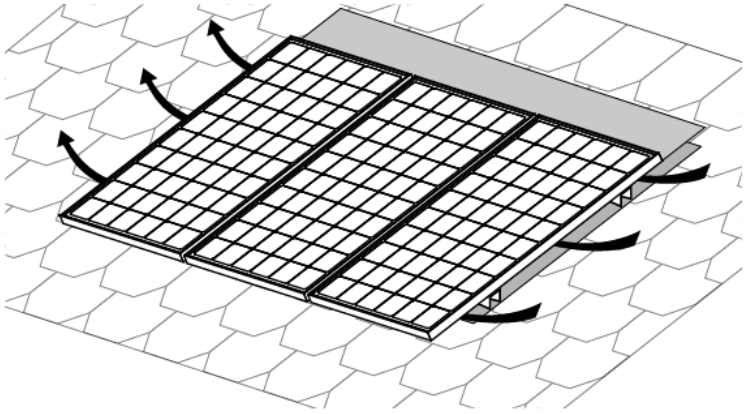
Roof Mounting:

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.

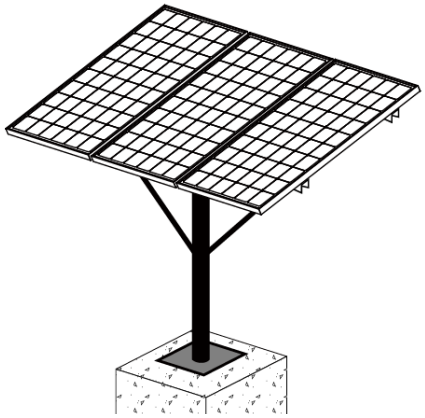
The roof installation of solar modules may affect the fireproofing of the house construction and it may be necessary to use an earth ground fault circuit breaker.



- 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.



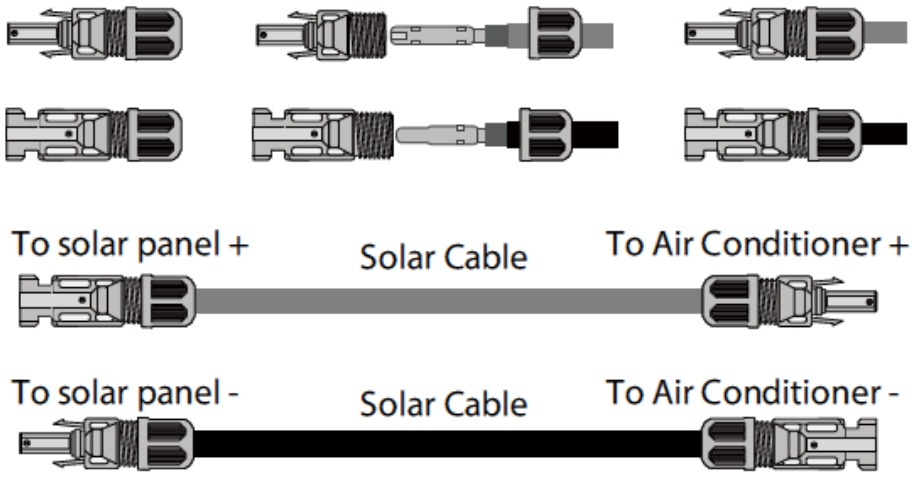
Solar Array Wiring

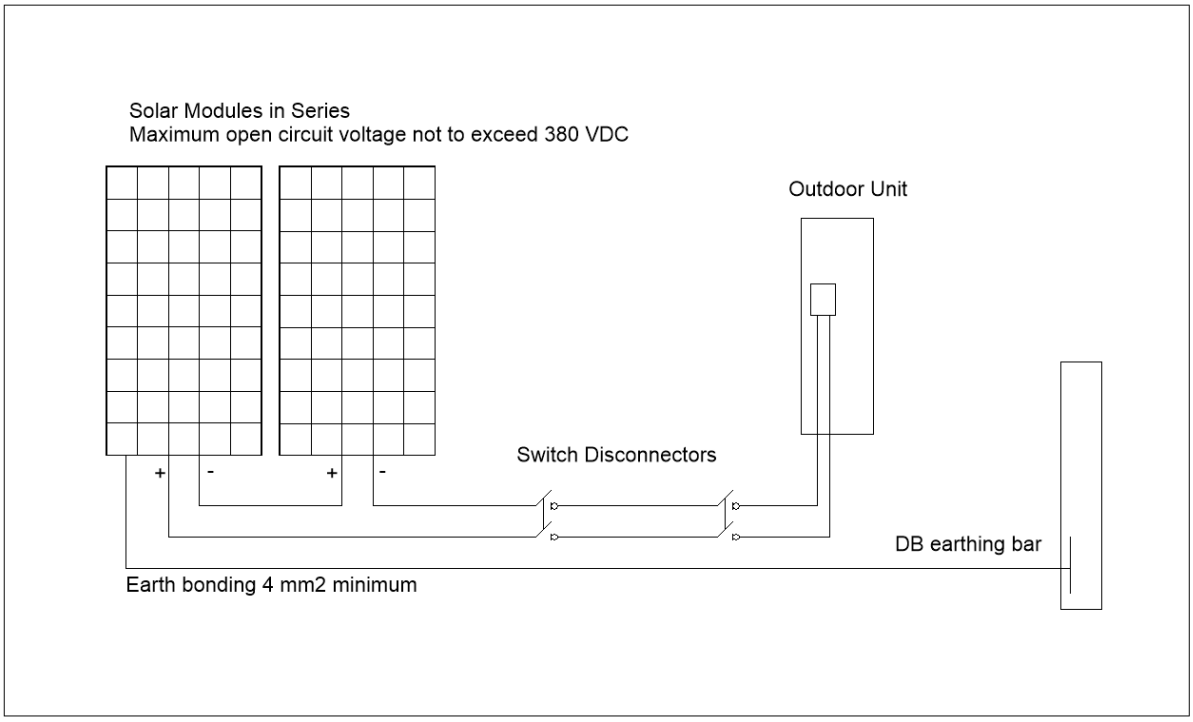
The array is formed of modules in series. The switch disconnectors must be approved for disconnecting solar DC under load.

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

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

The outdoor unit solar controller has DC earth leakage detection. When the PV positive and PV negative currents are not equal relays RY1 & 2 will open and disconnect DC power to the Unit.

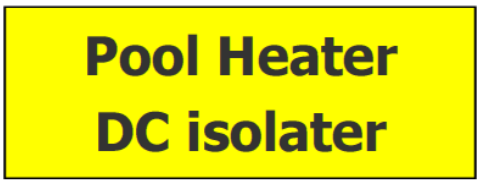
An error code will be displayed on the outdoor unit AC/DC booster LED. The LED will flash 7 times.

If a fault occurs the indoor unit will signal a fault with a beep tone.

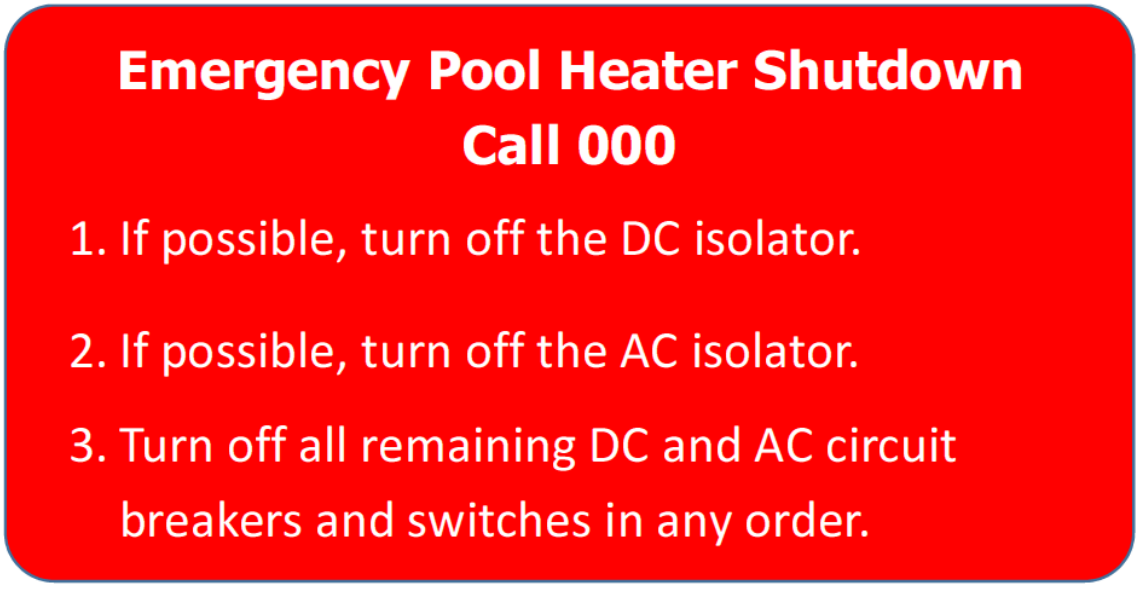
Signage

Additional Solar signage to be posted on the outdoor unit

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



To be posted adjacent to the pool heater.



Solar Disclaimer

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.

Initial Operation and Commissioning.

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.

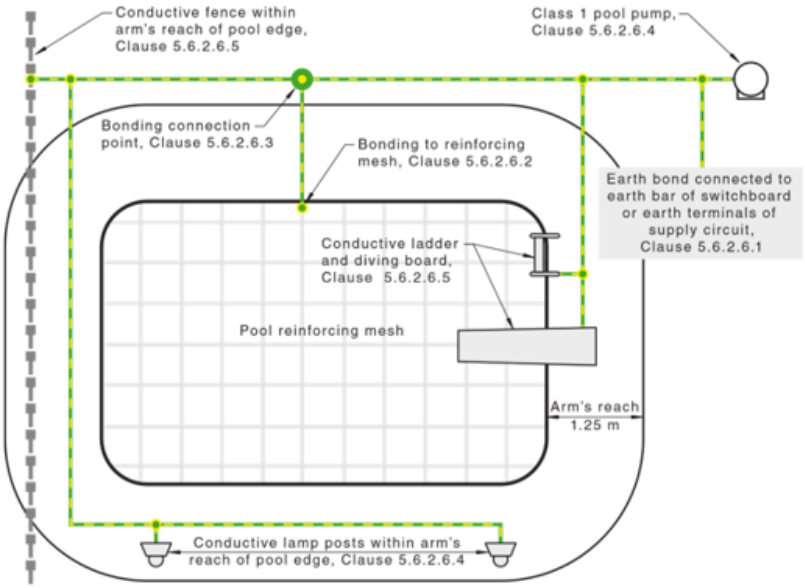
Before the test run:

Measure earthing and bonding resistance. The earthing resistance must be less than required to trip any protection devices, and bonding resistance less than 0.5 ohms. See AS/NZS 3000 equipotential bonding Clause 5.6.2.6

Perform an insulation resistance test.

During the test run:

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



Commissioning checklist

Number	Description	Compliant Yes/No
1	Verify earthing and equipotential bonding connections	
2	Perform insulation Testing	
3 	Using a suitable refrigerant detector for flammable refrigerants check for leaks.	
4	Verify piping connections and check for leaks	
5	Verify that the unit is not installed in a climbable area.	
6	Verify that the airflow to and from the unit is not obstructed	
7	Test run and verify performance	
8	Verify that labels and signs are present, visible, and legible	

Test Run

Before the test run:

Verify that:

- The unit's electrical system is safe and will operate properly
- The test should run for at least 30 minutes

Maintenance

Pool Heater Unit

Prior to any maintenance verify that the unit is not installed near an ignition source.

Using a refrigerant detector suitable for flammable refrigerants check for the presence of refrigerants. The refrigerant used in these units is heavier than air and may pool in a low area.

Check that the marking of the equipment is visible and legible.

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.

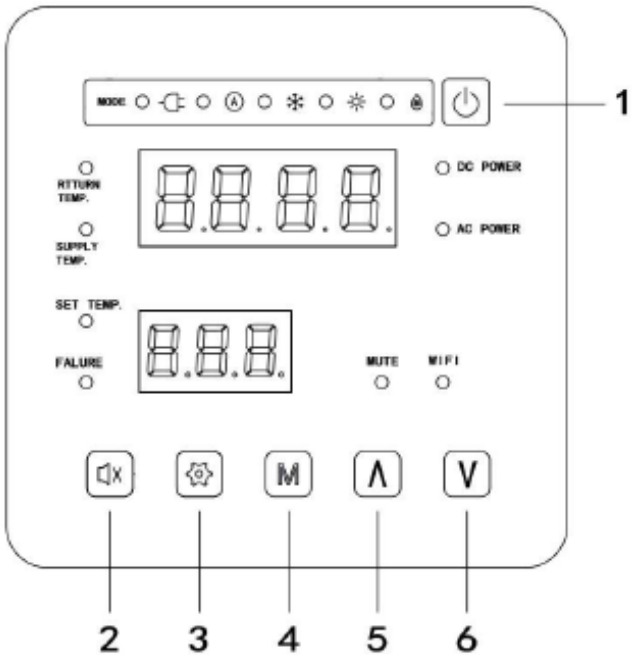
Check the condition of electrical conduits. Replace any damaged wiring or conduits.

Check the water balance and alkalinity. Failure to do so will void warranty.

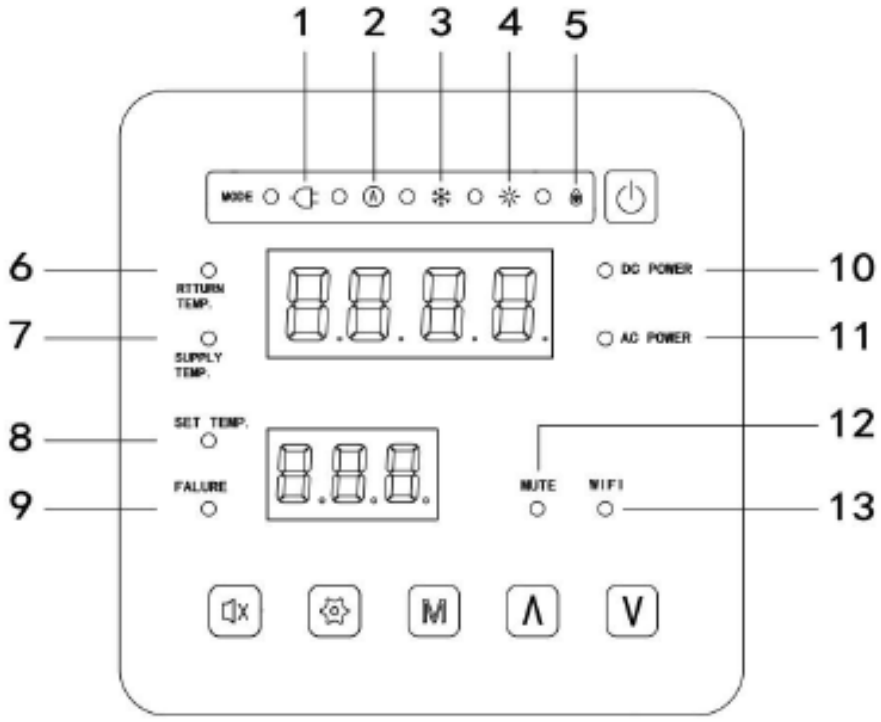
If subject to freezing, verify that measures are implemented so that the unit does not freeze with water in the heat exchanger.

Operation

The unit has a display mounted on its front.



No.	Designation	Function (short press is 0.5 seconds) (Long press is 5 seconds)
1	On/Off pushbutton	Short press to turn on or off.
		Long press to lock or unlock the screen.
		Short press to cancel the current operation and return to the previous operation
2	Mute pushbutton	Short press to enter or exit the one-button mute function.
		Long press to enter the timer mute setting.
3	Setting pushbutton	Short press to enter the user setting menu.
		Long press to enter or exit the one-click power limiting function.
		Short press to set parameters, function settings and save.
4	Mode pushbutton	Short press to switch mode
		Long press to set timing.
5	Up pushbutton	Short press to Increase value.
		Long press “Up” and “Dn” for three seconds to enter special functions settings.
6	Down Pushbutton	Short press to decrease value.
		Long press “Up” and “Dn” for three seconds to enter special functions settings.

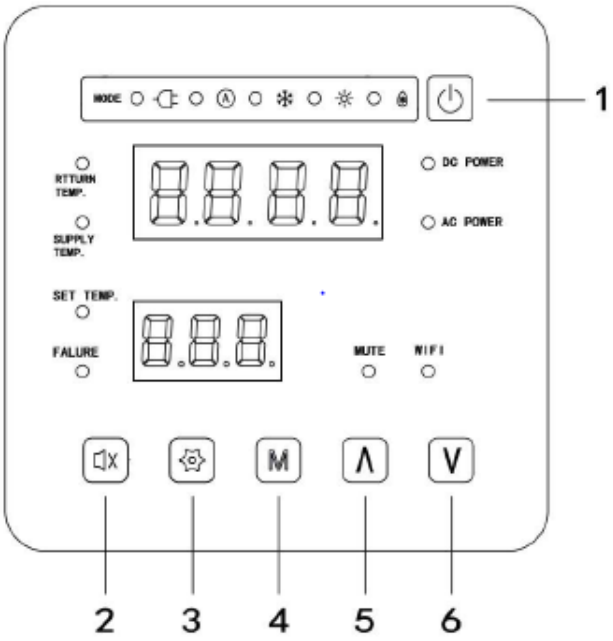


Indications

No.	Designation	Indication
1	Power limiting	When the AC 240 Volt power limiting function is enabled, the light is on.
2	Automatic mode	When the automatic mode is on the light is on.
3	Cooling mode	When the unit is in cooling mode the light is on.
4	Heating mode	When the unit is in heating mode the light is on.
5	Defrosting mode	When the unit is defrosting the light is on.
6	Water inlet	When the main display is showing inlet temperature the light is on.
7	Water outlet	When the main display is showing outlet temperature the light is on.
8	Setting	When the light is on it indicates the water temperature it is set to.
9	Fault	Lights if there is a fault present
10	DC power	Shows the DC power being consumed on the main display.
11	AC power	Shows the AC power being consumed on the main display.
12	Mute	Lighted in mute mode
13	Wifi	Blinks during WIFI configuration. Steady when WIFI engaged.

Start-up and Shutdown

Short press ON/OFF  to enter the on/off menu.



Notes:

- Start up and Shut down operation can only be conducted in the main interface.

Mode Switch

Short press Mode  to change the modes from heating, to cooling, to automatic mode.

Notes:

- Mode switch operation can only be conducted in the main interface.
- When the unit is in defrosting mode the system will return to the selected mode when defrosting has finished.
- During defrosting the mode can be selected. When defrosting finishes the selected mode will be enabled.

Temperature setting

The default value for all modes is 27 degrees C.

- Short press Up  or Dn  . The temperature icon will blink.
- Press Up  or Dn  to adjust the temperature.
- Short press Settings  to save the temperature setting and return to the previous menu.

Setting the timer

- Long press Mode, M and the timer setting interface will be displayed.
- Short press Up ∧ or Dn ∨ to select the parameters V03 to V08. (See chart below)
- After selecting a parameter short press Mode ⚙ to enter the hour, minute or enable setting. When the setting is blinking short press Up ∧ or Dn ∨ for the desired value.
- Short press the settings ⚙ button to save the setting.
- Short press On/Off ⏻ to return to the main menu.

Notes:

- The display on the unit can set one start and stop time per day.

Parameter number	Function	Parameter range
V03	Start time hour	0-23
V04	Start time minutes	00/10/20/30/40/50
V05	Start time enabled	0/1 enabled is 1
V06	Stop time hour	0-23
V07	Stop time minutes	00/10/20/30/40/50
V08	Stop time enabled	0/1 enabled is 1

Mute Setting

- Long press Mute 🔇 to enter the mute menu.
- Short press Up ∧ or Dn ∨ to select parameters F14 to F18.
- After selecting a parameter, short press settings ⚙ to select the parameter, then press Up ∧ or Dn ∨ to adjust the setting value.
- Press Settings ⚙ to save and press On/Off ⏻ to return to the main menu.

Parameter number	Function	Parameter range
F14	Mute start time hour	0-23
F15	Mute start time minutes	00/10/20/30/40/50
F16	Mute end time hour	0-23
F17	Mute end time minutes	00/10/20/30/40/50
F18	Mute enabled	0/1 enabled is 1

One Click Mute

- Press Mute  to enable or disable one click mute.

Clock Setting

- Press Settings  to enter the settings menu.
- Short press Up  or Dn  to select the “CL” menu, short press Settings 
- Short press Up  or Dn  to select parameters V01 to V02.
-

- Press Settings  to enter the hour and minute setting
- Press Settings  to save the settings and press On/Off  to return to the main menu

Parameter number	Function	Parameter range
V01	Clock hours	0-23
V02	Clock minute	0-59

Keyboard lock

- Long Press On/Off  for 5 seconds to lock or unlock the screen

Notes:

- When the screen is locked only the unlock function is available.
- The screen can be locked when the unit is OFF.
- When locked the screen displays time.
- If the screen is locked the auxiliary display shows failure codes, and the main display is off.

Defrost

- While in heating mode long press Up [Λ] and Dn [V] at the same time.
- Short press Up [Λ] or Dn [V] to select Forced Defrost “FD”.
- Press Settings [⚙] to force the unit to defrost.

Notes:

- Forced defrost can only be entered if conditions for mandatory defrosting are met.
- Defrosting will stop automatically.

Pump manual operation.

- While the unit is off press Up [Λ] and Dn [V] for 3 seconds at the same time to enter the function selection interface.
- Short press Up [Λ] or Dn [V] to select the Pump Forced “PF” mode.
- Press Up [Λ] or Dn [V] or Settings [⚙] to start or stop the pump.

Power limiting operation

- To set power limiting on, long press Settings [⚙] for 5 seconds to enable or disable the power limiting function. Power limiting will remain on until disabled.
- To temporarily engage the power limiting function long press Up [Λ] and Dn [V]
- Press Up [Λ] or Dn [V] to select the “LE” function.
- Press Settings [⚙] to enable the power limiting function. When the unit is turned off the power limiting setting will be disabled.

WIFI configuration

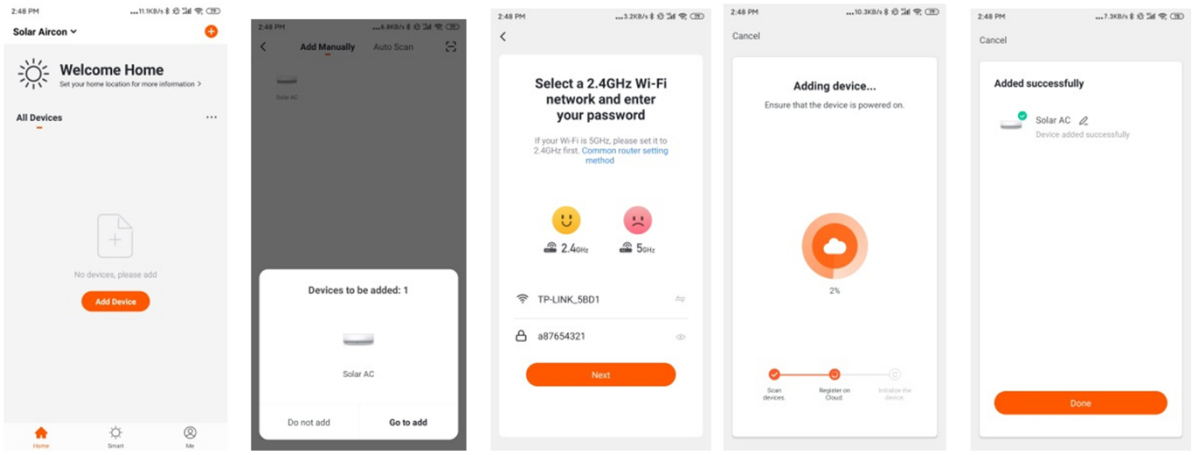
- Short press Up [Λ] or Dn [V] to enter the user setting menu.
- Press Up [Λ] or Dn [V] to select parameter group “UU”.
- Press Settings [⚙] to enter the WIFI network function. The WIFI indicator WIFI will blink.
- Long press Mode [M] until the unit returns to the main menu.
- If the WIFI connection is successful, the WIFI indicator WIFI will be on steady.

Android or I phone app

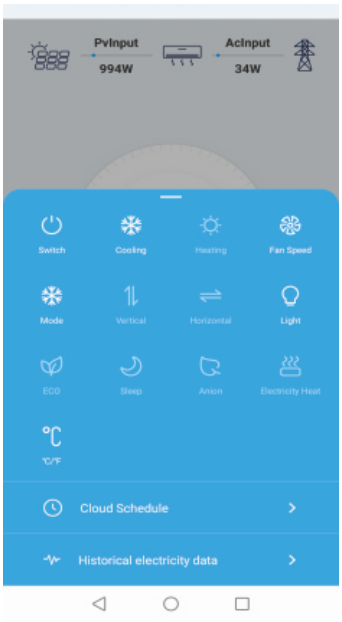
1. The indoor unit has a QR code that can be scanned to download the app.

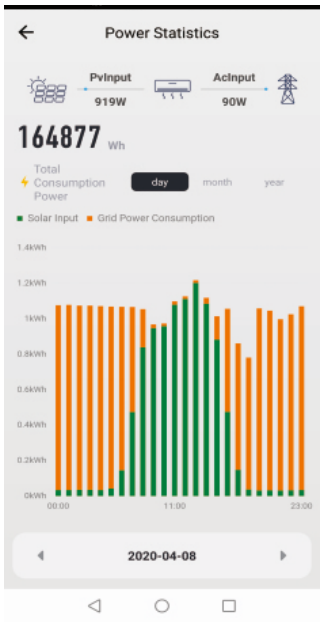
Download the app and register your phone number.

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



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





Troubleshooting and Repair

For Repair parts and service information contact

Rob Miravet

acdc@solaracdc.com.au

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

Error Code list

Protection / Fault	Code	Reason	Correction
Touch pad failure	01	MCU error	Replace Touch pad
Touch pad communication failure	03	Communication failure between Touch pad and main unit	Check the connection
Unit failure	05	MCU error	Replace MCU chip or board
Flow Switch protection	11	Water flow / pressure too low or high	Verify pump operation. Check for clogged filter. Check for air/vacuum leaks. Replace/adjust flow switch.
Inlet and outlet water temperature difference out of range - too high in heating mode	12	Insufficient water flow/ pressure	Verify pump operation. Check for clogged filter. Check for air/vacuum leaks. Replace/adjust flow switch.
Outlet water temperature out of range – too low in cooling mode	13	Insufficient water flow/ pressure	Verify pump operation. Check for clogged filter. Check for air/vacuum leaks.
Outlet water temperature out of range – too high in cooling mode	14		
Flow switch not operating	15	Flow switch is not opening when pump is stopped	Replace / adjust flow switch.
Heat exchanger coil temp out of range high.	20	Heat exchanger coil temp high	Verify pump operation. Check for clogged filter. Check for air/vacuum leaks.
Compressor Coil temp out of range high.	21	Compressor coil temp high	Check that the compressor runs normally. Check that the coil airflow is not obstructed. Check fan blade and fan for proper operation.
Exhaust air overtemperature protection	22	Compressor overloaded	Check that the compressor runs normally. Check that the coil airflow is not obstructed. Check fan for proper operation.
Anti-freezing protection	23	Water flow not sufficient or outside air temp out of range – too low.	Verify pump operation. Check for clogged filter.

			Check for air/vacuum leaks. Take measures to prevent freezing
High pressure protection	24	The high-pressure switch is inoperative	Check the pressure switch and cold circuit.
Low pressure protection	25	Low pressure 1 protection	Check the pressure switch and cold circuit.
Temp sensor fault heat exchanger	31	Temp sensor inoperative	Replace temp sensor
Temp sensor fault compressor	32	Temp sensor inoperative	Replace temp sensor
Temp sensor fault heat exchanger coil.	33	Temp sensor inoperative	Replace temp sensor
Temp sensor fault ambient air.	35	Temp sensor inoperative	Replace temp sensor
Temp sensor fault compressor coil	36	Temp sensor inoperative	Replace temp sensor
Temp sensor fault water discharge	37	Temp sensor inoperative	Replace temp sensor
DC fan fault	58	Motor current feedback open circuit or short circuit	Replace motor
Overcurrent protection	73	Compressor overloaded	Check compressor operation/
Compressor stall failure	93		
IPM overcurrent	95		
Oil return failure protection	98		
Compressor low speed protection	99	In Solar only mode the solar power is insufficient.	Check Solar modules and wiring. Repair if required. Enable AC mode.

Decommissioning

Decommissioning must be carried out by suitably qualified personnel.

Warning electric shock. The unit can be connected to both solar DC and Mains AC. Work should only be carried out by a suitable qualified person

Disconnect and render safe all electrical connections.

Disconnect water connections and ensure that the pump or pumps are not disabled if the pool is to be used.

Ensure that manual handling procedures are followed and remove the unit.

Transport the unit to a suitable recycling facility that can accept refrigerated appliances.

Wiring diagram internal