



SOLAR AC DC
JUST COMMON SENSE

Installation Manual

48 Volt DC Split System Air Conditioner



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Table of Revisions

Table of Revisions		
Revision Date	Reason for revision	Revision By
01 Aug 2021	Initial writing	George Abernathy

Model Applicability

This manual applies to the following models

Table of Models			
Size	3.5 Kilowatt		
Model	DGWA1-DC48V-12K		
Indoor unit	DGA1-DC48V-12K		
Outdoor unit	DWA21-DC48V-1K		

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 is powered by 48 Volts DC

Installation is the same as a standard split system air conditioner with the addition of a DC input.

The system is controlled by an optical remote control.

Accessories

Components Supplied		
Number	Quantity	Name
1	1	Indoor unit
2	1	Indoor unit Mounting plate
3	1	Remote Controller
4	2	AAA battery
5	1	Connecting cord 3 meters
6	1	Outdoor unit
7	1	Connecting pipe 3 meters
8	1	Connecting wire 3 meters
9	1	Wrapping tape weather protection
10	1	Drainpipe 1.5 meters 15 mm diameter
11	1	Wall sleeve
12	1	Sealant putty
13	1	User Manual
14	1	Installation manual
15	1	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 1571
AS/ NZS 3000
As/ NZS 3500
AS/NZS 4777
AS/NZS 5033
AS/NZS 5139
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 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

Safety Precautions



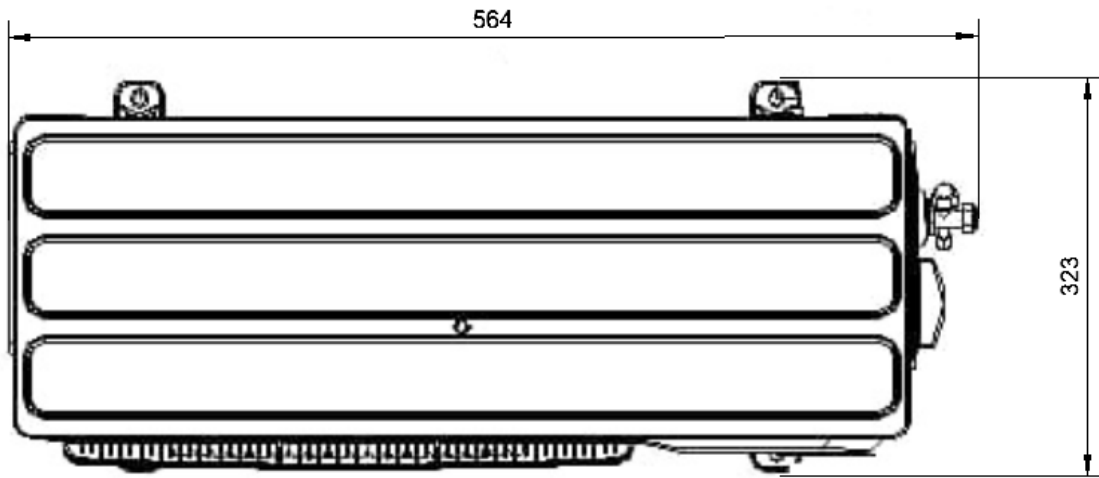
Warning

- 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 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 recommended.

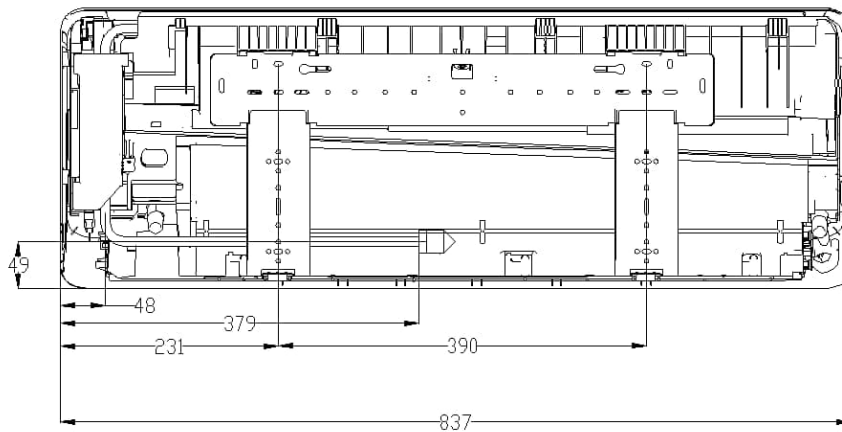
Dimensions

Outdoor unit 3.5 KW top view dimensions.



3.5 KW outdoor unit

Indoor unit 3.5 KW rear dimensions



Indoor unit mounting

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
- Firm 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.

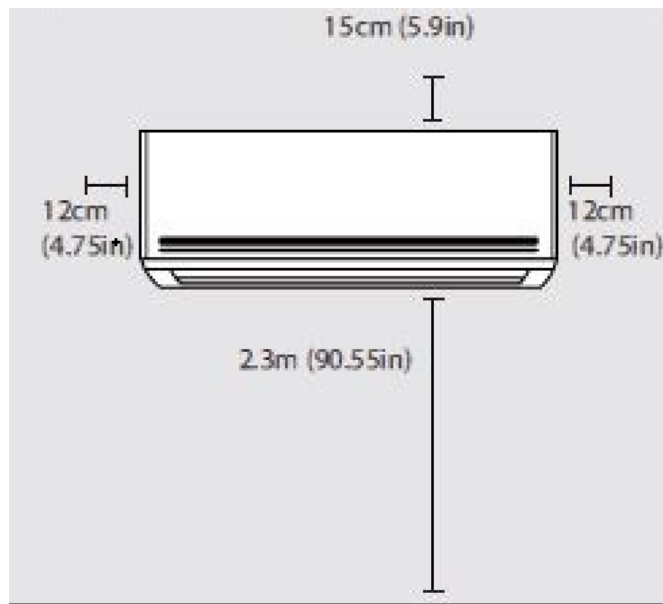
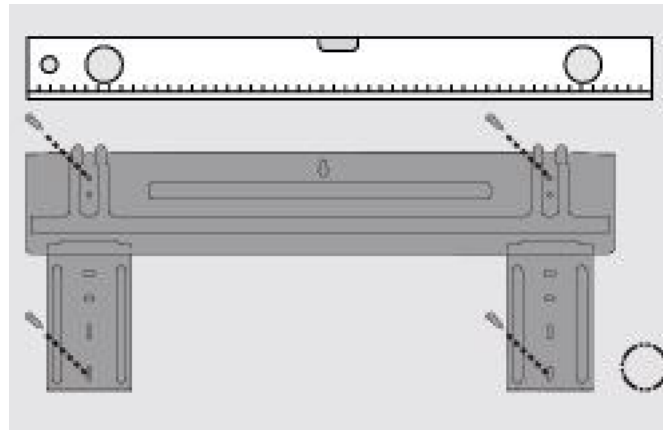
Select a location that is not next to a heat source and that will allow sufficient airflow throughout the room.

The indoor unit requires the following clearances

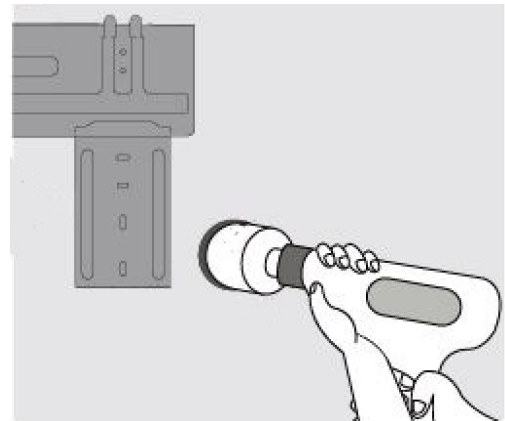
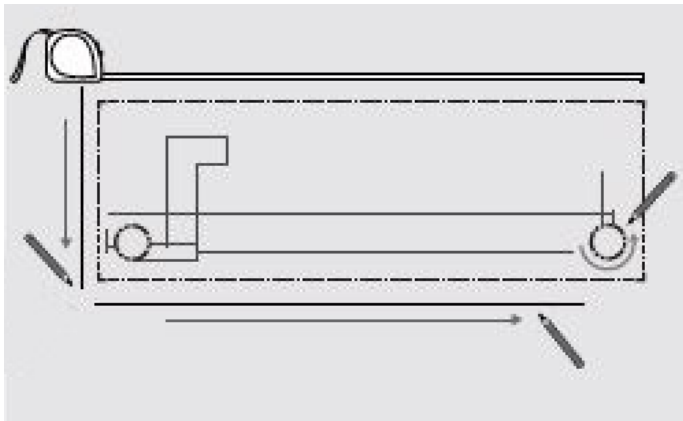
Indoor unit clearances	
Above	150 mm
Left Side	120 mm
Right side	120 mm
Below	230 mm

Mount the indoor unit mounting plate on a secure surface that is sufficiently dense to prevent unwanted noise and vibration.

Level the mounting plate and secure with appropriate anchors.



Measure and drill the pipe penetration hole



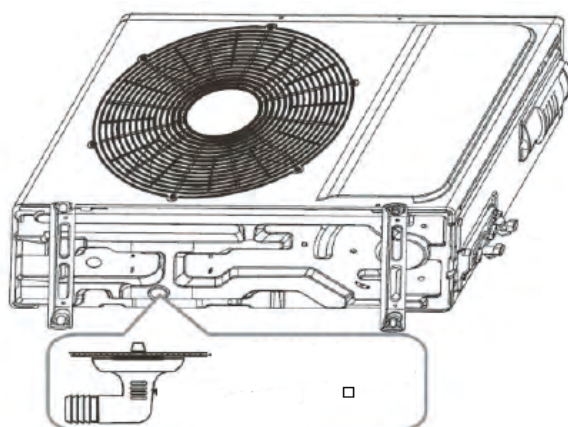
The indoor hole must be higher than the outdoor hole so that condensate water will drain.



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.



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

Wrong way	Correct way

Outdoor unit required clearances

Outdoor unit Clearances	
Above	500 mm
Left	300 mm
Right	60 mm
Below	200
Behind	300

Refrigerant pipe Specifications

The system has a maximum ambient operating temperature of 58 degrees Celsius. The maximum pressure is 3541 Kpa / 514 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			
Size		3.5 Kilowatt	
Unit		DGWA1-DC48-12K	
Indoor unit		DGA1-DC48V-12K	
Outdoor unit		DWA21-DC48-12K	
Refrigerant type		R410a	
Charge Volume	g	1020	
Max Design pressure Discharge side	Kpa	4300	
Max design pressure Suction side	Kpa	1500	

Maximum Length of piping

Maximum pipe Length, Pipe sizes, Maximum head			
Unit		DGWA2-ACDCBLW-12K	
Indoor unit		DGA1-DC48V-12K	
Outdoor unit		DWA21-DC48-12K	
Max pipe length	M	15	
Pipe sizes	inch	$\frac{1}{4}$ & $\frac{3}{8}$	
Maximum Head (vertical)	M	8	

Addition of refrigerant per pipe length

Pipe length more than 5 meters requires the addition of refrigerant.

Refrigerant to be added if pipe length is greater than 5 meters			
Unit		DGWA1-DC48-12K	
Indoor unit		DGA1-DC48V-12K	
Outdoor unit		DWA21-DC48-12K	
Max pipe length	g	15	

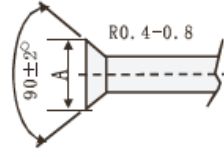
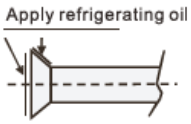
Connecting the Refrigerant piping



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				
Pipe size	Torque	Flared width (A)	Flaring shape	Apply refrigerant oil or sealant
6mm / ¼ inch	15-19 Nm	8.3 / 8.7 mm		
9 mm / 3/8 inch	35-40 Nm	12.0 / 12.4 mm		
12 mm / ½ inch	50-60 Nm	15.4 / 15.8 mm		
15 mm / 5/8 inch	62-76 Nm	18.6 / 19.0 mm		
19 mm / ¾ inch	90-120 Nm	22.9 / 23.3 mm		

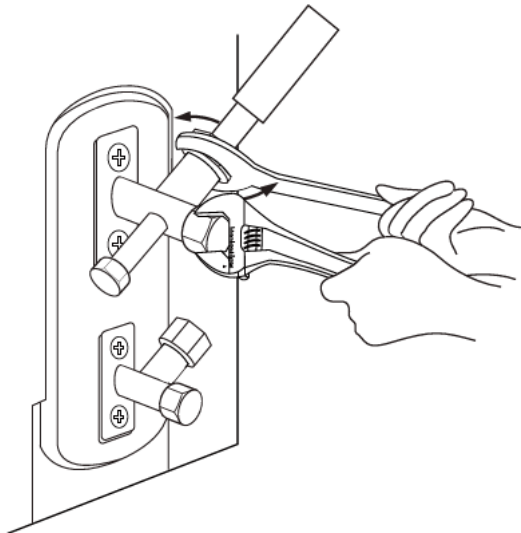
Remove the protective caps from the valves.

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:



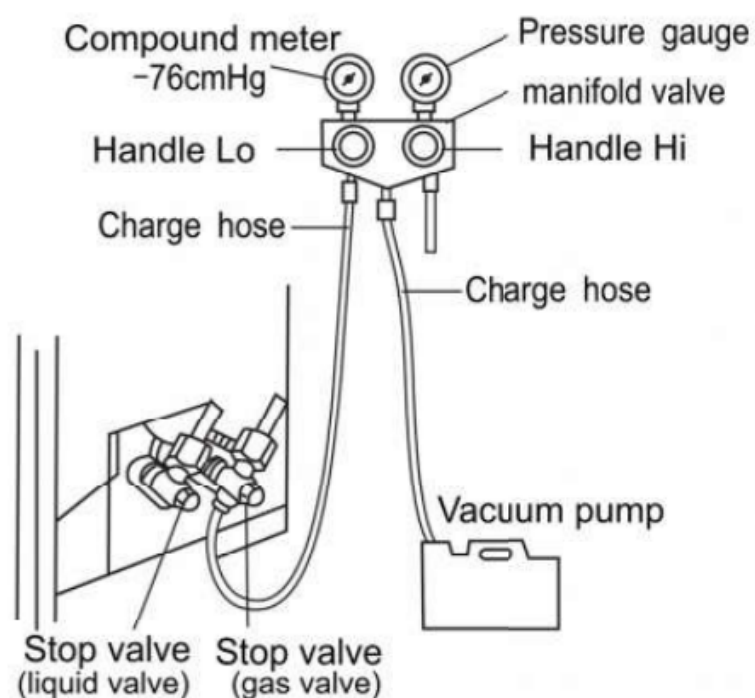
Air and foreign matter in the refrigerant circuit can cause abnormal rises in pressure and could cause damage to the air conditioner. Care must be taken to ensure that the refrigerant lines are free of foreign matter.

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 off in 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.

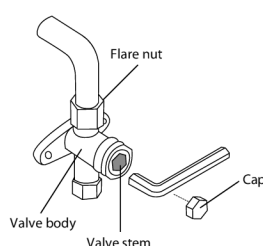
Releasing the refrigerant into the system

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.

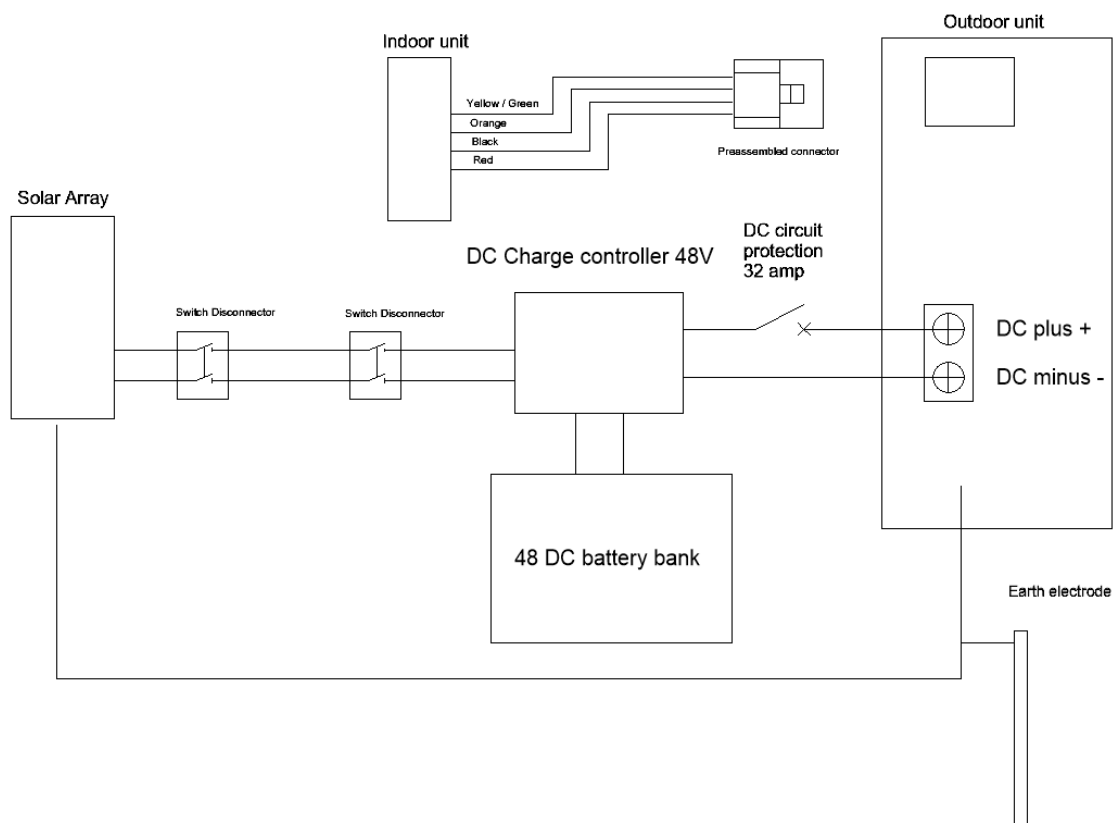
Open the low pressure and high-pressure valves by winding them out anti clockwise until seated.

The low-pressure gauge should read approximately 150 PSI.



Electrical Connections

Maximum input power AC Circuit Breaker size DC input parameters				
Unit		DGWA1-DC48-12K		
Indoor unit		DGA1-DC48-12K		
Outdoor unit		DWA21-DC-12K		
Power DC	VDC	48		
Max input power	Amps	32		
Max input power	Watts	1500		
DC MAX VOLTAGE	VDC	58		
Minimum DC voltage	VDC	46		
Heating Cooling amps nominal	Amps	22		
Power input nominal	Watts	1020		



Minimum DC voltage Error

The Minimum DC Voltage is 46 Volts DC. When the voltage drops to 47 Volts DC the Compressor will slow down. When the voltage drops to 46 Volts DC the Compressor will stop and Error Code 76 will be displayed.



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.

Connect the cable from the indoor unit to the outdoor unit using the four-conductor cable. A plug is prefabricated on the Outdoor end.

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 must be installed by a licenced, competent person.

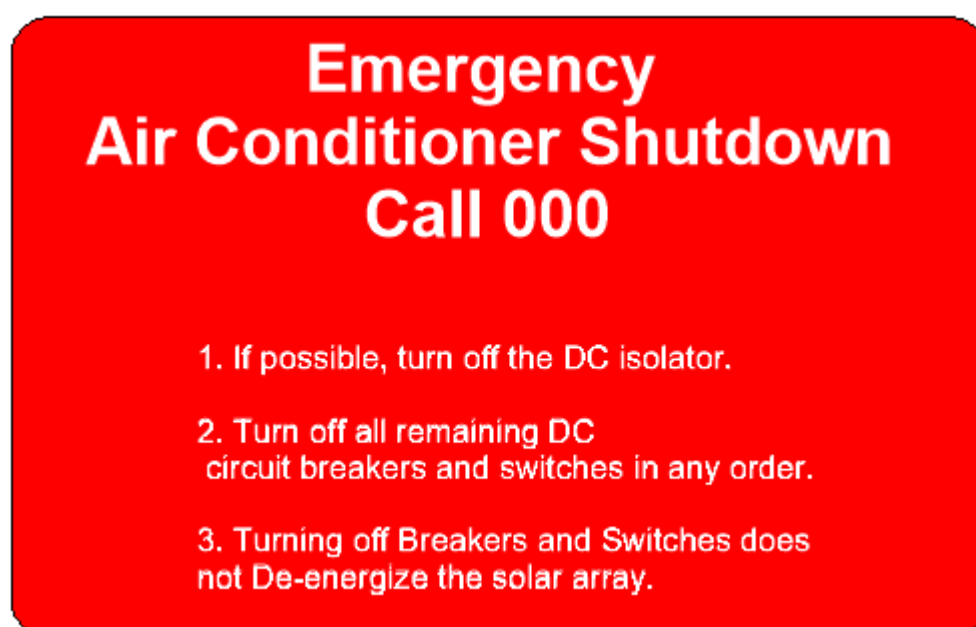
Earth Fault Protection Solar DC

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.

Signage

Additional Solar signage to be posted on the outdoor unit



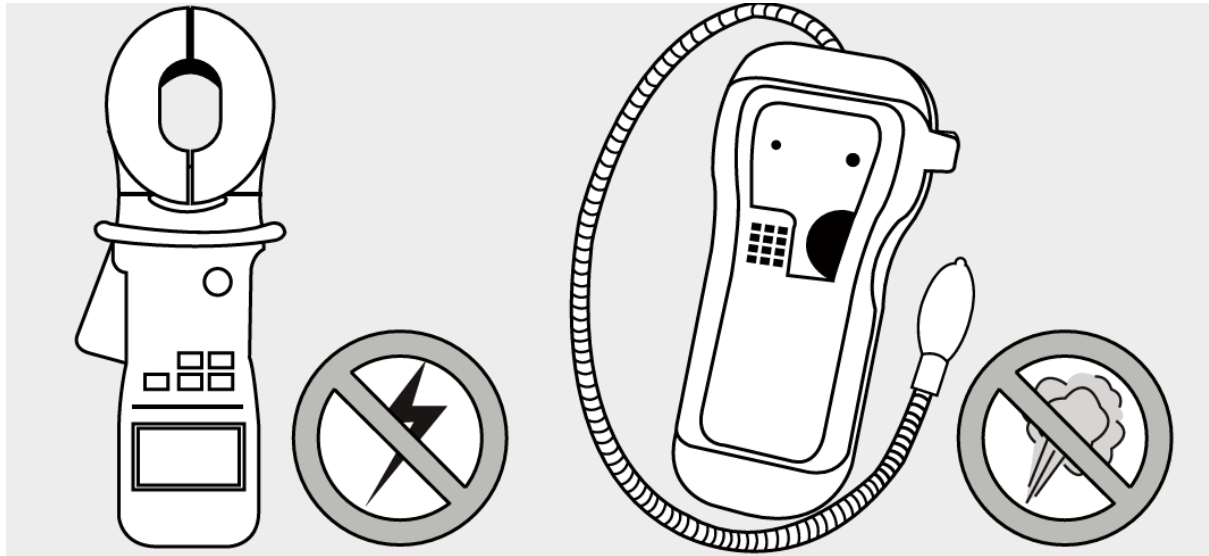
Solar Disclaimer

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.

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.

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

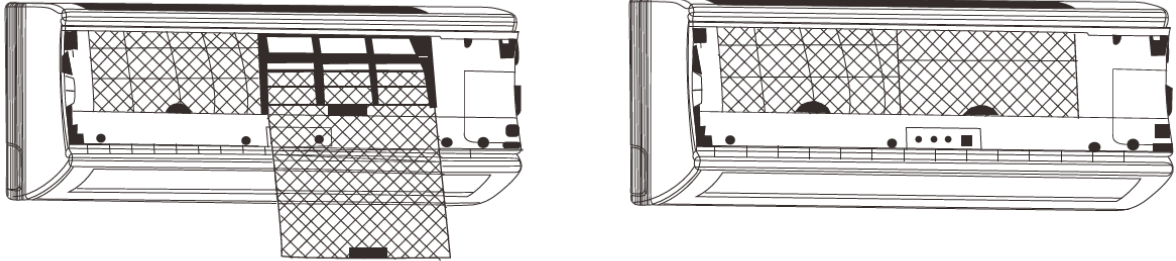
List of Checks to Perform	PASS (✓)	FAIL (✗)	TEST RESULT
Solar array Voc test			
Solar array grounding fault test			
Solar array operating current test			
No electrical leakage			
Unit is properly grounded			
All electrical terminals properly covered			
Indoor and outdoor units are solidly installed			
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 performs HEAT function properly			
Indoor unit louvers rotate properly			
Indoor unit responds to remote controller			

Maintenance

Indoor unit:

Turn off the air conditioner.

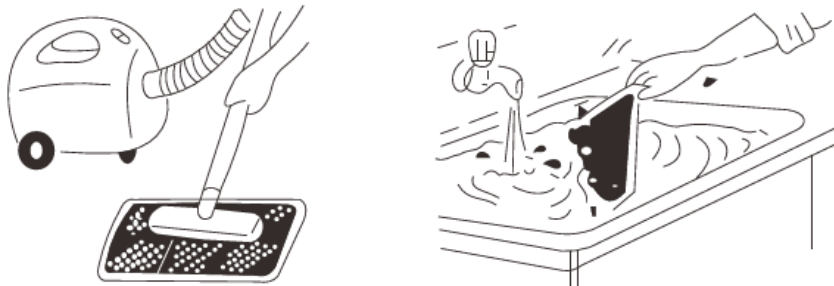
Open the indoor unit cover and remove the air filters.



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.

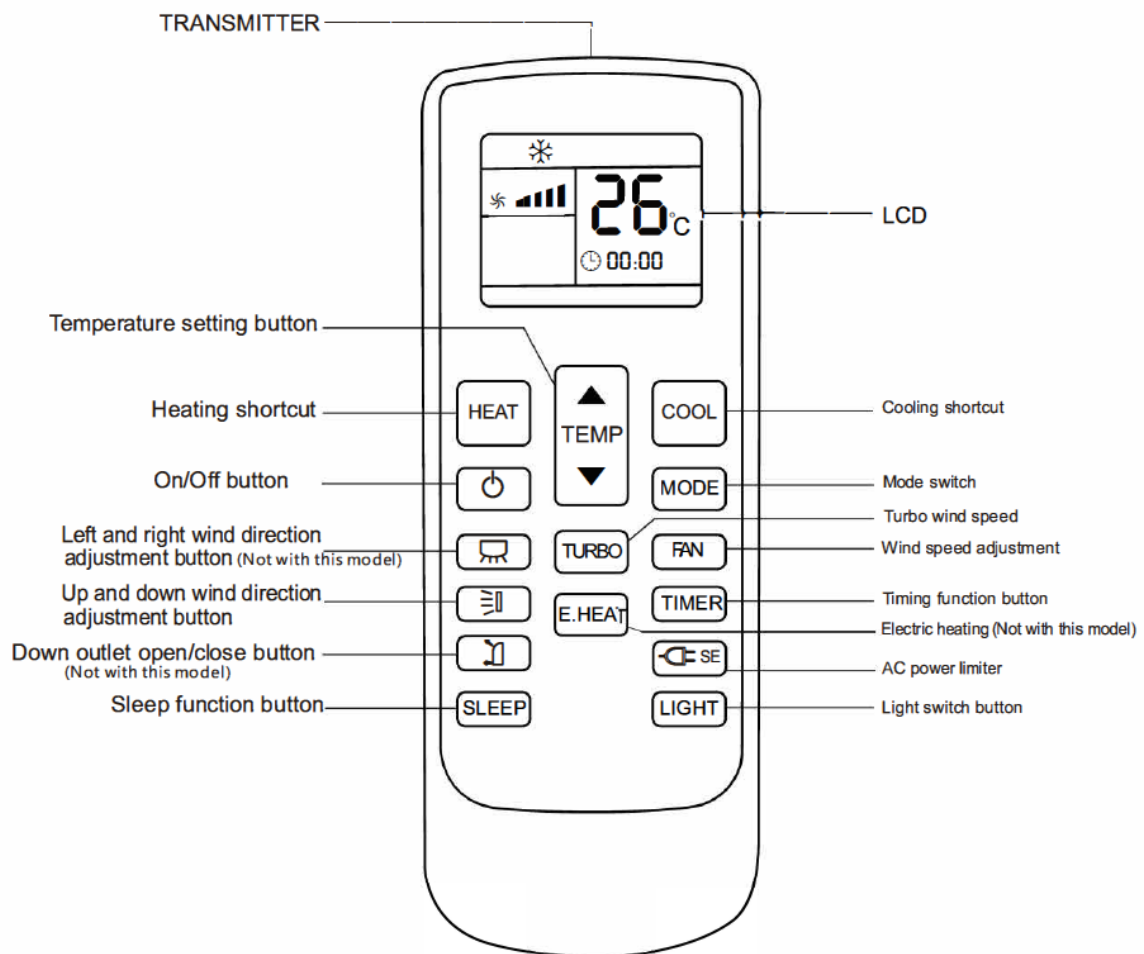
Check the condition of electrical conduits. Replace any damaged wiring or conduits.

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.



Basic operation of remote control

● "⏻" button	Press the "⏻" button to switch the air conditioner
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● Mode selection	Press the "Mode" button and select the "Auto/Cooling/Dehumidifying/Air Supply/Heating" mode.
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● Cooling	<p>This button is used to set the air conditioner to enter the cooling mode, and the set temperature is 26°C run.</p> <ol style="list-style-type: none">1. When the air conditioner is on or off, just press the button, the air conditioner will enter cooling mode 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.
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● Heating	<p>This button is used to set the air conditioner into heating mode, and set the temperature to 24°C run.</p> <ol style="list-style-type: none">1. When it is turned on or off, as long as you press this button, the air conditioner will enter the heating mode and 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.
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● Temperature adjustment	<p>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.</p>
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● Wind speed adjustment	<p>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.</p>
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● One-click powersaving	<p>When connected to the mains, press the "⏻SE" button, the one-key power saving logo of the internal unit will turn green, and enter Power saving mode.</p>
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Troubleshooting and Repair

For Repair parts and service information contact

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

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.
Unit is displaying 76 error code	DC voltage is below 46 volts. Compressor is shut 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: <ul style="list-style-type: none"> • Disconnect the power, then reconnect. • Press ON/OFF button on remote control to restart operation.

Items to check before contacting a repair agency.

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.
The unit is not working	Solar power is not enough. grid power is off, air conditioner runs only on solar panels.	Turn on the grid power.
	Both solar and grid power is off	Turn on grid and solar power
	Remote control batteries are dead	Replace batteries
Poor heating performance	Timer is activated	Turn timer off
	The outdoor temperature is lower than 7°C (44.5°F)	Use auxiliary heating device
Error code appears in the window display of indoor unit: • E0, E1, E2... • P1, P2, P3... • F1, F2, F3...	Cold air is entering through doors and windows	Make sure that all doors and windows are closed during use
	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 off the unit and contact an authorized service centre	

Error Code list

Description	CODE	Remark
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 condenser 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 over current	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	

LO: Compressor oil return fail (DC solar power off)。

LP: Low power protection (DC solar power off)。