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SOLAR USER GUIDE

Power of nature, the bright alternative.

www.ekosolar.com.au



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WELCOME TO EKO SOLAR

At Eko Solar we're committed to offering affordable solar solutions to all Australians, wherever you live.

We would like to take this opportunity to congratulate you on the purchase of your new grid connected solar system from Eko Solar. Great care and pride has gone into the installation of your system which has been designed especially for Australian conditions and to meet the regulatory requirements of the current Australian electrical and building codes.

This user guide will help you get started and ensure that you receive trouble free operation over the system lifetime. Please be aware of all safety requirements outlined in this manual as electricity is dangerous if not handled with care.

Thanks for choosing Eko Solar and congratulations on going solar.



WE ARE HERE TO HELP

Make sure to keep this user guide for the life of your solar system. In addition, please keep your original invoice as proof of purchase in case you need to make a warranty claim, and make sure you pass this on to the new homeowners if the house is sold.

For Technical Assistance:

t: 1300 022 507

a: PO Box 334 Seymour Vic 3661

e: info@ekosolar.com.au

Company	Website	Customer Service / Warranties
CSUN	www.csun-solar.com	1300 132 162
Q Cells	www.q-cells.com.au	(02) 9016 3033
Fronius Australia	www.fronius.com.au	(03) 8340 2900
Sungrow Australia	www.sungrowpower.com.au	1800 786 476
Zeversolar Australia	www.zeversolar.com	1300 101 883



SYSTEM MAINTENANCE

To ensure that your system is performing at its peak, we have compiled a list of system maintenance procedures you should undertake on a regular basis. If you have any problems with your system, please contact Eko Solar on 1300 022 507.

INVERTER

Check inverter performance during the day as described in your inverter manual.

METER

Check your meter during the day when there are no (or minimal) electrical appliances operating in your house. The meter should show energy being exported. If you are having trouble understanding how to read your meter, contact your electricity retailer for advice.

CHECK YOUR ELECTRICITY BILL

The easiest way to do this is to compare your current bill with the bill for the same period last year. Look at the number of kilowatts your household has consumed, which should be less than the last bill prior to the installation of the solar system, provided your usage has not changed. During winter, sun hours are reduced, therefore, the solar system will not produce as much electricity.

CHECK CABLES AND PLUGS

If you come across a damaged cable or any other wiring defect, please report it immediately to Eko Solar on 1300 022 507.

CHECK FOR SHADING

Trees can grow quickly and they may have grown since your solar system was installed. Check for shading at 10am, 12pm and 3pm. If you detect shading, the trees may need to be trimmed. Be sure to check with your local council to ensure you comply with local laws before trimming or removing trees.

CHECK FOR TREE LITTER BEHIND PANELS AND FRAMING

If you are in a fire risk area, or have trees surrounding your house, ensure no tree litter is lodged behind the panels and frames. This maintenance is particularly important to include as part of your fire readiness plan. Flying embers in a bush fire could ignite tree litter lodged behind panels.

CHECK FOR BUILD-UP OF DUST OR BIRD DROPPINGS

A buildup of dust and/or bird droppings on your solar panels will reduce the system's performance. Refer to the section in this manual on cleaning the panels and safety warnings.

PROFESSIONAL SYSTEM PERFORMANCE AND MAINTENANCE CHECK

Eko Solar recommends a regular professional system performance and maintenance check.



WARNING

DO NOT TAKE THE COVER OFF THE INVERTER



WARNING

DO NOT TOUCH CABLES IF DAMAGED

Risk of electrocution



WARNING

Risk of falling from the roof. Eko Solar recommends against climbing on to the roof. This should only be done by suitably qualified and equipped persons and they must follow safety procedures and guidelines.



HOW YOUR SYSTEM WORKS

From the sun to your appliances. Here's how it's done.

PHOTOVOLTAIC (PV) MODULES

Photovoltaic (PV) modules (also known as solar panels) convert energy in the form of sunlight into direct current (DC) electrical power.

INVERTER

The inverter changes the solar DC power into 240V alternating current (AC) ready to be fed back into the grid or used in your home.

SWITCH BOARD

AC power from the inverter goes through the switch board for use in your home.

ELECTRICITY METER

The electricity meter records the energy sent to the grid from your solar system as well as the energy consumed from the grid.

ELECTRICITY MAINS GRID

In a typical 'net' metering arrangement, any surplus electricity being generated simply flows through the meter into the electricity mains grid for use elsewhere. Under a gross metering arrangement, all electricity flows into the mains grid.



SYSTEM PERFORMANCE

Electrical energy is metered in kilowatt hours (kWh). Some electrical retailers refer to 1 kWh as 1 unit.

The following figures indicate the average kilowatt hours (kWh) of energy you can produce in one day from a 1 kilowatt (kW) solar power system in various parts of Australia under perfect laboratory conditions.

However, your system's performance will largely depend on the geographical location, climate and atmospheric conditions at the installation site. Additionally, the direction your panels face, the temperature they reach, the angle of tilt they are on, and the amount of dust and shading they encounter all affect the ability of the system to perform at its peak level.

Reference: Clean Energy Council, "Consumer guide to buying household solar panels (photovoltaic panels)", Volume 20: 22 November 2012.

YOUR NEW ELECTRICITY METER

Most homes will need to have their electricity meter changed to enable the recording of incoming and outgoing solar electricity. The costs associated with meter change are **NOT** covered by your solar system purchase price. While the process varies in each state, generally your installer will initiate your meter changeover with your electricity retailer or distributor (as appropriate). If your meter has not been changed within 3 months of your installation contact your electrical retailer. Your new meter must be installed within 12 months from the date of installation to ensure you don't incur further costs. Some states offer solar system owners credit for electricity they feed back into the grid called a feed-in tariff. Please be aware that some states give consumers a choice of feed-in tariffs so you should ask your retailer whether they offer different feed-in tariffs and which one is appropriate for you.

City	kWh
Adelaide	4.2
Alice Springs	5.0
Brisbane	4.2
Cairns	4.2
Canberra	4.3
Darwin	4.4
Hobart	3.5
Melbourne	3.6
Perth	4.4
Sydney	3.9



TROUBLE SHOOTING

INVERTER

The inverter is considered to be the “heart” of the solar system as it controls every aspect of the power generation within the system and provides system status indication and performance data. Your inverter manual contains information on identifying problems.

IF THE INVERTER DOESN'T RESPOND

1. Check there has not been a power cut. If there is the inverter will reconnect when power is restored.
2. Check solar array switch is in the ON position.
3. Check that the inverter isolator is in the ON position.
4. Turn the system OFF and ON again.

Contact Eko Solar on 1300 022 507 for assistance

MAINTENANCE TIMETABLE:

ONCE A WEEK:

Check inverter is operating. Check inverter is recording exported energy.

EVERY 3 MONTHS:

Check electricity bill to ensure you are being credited for the power you are producing.

Check for panel shading, as shading reduces performance.

Check for tree litter behind panels & framing.

Check for build-up of dust or bird droppings and if noticeable arrange for panels to be cleaned.

EVERY YEAR:

Professional system performance and maintenance check.

SAFETY

Your safety is very important to us. The following instructions **MUST** be followed to ensure your safety. Please read and understand all the safety instructions, warnings and cautions before using your system.



- **DO NOT** service your solar system unless you are a CEC accredited electrician and your work is carried out in accordance with the Australian electrical safety rules and standards.
- **DO NOT** make any modifications to your solar system as you may endanger yourself and others and void workmanship and component warranties (Warranties).
- **DO NOT** pour cold water on your solar panels when they are hot as the glass protective cover could shatter exposing you to electrical danger and voiding the Warranties.
- **DO NOT** walk on solar panels as you will damage the glass and void the Warranties.
- **DO NOT** throw or drop heavy or sharp objects on the solar panels. They are made of toughened glass, but you might damage them and void the Warranties.
- **DO NOT** damage the back of the solar panel as this could affect the connections between the cells or the cells themselves, voiding the Warranties.
- Eko Solar strongly recommends against climbing onto the roof - this should only be done by trained professions with appropriate safety equipment.
- Observe all safety signs installed with your system. These signs must remain in place and visible to ensure both your safety and that of others.
- DC voltages can kill or cause serious injury. Even when the system is completely isolated and all the circuit breakers are switched off there could still be DC voltages present across the solar modules.
- **DO NOT** open any of the components of your solar system unless you are a licensed electrician.
- **DO NOT** remove the earthing cable attached to the solar panel/framing. This has been installed to provide safety in the event of fault. Removal could result in serious injury or death.



WARNING

DO NOT OPEN THE INVERTER!

Never open the inverter housing, even when switched off. The inverter should only be opened by a suitably trained licensed electrician.



WARNING

DO NOT TOUCH ELECTRIC COMPONENTS

Such as wires, connection terminals, generator junction boxes or plug connectors - there is a risk of electric shock or even death.

REPAIRS OR MODIFICATIONS

Any work on electrical components, such as repairs or modifications, must be carried out by a CEC accredited electrician.

ELECTRICAL OR BUILDING WORKS

The solar system must be shut down before commencing any electrical work or building works which may come into contact with its electrical cables. All signage and warnings must be observed.

SHUT-DOWN PROCEDURE FOR EMERGENCIES & MAINTENANCE

The following procedure must be followed to shut down the system completely:

1. Take note of any fault message on the inverter
2. Turn OFF AC - Solar supply main switch/isolator at the switch board
3. Turn OFF AC - AC output isolator at the inverter (if fitted)
4. Turn OFF DC - PV array main switch (DC input isolator) at the inverter

EARTH FAULT ALARM PROCEDURE

In case of an earth fault alarm, follow the same shut down procedure as described above for emergencies and maintenance.

DO NOT disconnect solar panel plugs under load. These are the plugs at the back of the solar panels and they cannot be disconnected when the sun is shining and there is electricity flowing through the system as it will create a DC arc which could cause damage to the plug and serious or even fatal injuries.

DC VOLTAGE WHEN SYSTEM IS SHUT DOWN

Even if the system has been disconnected from the grid via a circuit-breaker voltage is still present in the solar panels during daylight hours which could cause serious or even fatal injuries.

START UP PROCEDURE

1. Turn on DC
2. Turn on AC

FIRE

In case of a fire, try and shut down the system so long as it is safe to do so. All circuit breakers must remain off until the fire is extinguished.

DAYLIGHT VOLTAGE IN THE SOLAR MODULES

In daylight hours, as well as at dusk and dawn, DC voltage will be present in the connected wires and cables.

SAFE WORK ON ROOFS

After shutting down your system, if people are working on your roof, you must make them aware that there is the possibility of a small, non-lethal electrical charge being present in the base frame and module frames. If they are not aware it could startle them and make them fall. People working on your roof should always use appropriate safety equipment.

CLEANING THE SOLAR ARRAY

Generally, the solar panels clean themselves during rainy weather. However, a layer of dust can form if there is a prolonged dry spell or in particularly dusty environments. This could reduce the amount of energy produced by the solar system. Your system output has been calculated to take account of some level of dust.

DO NOT climb on the roof to clean the solar panels, as you could fall if not correctly trained and equipped for the task. Use a qualified person to clean your solar panels.

DO NOT use ANY high-pressure cleaner or chemical cleaning product on the surface of the solar panels. The panels only require the use of plain water at mains pressure or less. Particular care must be taken to ensure all electric components, such as cables, connectors, generator junction boxes etc. remain dry.



CAUTION

Never wash the solar panels while they are hot! Cold water on hot solar panels may cause the glass to shatter. Solar panels may be hot even when it is cloudy. The temperature of the solar panel can reach over 70°C.

