
SOLAR e POWER[™]

CASE 800



User's Manual

SOLAR e POWER™ **CASE** 800

MOBILITY • RAPID SETUP • INSTANT POWER

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INTRODUCTION

Congratulations on your purchase of Wagan Tech's Solar e Power™ Case 800. As supplied, the Solar e Power Case is a balanced electrical system that can power AC appliances and operate and charge a variety of communication and entertainment devices. In an emergency, it can boost a low charge car battery. On the job site, it can power tools where no power lines or generators exist. At night, it can power a variety of light sources from DC spotlights to AC floodlights. At the campground it can power an RV Microwave oven, water pumps and entertainment equipment. The Solar e Power Case is expandable: As your needs change, external batteries can be added to the system to increase run time. This flexibility preserves your investment in the Solar e Power Case.

Read and understand all warnings, cautions and notes included in this manual before using the Solar e Power Case. Follow instructions provided by your vehicle and other device manufacturers intended to be used with the Solar e Power Case.

Keep these instructions for future reference.

Fully Charge The Solar e Power Case Before First Use.

WARNINGS, CAUTIONS AND NOTES

WARNINGS identify important safety concerns when operating this equipment. Failure to follow these warnings could result in personal injury or loss of life.

CAUTIONS identify conditions that can cause damage to equipment

NOTES identify operating details.

Warnings—General

Shock or fire hazard—The Solar e Power Case generates the same potentially lethal AC power as a normal household wall outlet. Treat it with the same respect that you would any AC outlet.

Explosion Hazard—Do not use this product around flammable fumes or gasses, such as in the bilge of a gasoline powered boat, or near a propane tank. Do not use Solar e Power Case in an enclosure containing automotive-type lead-acid batteries. These batteries, unlike the sealed battery pack in the Solar e Power Case, vent explosive hydrogen gas, which can be ignited by sparks from electrical connections or disconnections.

When working on electrical equipment, always make sure that someone is nearby to help you in an emergency

Heavy Lifting—This unit weighs about 37.2 pounds (16.9 kg). Proper care should be taken when lifting the unit.

Limitations on Use—The Solar e Power Case has not been tested for use with life support systems or other medical equipment or devices. The user assumes all risk if medical devices are used with this product.

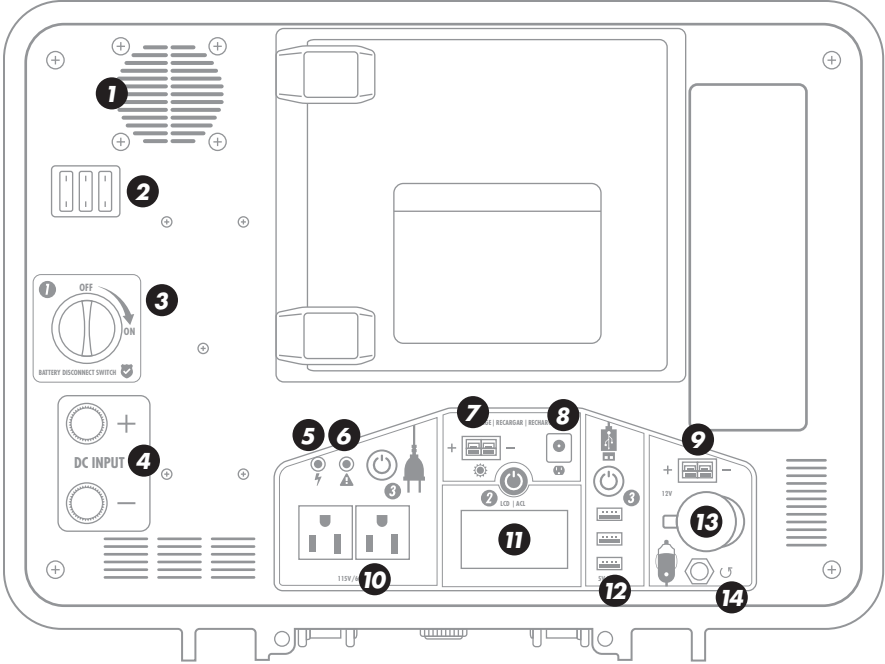
Temperature Limits—Do not expose Solar e Power Case to excessive temperatures.

MAJOR FEATURES

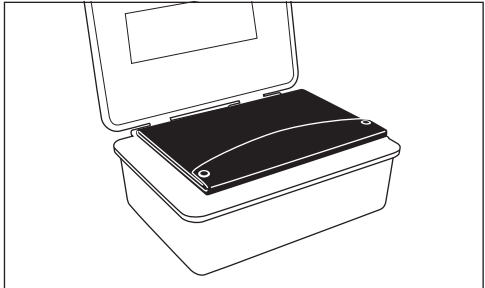
- 800 watt Power Inverter (1600 watts peak)
- 115/230 volt AC Outlet(s) depending on the model
- One 12 volt Automotive Outlet for powering DC appliances (loads to 20 amps)
- Three USB Power Ports for charging/operating cell phones, PDAs and MP3 players
- AC Charging Adapter with 2 amp output
- DC Charging Adapter
- Digital LCD screen to communicate all power functions and status
- Solar Panel Terminals to connect solar panels to the internal Solar Charge Controller
- Terminals to connect additional batteries
- Storage compartment for chargers and cables
- Rugged handle and luggage strap for easy lifting
- 26 Ah AGM battery for long life
- 60 Watts of solar panels for charging the internal battery
- Waterproof case (IP67) when closed

COMPONENTS

ENGLISH

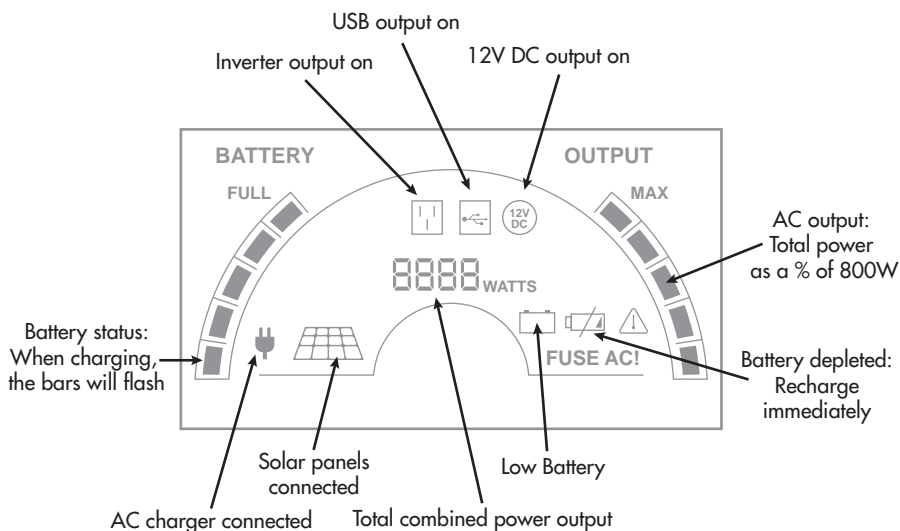


- 1. Internal Cooling Fan
- 2. Replaceable Fuses
- 3. Battery Disconnection Safety Switch
- 4. External Battery Terminals
- 5. AC Operation LED
- 6. AC Fault LED
- 7. Solar Panel Connection Port
- 8. Recharge Adapter Port
- 9. Anderson DC Output Ports
- 10. AC Outlets
- 11. LCD Screen
- 12. USB Ports
- 13. DC Socket with Dust Cover
- 14. Circuit Breaker Reset



Solar Panel



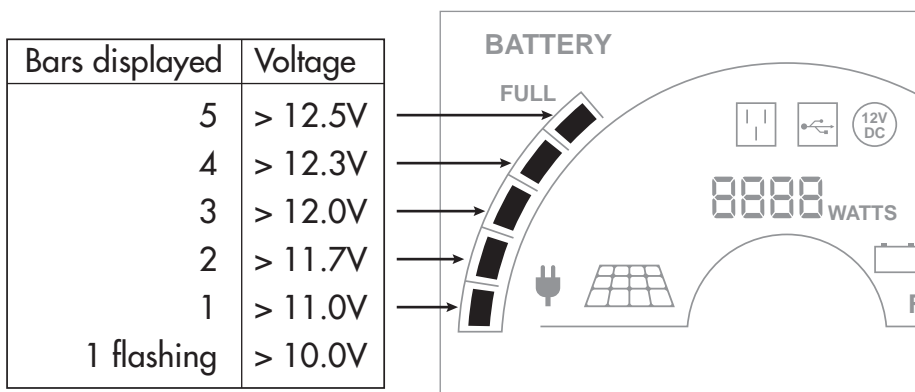


Digital LCD Voltmeter (Battery Status)

The Digital LCD Voltmeter provides the user with the current charge state of the internal battery. It is the user's responsibility to periodically monitor the battery charge and to recharge the battery after each use. Recharge every three months even if the Solar e Power Case is not used.

NOTE: Battery status (voltage) is accurate with Charging Adapters disconnected

1. Press and hold the Battery Status Push-Button for 3 seconds.
2. The Digital LCD Voltmeter (Battery Status meter) will display the battery voltage.



26 Ah AGM Battery

The Solar e Power Case is equipped with the latest in battery technology. Supplied batteries combine the charging characteristics and compatibility of AGM valve regulated, sealed lead-acid batteries.

These batteries are electrically compatible with AGM batteries for expansion and also follow AGM charge characteristics. It is recommended that only AGM batteries be used for long term expansion or replacement because they are more compatible with portable applications and do not spill or leak.

CAUTION—Battery Life:

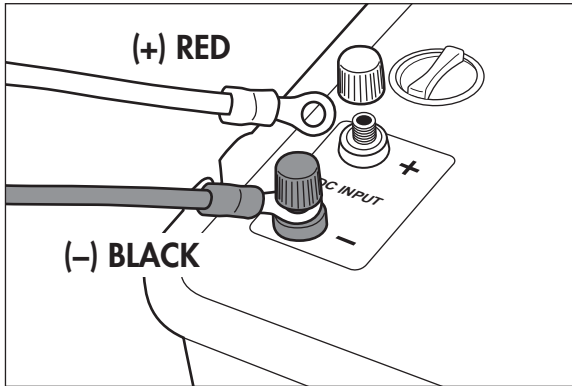
Repetitive quick deep discharging of any rechargeable battery will reduce the capacity and life of the battery. Frequent charging will preserve battery life.

External Battery Terminals

Red and black terminals labeled “Battery Terminal” are located on the top panel of the Solar e Power Case. Battery Terminals can be used for DC load applications greater than 20 amps. Care must be taken to ensure that the battery is not over-discharged. Battery Terminals can be used to connect additional (external) batteries to increase capacity of the battery bank.

CAUTION—Live Battery Terminals:

The Battery Terminals are connected to the internal battery. Proper care must be taken to keep Battery Terminals covered (insulated) at all times when not in use.



Battery Terminals

CHARGING THE SOLAR E POWER CASE

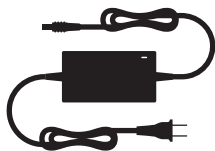
Make Sure The Solar e Power Case Is Fully Charged Before First Use.

It is important to charge the Solar e Power Case for 24 hours before initial use. Recharge after each use. When storing for long periods of time, it is recommended to charge the battery once every 3 months. Failure to follow these instructions can damage the battery and reduce the battery's ability to hold a charge

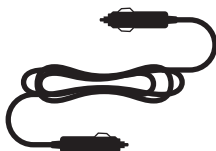
CAUTION—Risk Of Damage To Battery: Do not attempt to charge Solar e Power Case battery if it is frozen. A frozen battery should be gradually warmed to 32 °F (0 °C) before charging.

CHARGING METHODS

Factory supplied equipment allows the Solar e Power Case to be charged using:

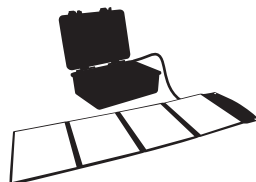


AC Charging Adapter



DC Charging Adapter

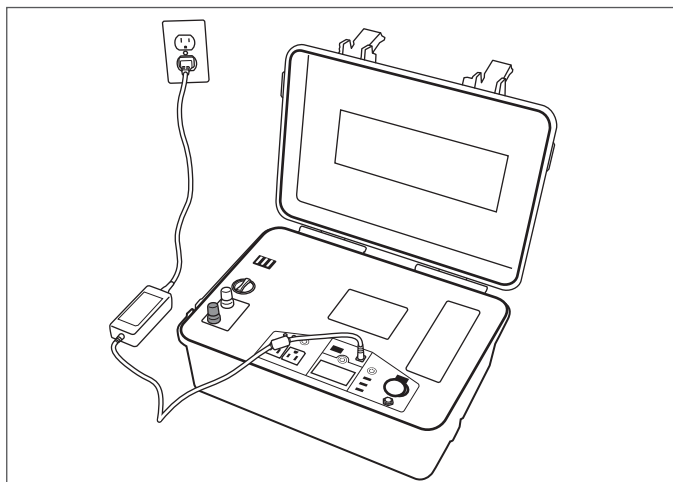
(Charging from your vehicle as you drive)



Solar Panels

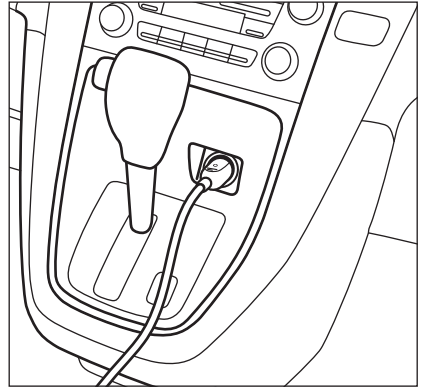
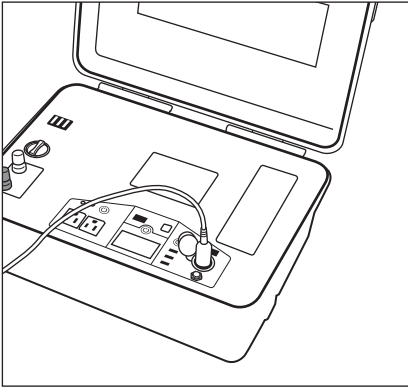
AC Charging Adapter

The Solar e Power Case is supplied with a fully automatic AC Charging Adapter. The indicator light on the top of the adapter shows red when the battery is charging and green when the battery has reached a full charge. The charger will continue to trickle charge the battery to maintain a full charge when the green light is on. The Charging Adapter has a wide range of input voltages and automatically adjusts to 115V or 230V depending on the AC source. Note that initial AC charge can take up to 24 hours. The AC Charging Adapter connects to the Solar e Power Case through the AC input port located on the Front Panel.



Plug AC Charging Adapter into wall socket

DC Charging Adapter



Plug DC Charging Adapter into vehicle DC accessory socket

To charge the Solar e Power Case using the DC Charging Adapter:

Only use the DC Charging Adapter supplied with this unit. Do not continuously charge for more than 16 hours using the DC to DC method.

1. Note that the engine must be running while charging the Solar e Power Case to avoid draining the vehicle's battery.
2. Make sure all Solar e Power Case switches are set to OFF except the master switch and the LCD display switch so you can see the charging status.
3. Plug the DC Charging Adapter into the Solar e Power Case's DC Outlet.
4. Plug the other end of the DC Charging Adapter into the vehicle's accessory socket (cigarette lighter socket).
5. After charging the battery, disconnect the DC Charging Adapter from the vehicle accessory socket first, then from the Solar e Power Case DC Outlet.
6. Store the DC Charging Adapter in the Storage Hatch.

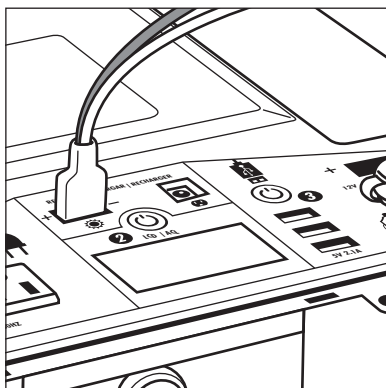
Do not leave the Solar e Power Case connected to your vehicle's DC socket when the engine is turned off.

CAUTION—Equipment Damage:

- While the Solar e Power Case is being charged with the DC Charging Adapter from your vehicle, do not operate the Inverter with a load of over 100 watts. Further, do not plug in or operate any DC appliance from the Solar e Power Case that requires more than 10 amps. Either action may blow a vehicle fuse.
- Always remove the DC Charging Adapter from the vehicle's DC socket before starting the vehicle.
- Disconnect the Solar e Power Case from the vehicle's DC socket when the engine is turned off to prevent discharging the vehicle's battery.

Charging With Solar Panels

The Solar e Power Case is supplied with a 60W foldable solar panel and a connecting cable. Plug the the cable directly into the solar port on the Solar e Power Case.



You will see the solar indication on the LCD screen when connected properly and charging.

CAUTION—Keep any objects from resting on the solar panels. This will reduce panel exposure to sunlight and slow battery charging. Heavy objects can damage the solar panels.

Factory supplied solar panels have a combined rating of 60W, however, actual charging power may vary depending on environmental factors and sun intensity in your region. The approximate charging time for the Solar e Power Case using the supplied solar panels is 10 hours of peak sunlight.

CAUTION—Solar Charge Controller Amperage Limit:

The Solar Charge Controller is rated at a maximum of 10A. Do not connect more than 90W of solar panels, including the 60W panels that are supplied. Doing so will damage the Solar Charge Controller and void the warranty.

Solar Panel Positioning

To ensure maximum power from the solar panels, position the panels perpendicular to the position of the sun. For best results, the solar panels should be in line with the expected path of the sun. Panel placement varies depending on your location. It is recommended that panel positions are checked and adjusted every 3 hours to ensure solar absorption is optimized.

OUTPUT POWER

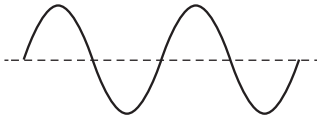
Using the AC Outlet Power Receptacle(s)

The Solar e Power Case's Inverter can operate most AC appliances or a combination of appliances up to 800 watts. The Inverter is capable of handling up to 800 watts for an extended period of time when additional batteries are connected. However, additional batteries will not increase the Inverters wattage capability beyond 800W. Operating time (run time) is dependant on the AC load (watts) and the charge and condition of the Solar e Power Case's internal battery and any connected external batteries. Low wattage AC loads and a full battery charge result in longer operating times. Be sure to turn off or disconnect any AC appliance not in use. The Inverter has a

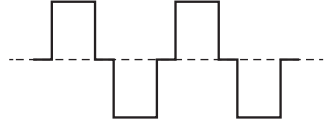
soft start function that protects the Inverter circuitry from a power surge commonly present when starting heavy loads. This function may take up to 3 seconds for the Inverter power light to turn on.

Converting DC battery power to AC generates heat. To minimize heat buildup and possible thermal shutdown, remove obstacles blocking or hindering airflow between the intake and exhaust sides of the Solar e Power Case. Ambient temperatures above 25 °C will reduce the Inverter's ability to cool effectively, thus affecting operating times. Leave the case open during Inverter operation.

This Inverter produces Modified Sine Wave (MSW) AC. The waveform differences can be seen below. Both waveforms have the same electrical energy, however some average reading AC voltmeters can not properly read MSW. Readings on a non-TRUE RMS meter will display up to 30 volts lower voltage than sine wave AC.



Pure Sine Wave



Modified Sine Wave

CAUTION—Modified Sine Wave:

- Some rechargeable devices are equipped with a separate AC charger. These devices are likely to operate properly with this Inverter. Rechargeable devices that have built-in chargers (see device owner's manual) may not operate properly with this type of Inverter.
- Some motorized devices may operate at excessively elevated temperature when used with this Inverter. During first use with this Inverter, check for excessive motor temperature. Abnormally elevated temperature of the motor is an indication that they should not be used with this Inverter.

To use the AC Power Inverter:

1. Turn on the Safety switch. **1**
2. Turn on the LCD Display power. **2**
3. Turn on the Inverter Power. **3**
4. When the Inverter Power Indicator LED is green, the Inverter is operating normally.
5. Check the battery voltage level on the LCD panel.
6. Connect the AC appliance or appliances to the AC Outlet(s).
7. Turn on one AC appliance and observe the Power Indicator and FAULT LEDs.
 - If the LED remains green, proceed to turn on the second appliance.
 - If the Power Indicator LED continues to remain green, then both appliances are operating properly.
 - If the red FAULT LED light is lit, then remove all loads and restart the inverter
 - If the Power indicator LED is not lit, then reduce the AC load. If the Inverter is still not operating, refer to the Troubleshooting table at the end of this User's Manual.

8. After appliance use, turn OFF the Inverter switch
9. Remove AC appliance plug(s) from the AC Outlet(s) on the Solar e Power Case
10. Recharge the Solar e Power Case as soon as convenient.

Note: The external cooling fan operates only when needed. The cooling fan helps maintain Solar e Power Case internal temperature when products with high power requirements are in use.

12V DC Accessory Outlet

The DC Accessory Outlet can power a DC load up to 20 amps. Overloading the port will result in tripping a circuit breaker. To reset the circuit breaker, remove all loads attached to the case, then press the reset button.

CAUTION—Do not insert an automotive cigarette lighter into the Outlet. There is no pop-out feature and excessive heat may damage the Outlet.

USB Power Ports

1. Turn on the Safety switch. **1**
2. Turn on the LCD Display power. **2**
3. Turn on the USB Power. **3**
4. After appliance use, turn OFF the USB Power switch
5. Remove USB appliance plug(s) from the USB Power Outlets on the Solar e Power Case.
6. Recharge the Solar e Power Case as soon as convenient.

AC OPERATING TIME USING INVERTER

Below are typical AC products that can be operated by the Solar e Power Case with estimated operating times. The operating times will vary depending on the internal battery charge level, ambient temperature and the actual AC product being operated. The Solar e Power Case will not continuously operate AC appliances rated at more than 800 watts, However, extending the battery capacity will not increase the capacity of the inverter to loads over 800W. Operating times can be extended if external batteries or chargers are connected to the Solar e Power Case.

<i>AC Powered Products*</i>	<i>Watts</i>	<i>Estimated Run time</i>
3W LED light bulb	3	86 hours
Radio	4	65 hours
Portable stereo	20	12 hours
Laptop computer	45	5 hours
19" Color TV	160	1 hour
Computer with 15" monitor	200	50 minutes
Power drill	320	24 minutes

* Power usages listed are averages. Check your appliance rating for more accurate time estimates. Operating times assume a fully charged battery and ambient temperature of 25° C. Actual results may vary based on model/brand used.

DC OPERATING TIME

Below are typical DC accessories that may be operated by the Solar e Power Case. Operating time will vary depending on the battery charge level and the specific accessory being operated. Operating times can be extended if external batteries are connected to Solar e Power Case.

<i>DC Powered Products*</i>	<i>Watts</i>	<i>Estimated Run time</i>
Cellphone or tablet	6	43 hours
Florescent light	8	32 hours
Portable cooler	30	8 hours

- * Power usages listed are averages. Check your appliance rating for more accurate time estimates. Operating times assume a fully charged battery and ambient temperature of 25° C. Actual results may vary based on model/brand used.

VEHICLE BATTERY BOOSTING USING THE DC CHARGING ADAPTER

CAUTION—Do not leave the DC Charging Adapter connected to the vehicle's lighter socket when starting the vehicle. Remove the DC Charging Adapter before starting the vehicle. This will prevent the vehicle's DC socket fuse from blowing.

In some cases when the vehicle battery has enough power to crank the engine, but not enough to start the vehicle, the DC Charging Adapter can be used to provide enough charge to the vehicle's battery to start. Make sure the Solar e Power Case is fully charged. The following procedure outlines this process:

1. Make sure the Inverter switch is OFF and all appliances have been disconnected from the Accessory Outlets and USB ports.
2. Plug one end of the DC Charging Adapter to your vehicle's cigarette lighter (accessory) socket. You may need to switch the ignition key to the "Accessory" position to supply power to the lighter socket. Be sure to turn off any lights or accessories such as radio or A/C fan that may be operating from the vehicle's battery.
3. Plug the other end into the DC Outlet on the Solar e Power Case Front Panel.
4. Wait 15 minutes while the Solar e Power Case trickle charges you vehicle's battery.
5. Remove the DC Charging Adapter from the vehicle's cigarette lighter socket before attempting to start the engine.
6. If your vehicle engine cranks but does not start, investigate for other problems.
7. Store the DC Charging Adapter in the Storage Hatch.
8. Charge the Solar e Power Case as soon as possible.

POWER EXPANSION OPTIONS

Adding Batteries to the System

For extended operating time, additional batteries may be added in parallel using the Battery Terminals located above the wheels. It is recommended to connect 12V AGM batteries with the same capacity as the internal battery (26 Ah) into the system for long-term use. Connecting flooded, GEL batteries can, over time, result in uneven charge and discharge between the internal and external batteries, a battery damaging condition. You may temporarily connect flooded, GEL batteries to the Solar e Power Case for discharge purposes only. Different battery types require different charging conditions. The charging systems are designed to charge AGM batteries only. It is important that you only connect same voltage (12V) batteries to the DC terminals. Reverse polarity connections can cause an explosion. Connecting external batteries to the Solar e Power Case in series could cause damage to the system and void the warranty. It is recommended that adding batteries be performed by a qualified person. If in doubt, a user-provided voltmeter may be needed to verify voltage and polarity of external batteries to be connected to Solar e Power Case.

CAUTION—External Battery:

- When adding batteries to the system for long-term use, you must use 12V AGM batteries. Using different construction or chemistry batteries can damage components.
- Total internal and external amp hour rating should not exceed 104 amp hours.
- It is recommended to use at least 10 AWG cable or larger to connect additional batteries to the Solar e Power Case when drawing full power from the Inverter. Heavy cables reduce voltage loss in the cables.

External Battery Connection Procedure

1. Locate the Battery Terminals. Batteries must only be connected in parallel.
2. Loosen the Battery Terminal covers and connect the batteries using either ring terminals or jumper cable clamps. Make sure the connection is secure.
3. With a voltmeter, verify that the battery voltage is correct at the terminals.
4. Turn ON the LCD Display button and observe the combined battery voltage.

CAUTION—Battery Discharge:

The LCD display shows the combined voltage of external and internal battery system. It is important to monitor the external battery voltage to prevent battery over-discharge.

MAINTENANCE

Maintaining the Solar e Power Case in good operating condition is relatively simple. Charge the battery until full as often as possible and keep all surfaces free of dust and dirt.

Cleaning

With the Solar e Power Case disconnected from all electrical cords and the fans OFF, you may carefully vacuum the vents to remove dust.

Solar e Power™ Case 800 by Wagan Tech®

The solar panels should be periodically cleaned during extended use and before storing. Check your panels weekly or following a storm to make sure no damage has occurred.

- Check for dirt buildup.
- Using a soft brush, remove dust or droppings from the panels.
- Wipe surface with a soft damp cloth.
- Dry the panels with a soft cloth. Solar panels are more efficient when they are clean.
- Check wiring or cables that are attached to the solar panels. Wire or cables may become loose from turbulent weather conditions.
- Store panels when not in use.

TROUBLESHOOTING GUIDE

<i>Problem</i>	<i>Possible Cause</i>	<i>Solution</i>
No AC output, Green LED is not lit, Voltmeter reads below 10 volts	Battery voltage too low	Reduce AC load and charge the Solar e Power Case battery
	Excessive AC load	
No AC output, no displays lit	Inverter Switch is OFF	Turn ON Switch
No AC output, 12 volt outlet operates, USB ports operate. Inverter Switch is ON	Inverter is not working	Call Wagan Tech Support
12 volt DC outlet switches on and off	DC Outlet is overloaded	Reduce DC load.
Television interference	Picture breaking up (static)	Place the Solar e Power Case as far as possible from the TV, the antenna and the coaxial cable
		TV station may be out of range
Static/noise interference in audio system	Sound system has weak alternating current shielding	Do not use Inverter with low quality audio AC filtering system
		Replace audio system with high quality noise filtering
Run time is less than expected	Solar e Power Case is not fully charged	Charge using the AC Charging Adapter.
	Product power consumption is higher than expected	Check the power or "wattage" rating and compare with the tables in Battery Operating Times section of this manual
Charging light is OFF when AC Charging Adapter is connected	No AC power at wall socket	Ensure power is available at the wall socket
DC Charging Adapter does not work	Blown fuse	Check for and replace blown fuse.

RECYCLING/DISPOSAL

The Solar e Power Case contains materials that are prohibited from being placed in landfills and require recycling. These include lead-acid batteries, solar panels and some components in the Inverter. Contact local authorities for disposal/recycling instructions.

SPECIFICATIONS

Specifications are subject to change without notice.

Solar e Power Case Shipping Specifications

Dimensions (closed)	18.3 × 14.4 × 7.3 in. (46.5 × 36.5 × 18.5 cm)
Weight	37.2 lbs (16.9 kgs)
Solar e Power Case warranty—see warranty statement at rear of manual	2 years
Battery warranty	1 year, subject to terms of use

12V DC Battery and Outlets

Internal battery type	Sealed lead-acid AGM
Internal battery voltage (nominal)	12V
Internal battery capacity	26 Ah
Maximum load current through 12 volt DC accessory outlet (continuous)	20A
DC accessory outlet circuit breaker rating	20A
USB max output current (each)	2.1A

Inverter

Item no. 8822

Item no. 8822-7

AC output voltage (nominal)	115V	230V
AC output frequency	60 Hz	50 Hz
Maximum continuous AC output power	800W	
Momentary AC surge power	1600W	
AC output waveform	Modified sine wave	
Battery drain with no load/outlets on	Less than 0.5A	
Operating temperature	23–113 °F (–5–45 °C)	
Storage temperature	–4–131 °F (–20–55 °C)	
Low battery alarm trigger (nominal)	10.5V ± 0.5V	
Low battery shutdown (nominal)	10.0V ± 0.5V	

AC Charging Adapter

AC input voltage range	90–230V AC
AC input frequency	47–63 Hz
DC output voltage	For 12 volt batteries
DC output current charge current maximum	2.0 amps
AC charging adapter indicator LED (red/green)	Red—Charging Green—Charging complete/float charge
Output connector	DC plug (automotive)

DC Charging Adapter

DC cable length	48 in. (122 cm)
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Solar Panels and Solar Charge Controller

Active panel materials	Monocrystalline
Voltage output range	16–22 volts
Panel wattage maximum	60 watts
Panel efficiency	17%
Internal solar controller maximum panel wattage	75W
Controller max charge current	7.5A