



**Solarflex SA.**

**User Manual.**

**Guide for Connecting Solar Panels - Marine Applications**

**Power on the Water: Canoeing, Kayaks and Yachting.**

There are many ways to go about the task of charging batteries & electronic devices via solar power whilst on the water.

The following is a guide to connecting 12v devices requiring power when you are on the water; from digital devices, fish finders on ocean going kayaks to canoeing trips and yachting applications.

Solarflex SA 5Watt, 10Watt and 32Watt Flexible Solar panels as well as the Flexcell Sunstick 7Watt, 14Watt and 27Watt range of solar panels are the most appropriate portable marine power solutions for strapping to the decks of kayaks, canoes, yachts or any vessel on the water.

These panels are specifically designed for marine applications – proven water resistant solar panels in the yachting world.

**Estimate your power requirements – Low Power Applications.**

The first step in creating a solar power system for any water bound trip is to estimate your total power needs, and choose a solar panel to match.

Watt-Hours are a measure of a battery's capacity.

For example, most digital cameras require 5-10 Watt-Hours, mp3 players require on average 5 Watt-Hours. Decide how often you will need to charge your various devices.

For example, if you want to charge your digital SLR camera while canoeing or kayaking, and you know that under typical use, you get 3 days from the camera battery before it needs charging, then your needs are 15 WHrs over 3 days = 5 WHrs/day.

To complete this example, we'll add the need to charge two AA batteries each day for a GPS unit, and an iPod every other day. Total daily power needs may be about 12 WHrs.

For portable applications, and while you are on the move it is best to be conservative when estimating the power production from solar panels.

It is nearly impossible to get ideal exposure for a solar panel when it is fixed to the deck of your kayak, draped over your tent, or on your canoe. Typically the solar production may be only about half of what a typical framed solar panel can produce.

A 5Watt panel may meet the needs but it would be advantageous to use a larger capacity panel for extra power.

Size limitations would be a consideration; more power means a larger panel and that can present a challenge depending on surface areas available.

### **The Battery Pack and the connectors.**

The battery pack should be as small and light as possible so as to not load your canoe or kayak any more than necessary. The connectors you need to charge all your devices should be capable of being water resistant – an option is to encase all connectors with a decent “rubber tape” which can prevent moisture from getting in to the connection.

The battery should also store enough power to get you through times when the sun isn't as bright as we would hope. Best practice is to make use of at least a 12a/h deep cycle battery as a minimum.

Connectors for different devices can be a problem, most digital devices require an AC outlet for charging – please note that 12v AC invertors for a device battery cannot be powered directly from a solar panel.

The only solution is to have a 12v DC power charger that can supply power to your device battery - and connect that to your storage battery which in turn is topped up via power from the solar panel. The trick is to have the applicable power connector for the 12v device battery charger so that the device battery charger can connect to the 12v AC inverter.

### **AA Batteries.**

For powering AA batteries there are two options:

- Direct solar charging of AA batteries.
- Using an intermediate power storage battery.

In the first option...

The solar panel is connected directly to a DC-input AA battery charger. These will typically have a Cigarette Lighter 12v adapter. The best option here is the 7Watt or 14Watt Sunslick Panel with a CL Adapter fitted for the purpose.

Best practice is to have spare batteries for charging whilst others are in use.

Mark them and rotate them to keep the sets fully charged at all times.

In this way it should be possible to maintain charge to as many as 8 AA batteries on a normal day.

The second option utilises an intermediate power storage battery - it should allow you to store solar power during the day, and draw power when you need it, even at night.

Besides having access to power anytime, an important advantage of using an intermediate battery is being able to operate the battery chargers at their peak rate, and not just at the present rate of the solar panel.

### **Larger Marine Applications.**

For larger Boating requirements larger panel installations are required for operating SatNav equipment and radios etc.

Typically these are best left to the electrical fitter of your yacht or deep sea vessel, as the power requirements would necessitate an array of 32Watt Flexible Solar Panels to be fitted.

Such an installation would also require a suitable Marine application Battery Solar Charge Controller to be installed in conjunction with your existing power unit in order to complement your power requirements on board.

Please consult your nearest fitment expert more information for these installations.

Solarflex SA 32Watt Solar Panels as well as the 27Watt Flexcell Sunslick range of Solar panels are best suited.

These Marine Solar Panels are designed for Yachting and Marine use, lightweight and flexible.

Solarflex SA 32Watt panels have been utilised on various yachts in South Africa, including the Cape Town to Bahia Yacht race by some top yachts.

[www.flexcell.com](http://www.flexcell.com)

### **Trickle Charge for Batteries on Yachts.**

10Watt Solarflex SA panels are ideally suited to supply power to batteries whilst the yacht is at a mooring for weeks on end, this allows the battery to remain fully charged – board the yacht without a flat battery. (Best practice would be to have a battery charge controller installed to prevent an overcharge of the battery)

**Please Note – always allow for ventilation when charging batteries.  
Do not charge batteries in concealed spaces.**

For further information please see the **Guide for Connecting Devices in the Field** on this website.  
[www.solarflex.co.za](http://www.solarflex.co.za)

### **Glossary.**

- **PV = Photo Voltaic solar panel.**
- **Storage Battery – any size 12v battery that can hold charge from a solar panel and provide power to the devices 12v battery recharge unit.**
- **Device battery – the re-chargeable battery supplied with the device.**
- **CL – Cigarette Lighter plug, male or female, also known as Hella connectors for 12 v appliances.**

### **Disclaimer.**

- **The above is a guideline only; please contact us for best practice connection in the event that any clarification is required.**
- **We cannot be held responsible for any incorrect wiring procedures in the event of any mishaps.**
- **Overcharging any battery, whether a rechargeable or deep cycle or standard 7a/h or larger a/h capacity will result in battery failure, which will cause damage.**
- **Solarflex SA cannot be held responsible for damage caused to equipment.**
- **Please consult the device manufactures manual or consult a reputable retailer for further advice on your product.**
- **Check the internet for other examples and experiences that other users have recorded, there are many DIY websites that can offer solutions for any situations.**

Tips and experiences are most welcome from any users for posting on the website.

Please contact your authorised retailer for further information.

Or alternatively please mail: [info@solarflex.co.za](mailto:info@solarflex.co.za)

**Thank you for choosing Solarflex SA Solar Panels for your recreational power requirements.**

