

Solbian Solar: Frequently Asked Questions

General Questions

How much power will a solar panel array produce? What kind of difference will they make in how much electricity I can use on my boat?

This will depend on many factors, including how many panels are installed, the quality of the installation, shading on the panels, as well as your location and the amount of sun you receive throughout the day.

We'll be happy to send you a copy of our sizing worksheets. These will help you to determine how much energy you presently use on-board, and how much power the solar panels will produce.

I noticed your prices are for pickup from your location in British Columbia. Do you deliver within Canada?

If you are unable to pick up the panels from our warehouse, and we are not doing the installation of the panels, we have two options for shipping.

- 1) We can ship from our stock in British Columbia. This will incur additional shipping costs within Canada.
- 2) We can drop-ship the panel and controller directly from the suppliers to you. This can be faster and will avoid the in-Canada shipping costs from us to you, but border charges are typically higher than shipping from our stock.

Just let us know your timelines when ordering and we can make suggestions to meet them depending on stock levels.

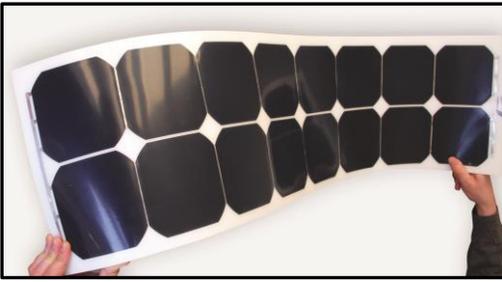
What is the warranty on the solar panel and charge controller?

Solbian panels are warrantied for 2 years for materials and 5 years output power.

Genasun charge controllers are warrantied for 5 years

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Solbian Solar Panels

What do the different efficiencies mean?

The efficiency of the panel is included in the wattage rating – a 16.5% 100W panel will be larger than a 22.5% 100W panel but both will produce the same energy. The efficiency is a measure of how much of the sun's energy is captured by the panel – lower efficiencies mean a larger panel is required to capture the same energy.

Are mounting zippers available in any other colour?

Solbian zippers come in white, however panels are available without zippers. Canvas-makers intending to install panels in a dodger or bimini are then free to choose their own type and colour of zipper.

Can you recommend an adhesive for deck-mounting the panels?

We recommend using 3M 4000UV adhesive. This is a rubbery adhesive that is resistant to UV damage, giving it an extended life under the sun.

Can Solbian panels be walked on? How about rolled?

Solbian panels are resistant to light pressure, but the surface is slippery and they are not designed to be walked on. Their internal wiring is fragile. Damage caused by walking on them is not covered by the warranty. The panels are flexible and can be mounted with a gentle curve, but should not be rolled. Excessive rolling or flexing will permanently damage the solar cells.

Are Solbian panels shade-protected?

Yes, Solbian panels include a bypass diode to prevent a shaded cell from de-powering the whole panel. These diodes effectively split the panel into two independent power sources. Without bypass diodes, a shaded cell will prevent a solar panel from producing any power – even if only a small part of the whole panel is shaded.

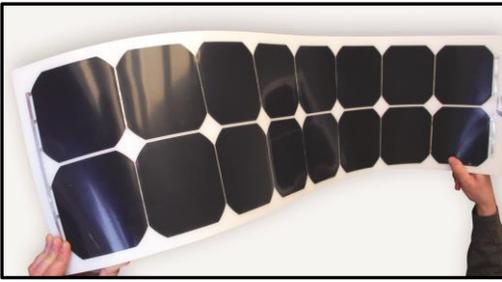
Genasun Charge Controllers

Why would I want multiple charge controllers?

Multiple controllers will increase the available output power of your solar array above what a single controller can handle. Each controller will also be able to independently maximize the power it is delivering. This is a benefit when multiple panels on a vessel have varying amounts of shading or don't all face the sun.

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Any issues mounting the controller in the engine room?

You **CANNOT** install Genasun controllers in a **gasoline** engine room, they are not ignition protected. A diesel room is acceptable, but the heat may reduce the performance and lifetime of the controller.

How close do Genasun charge controllers have to be to the batteries?

The battery temperature sensor is built into Genasun charge controllers so you'll want it as close to the batteries as you can, without placing the controller in a gasoline engine room.

I have 4 deep cycle 12V house batteries connected in parallel - do I just connect the controller to the first battery?

For parallel batteries you will connect the controller directly to the first battery in your house bank.

If you decide to use multiple panels and multiple controllers, each panel is connected separately to its own controller, and the controllers are then connected in parallel to the battery.

Wiring for self-installation

What size wire should I use to connect my panel to the charge controller?

Your individual situation may differ and it is important that your system is properly designed based on the number of panels, the power rating of the panel, and the wire length required between panel and controller. It also needs to be properly fused. The charge controllers will take gauge 12, 14 or 16 wiring. Wiring needs to be marine grade, we often suggest using 12/2.

We offer a design service which can help you with this, call us to enquire.

Are there any special tools required for connecting the panels with a junction box?

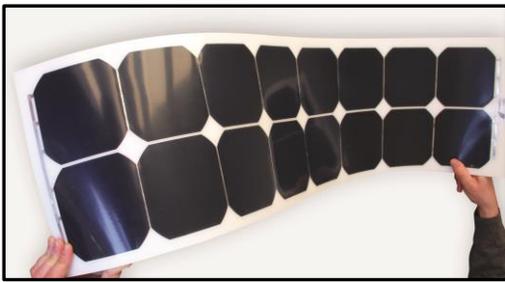
When using a junction box wiring connection, the wiring from the panel uses Compel MC4 connectors. To ensure a strong connection, this should be crimped with Compel crimpers.

What if I don't have a Compel crimper?

Contact us for an instruction sheet for assembly without the crimping tool, which many people have had success with. Connector assemblies are also available, with the wire already attached to the solar panel MC4 connector and ready to connect to the junction box.

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Charge controllers and electrical connections

What is a charge controller and when it is necessary to buy one?

The charge controller is an essential element of an isolated photovoltaic system. Its main function is that of providing the right current and voltage to the batteries, to properly charge them. A “solar” charge controller is a more complex device, that in addition to charging the battery, also optimizes energy production. Solbian offer a wide range of solar charge controllers, including the most up-to-date electronic tools capable of interrupting the charge if the battery is fully charged or preventing overloads that would lead to malfunctioning over time. Most of our controllers are provided with Maximum Power Point Tracking (MPPT) technology.

Why is MPPT technology is so important in the nautical field and what it is exactly?

MPPT is a technique that charge controllers and similar devices use to get the maximum possible power from one or more solar panels. This is especially important when the solar radiation on the panel is not homogeneous or stable, which is the usual case on a boat. Using a fast MPPT technology, it is possible to obtain the maximum power the solar panel can supply in every solar radiation condition. Using a controller with MPPT technology can increase the energy production by up to 30%.

SL40 & SP50 panels have an output voltage of around 9V. How can I charge my 12 V battery?

In this specific case, it is necessary to install a “Step-up” (or Boost) charge controller, that is able to increase the voltage to the value needed to properly charge the battery. Genasun Boost controllers and WMarine one can be used in this case, also to charge 24 or 48 V batteries.

The WRM-15 and WMarine controllers have a display. Which information is shown?

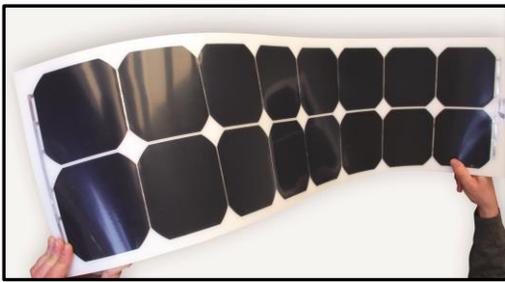
The most important information is the charge level of the battery, the instantaneous panel power, the input and output current and the total energy production.

How many charge controllers do I need if I install two or more panels?

In the nautical field the best solution is “one panel, one controller”, needed to have the best energy harvesting in any condition. A trade off between performance and cost can be naturally achieved

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and Solbian technical staff will be available to provide you all the necessary support to choose the right installation. In any case, it is important to stress some important points.

Series connection of the panels increases the voltage (total voltage = sum of the single panels' voltage) keeping the current steady (only panels that generate the same current can be connected in series). This kind of connection however suffers from shading problems, since even a single panel shadowed, can cause an important reduction in the efficiency of all the series.

Parallel connection can be set up between panels generating the same voltage. In this case, the generated current increases (total current = sum of the single panels' current) while the voltage remains the same of the single panels. Parallel connection makes the panels independent as far as shading is concerned, but the current increase can represent a problem for the electrical network. In any case a single MPPT controller used with more panels connected in parallel gives a poorer performance than the "one panel, one controller" solution.

Some examples

Two series connected SP50 panels generate, at their maximum power point, 18 V and 5.5 A. The right choice for them is a WR-10 controller or better a WMarine 10 (with MPPT). GV 10 is an alternative best buy if you want to choose Genasun models.

Two parallel connected SP50 panels generate 9 V and 11 A. WMarine or Genasun GVB can deal with them also by increasing the voltage to the proper battery value.

Two parallel connected SP100 produce a current larger than 10 A but with a voltage of more than 16 V. WR-10 controller can be suitable enough, even if WRM15 or GV are better suited for the presence of the MPPT circuit. Finally WRM15 can deal with three parallel SP100 or SL80 panels, but only two parallel CP125 panels.

For more details see: http://www.solbian.eu/images/stories/pdf_eng/panels-charge-controllersENG.jpg

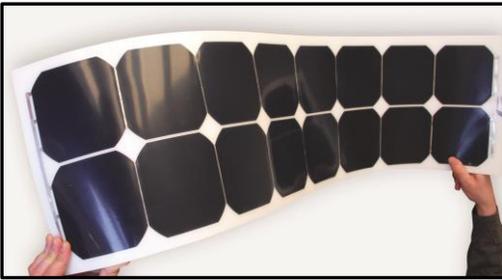
How to choose a panel with back strips or one with a Junction Box?

Panels with back strips are used to avoid external wiring on the boat deck. It is necessary to drill the deckhouse and to make the electrical connections from below deck. The panel is fixed on the deckhouse by use of a double sided adhesive or other kind of glue. Solbian advice is to refer to skilled personnel to make that kind of installation.

The use of the Junction Box (JB) is essential whenever you want to make a removable installation or in other cases where there is not a rigid substrate where to glue the panels, for example on a canvas

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bimini. The Junction Box is terminated with waterproof standard photovoltaic connectors (MC3 or MC4). Every JB contains one or more bypass diodes.

What is a bypass diode?

It is an electronic device that is able to reduce the shading problems and minimize the risk of overheating cells. It is usually located in the JB. For the more powerful panels that need to be applied without JB, Solbian uses a new kind of bypass diode that can be laminated into the module during manufacturing. This latest development assures Solbian customers increased energy production and highest safety of use.

How can you make the electrical connections and which materials do you need?

In case of installation with back strips, it is necessary to solder electrical cables of a suitable size (2.5 - 4 mm² according to the length) to the strips, and to isolate these junctions using heat shrink sheathing. It is also suggested to use silicone product to protect the exit point of the strips from the back of the panel. The outgoing cables will then reach the charge controller and then the battery. In case of panels with JB, connectors and cable are needed to reach the charge controller (on request, Solbian provides cables and connectors).

Installation choices

How can you make an installation with adhesive? What are its advantages and disadvantages?

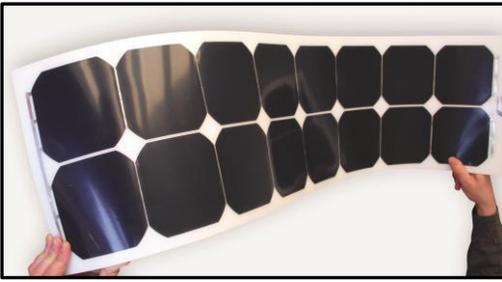
The panels with double sided adhesive are designed for permanent installations. This is a choice widely used by boat manufacturers and has the advantage of a clean and safe wiring makes theft impossible. The removal of the panel can be done by using, as an example, a thin steel cable, but it is likely to damage the panels. To have the technical data sheets of the adhesive used, please get in touch with Solbian. The intervention and support of qualified technical staff is strongly recommended, to avoid damages to the panels.

What is an eyelet installation? How do you use them? What are TENAX fasteners?

The panel provided with eyelets is designed for removable installations. Panels with eyelets need to be connected via a Junction Box. This solution is often adopted by the final customer who prefers not to drill his boat. The TENAX fastener, widely employed in the nautical sector, are special kind of eyelets that make the fixation and removal of the panels simpler. Solbian supplies the keys for the TENAX fastener fixing on the deckhouse or on the bimini canvas.

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How do you use a zipper installation?

The panel provided with zippers (zip fasteners) is designed for removable installations. The zipper is applied during manufacturing.

Thanks to the zipper it is also possible to connect several panels together.

Is it possible to buy a panel without any type of installation?

Certainly it is. All our products are versatile and that allows us to meet the clients' needs. Solbian technicians are available to discuss special request or customizations.

My boat hasn't enough space to set - up photovoltaic panels. How can I solve this problem?

"Asseaboat - Solarsolution" has developed the "SunBar Mini Rail" product using "SolbianFlex" solar panels. They can be installed on the guardrail avoiding the occupation of other spaces on the boat. For more details, please visit the site www.asseaboat.com

I would like to combine the photovoltaic panels with a SunBar. Which are the possible solutions?

"Asseaboat - Solarsolution" has developed the "SolaFlex Top Sail" product using "SolbianFlex" solar panels. They can be installed on a boat thanks to the use of a SunBar. For more details, please visit the site www.asseaboat.com.

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