

# Solbian Catalogue











Product quality, durability  
and maximum performance.

**ALWAYS.**



# Driven by noble energy

Freedom, the sea, the wind: great, endless passion.

The sense of freedom, the rushing wind and water: experiencing the sea on a yacht moving in perfect harmony with nature is a passionate experience.

Since 2007, the same passion has been driving Solbian to produce Solbianflex photovoltaic panels: innovative, flexible, light and highly efficient. They provide energy where it is needed, a natural and environmentally-friendly source.

Giovanni Soldini was one of the first sailors to choose Solbianflex panels for his adventurous oceanic crossings, testing their quality and reliability in the harsh conditions on board.

Solbianflex panels are particularly suited to sailing yachts, but they are equally suited to applications in electric mobility, caravans and campers, trekking, tents and mountain huts, emergency structures and building integrated projects.











# Many good reasons for choosing Solbian

Product quality, durability and maximum performance, always.

- ✓ Because we guarantee the quality of the product and its duration in time.
- ✓ Because our panels are very resilient, thin and extraordinarily flexible, able to adapt to curved surfaces, such as the deck of a boat.
- ✓ Because our panels are ultra-lightweight: only 2.1 kg per square meter, compared to 12 kg and more of traditional panels.
- ✓ Because we manufacture the SP series, with the most efficient solar cells on the market: high power even in very small dimensions.
- ✓ Because the ease of installation, both permanent and removable, is one of the strengths of Solbian: from structural adhesive to steel eyelets, all the different fixing methods provide easy installation.
- ✓ Because we offer a wide range of accessories, designed and manufactured for the marine industry.
- ✓ Because Solbian panels have been tested in extreme conditions by great heroes of sailing: Giovanni Soldini, Sébastien Roubinet, Alessandro Di Benedetto and many others.
- ✓ Because our products are certified according to IEC61215 and IEC 61730. Solbian has also obtained ISO9001 Quality, OHSAS18001 Safety and ISO14001 Environmental certifications.



Left: Maserati VOR 70 in 2013 with whom Giovanni Soldini has broken a new record in the route New York - San Francisco passing by Cape Horn.









# Something new under the Sun **SOLBIANFLEX**

No task is too hard for Solbianflex, with a wide range of power available. Three different series using three different technologies: SP, SXp and CP. All with crystalline silicon cells, the most efficient and proven on the market, and using lightweight and flexible encapsulation materials.

**Three levels of power, all winners**

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Photo: The Sense of Wood, winning project at the Bois Lab Workshop on the short wood supply-chain, organized by the Province of Turin and the Polytechnic of Turin. Francesco Zannier.



# Power at the highest level.

## SP Series

MADE IN ITALY



SP series is at the top of the range, thanks to the use of selected SunPower™ monocrystalline silicon cells, reaching a record 23% conversion of sunlight into electricity and with a pleasant appearance thanks to back-contact technology which hides the electrical contacts. SunPower™ cells represent the most advanced available technology on the market, and make the SP Solbian panels the highest-efficiency flexible panels.

Flexible, powerful and robust, the panels of the SP series are recommended for all installations where maximum reliability and power are required, and the appearance of these cells is one of the symbols of photovoltaic modules. They can be used in all situations and are a best seller in marine applications.

## Features

High efficiency

Light and flexible

Great aesthetic

Working also in low-light conditions

Easy installation with LOXX snap fasteners, zip, screws, adhesive, metal eyelets

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### Recommended applications:

Nautical, Pleasure and racing boats, Camper, Camping, Electric mobility, Building.





SunPower™ monocrystalline cells, encapsulated with high strength technopolymers. Thanks to their back-contact technology, they have a very pleasant aesthetic appearance and these Solbian flexible panels have the highest efficiency on the market.

	SP 125	SP 112 L	SP 112 Q	SP 100	SP 75	SP 50 L	SP 50 Q
Power	125 W	112 W	112 W	102 W	76 W	51 W	51 W
Lenght	1363 mm	1236 mm	855 mm	1109 mm	855 mm	1109 mm	601 mm
Width	546 mm	546 mm	800 mm	546 mm	546 mm	292 mm	546 mm
Thickness	2 mm	2 mm	2 mm	2 mm	2 mm	2 mm	2 mm
Weight	1.7 kg	1.6 kg	1.6 kg	1.4 kg	1.1 kg	0.8 kg	0.8 kg
N. of cells	40	36	36	32	24	16	16

## SP series installations

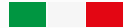




# Aesthetics, reliability and price.

## SXp Series

MADE IN ITALY



The polycrystalline solar cells used in the SXp series are electrically connected using ultra-thin copper wires that form a very fine mesh on the cell surface, resulting in thousands of contact points. This alternative to the standard bus-bar method allows a higher module power and increases the energy yield. This technology is optimally suited to flexible modules, due to its intrinsic insensitivity to micro-cracks, that are the most common cause of energy loss in solar modules. Another advantage is a reduced sensitiveness to shading, a quite important issue in marine and mobility applications.

The new connection technology, together with the use of high efficiency polycrystalline silicon cells, makes SXp panels especially powerful and reliable.

## Features

Thin wires dense mesh

Particularly resistant to shocks

Less sensitive to shading

Pleasant visual appearance

Easy installation with LOXX snap fasteners, zip, screws, adhesive, metal eyelets

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**Recommended applications:**

Pleasure boats, Camper, Shipbuilding, Building





The SXp series solar panels uses polycrystalline cells with efficiency greater than 18%. The sophisticated connection technology makes these cells particularly resistant to shocks and less sensitive to shading, mechanical stress and atmospheric agents. High performance at a great price.

	SXp 145 L	SXp 145 Q	SXp 96	SXp 64 L	SXp 64 Q	SXp 56
Power	145 W	145 W	96 W	64 W	64 W	56 W
Lenght	1523 mm	1046 mm	1046 mm	1364 mm	728 mm	1205 mm
Width	683 mm	996 mm	683 mm	365 mm	683 mm	365 mm
Thickness	2 mm	2 mm	2 mm	2 mm	2 mm	2 mm
Weight	2.4 kg	2.4 kg	1.6 kg	1.2 kg	1.2 kg	1 kg
N. of cells	36	36	24	16	16	14

## SXp series installations

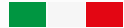




# Quality at the best price.

## CP Series

MADE IN ITALY



CP series products use standard 156x156 monocrystalline cells with efficiency greater than 18%, the best established technology to offer powerful and reliable panels at the best price.

The size and the high power make CP series particularly suitable for motor homes and caravans, even on curved surfaces, such as the profile of an attic roof.

## Features

Powerful

Lightweight

Flexible

Ideal for camper vans, electric vehicles, etc..

Easy installation with LOXX snap fasteners, zip, screws, adhesive, metal eyelets

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**Recommended applications:**

Camper, RVs, Shipbuilding, Building.





The CP series flexible solar panels are made using monocrystalline silicon cells with efficiency greater than 18%, encapsulated with high strength technopolymers.

	CP 144 L	CP 144 Q	CP 125	CP 70
Power	144 W	144 W	128 W	72 W
Lenght	1523 mm	1046 mm	1364 mm	1523 mm
Width	676 mm	996 mm	676 mm	356 mm
Thickness	2 mm	2 mm	2 mm	2 mm
Weight	2.4 kg	2.4 kg	2.2 kg	1.2 kg
N. of cells	36	36	32	18

## CP series installations

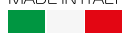




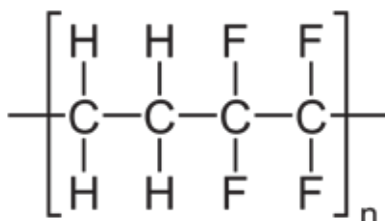
# Embed solar in your structure

## Surface Mounting (SM) option

MADE IN ITALY

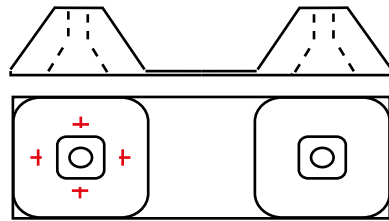
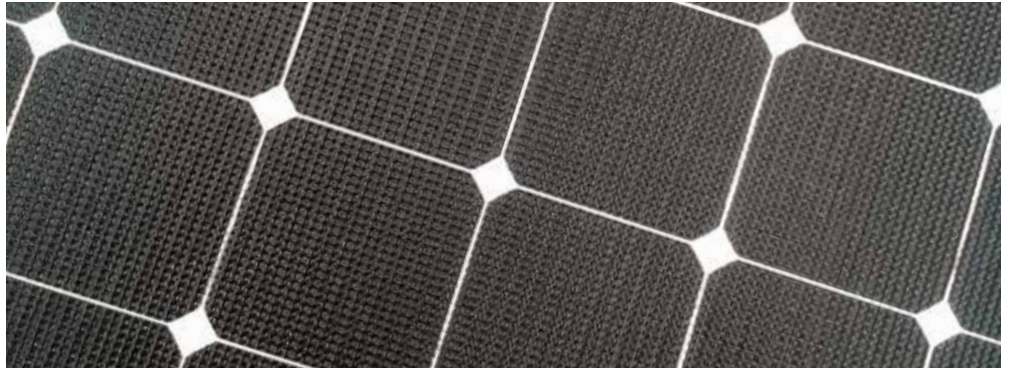


Solbianflex<sup>SM</sup> panels will become part of your boat deck, of your caravan roof or your golf cart hard-top. The SM option consists of a textured surface and of a safe and durable electrical connection via moisture-resistant cables. A custom-made grommet offers a perfect sealing of the electrical contacts and avoids chafing of the cables. Last but not least, SM panels can be offered with ready-to-use structural adhesive.



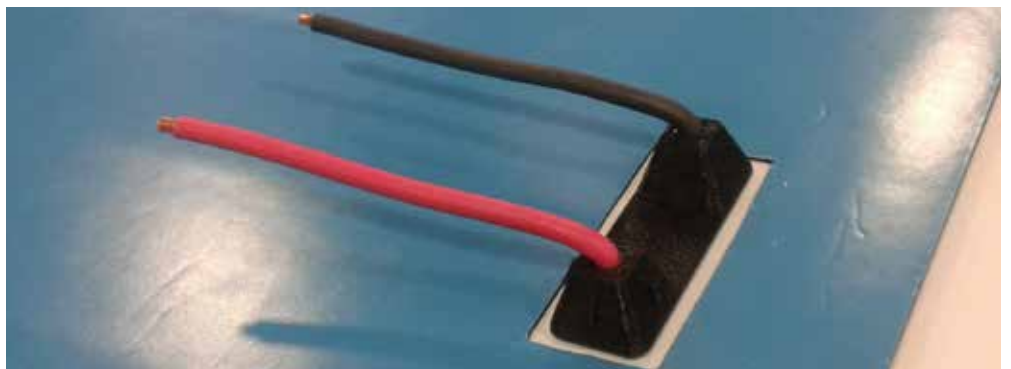
The external layer of the new front, made by a highly technical fluorinated polymer, assures UV and scratch resistance, and excellent light transmission.





The textured surface offers better grip if wet, but also a higher light capture for lower angles of incidence. Aesthetics is also important and the new SM series complements the glossy neat appearance of the Solbianflex standard finish.

The plastic grommet on the back of the SM panels assures the sealing of the electrical contacts and protects the joints between the metallic ribbons inside the panel and the silicon insulated cables. The electrical polarity is clearly shown on the grommet.



*The optional structural adhesive for a peel and stick solution<sup>1</sup>.*

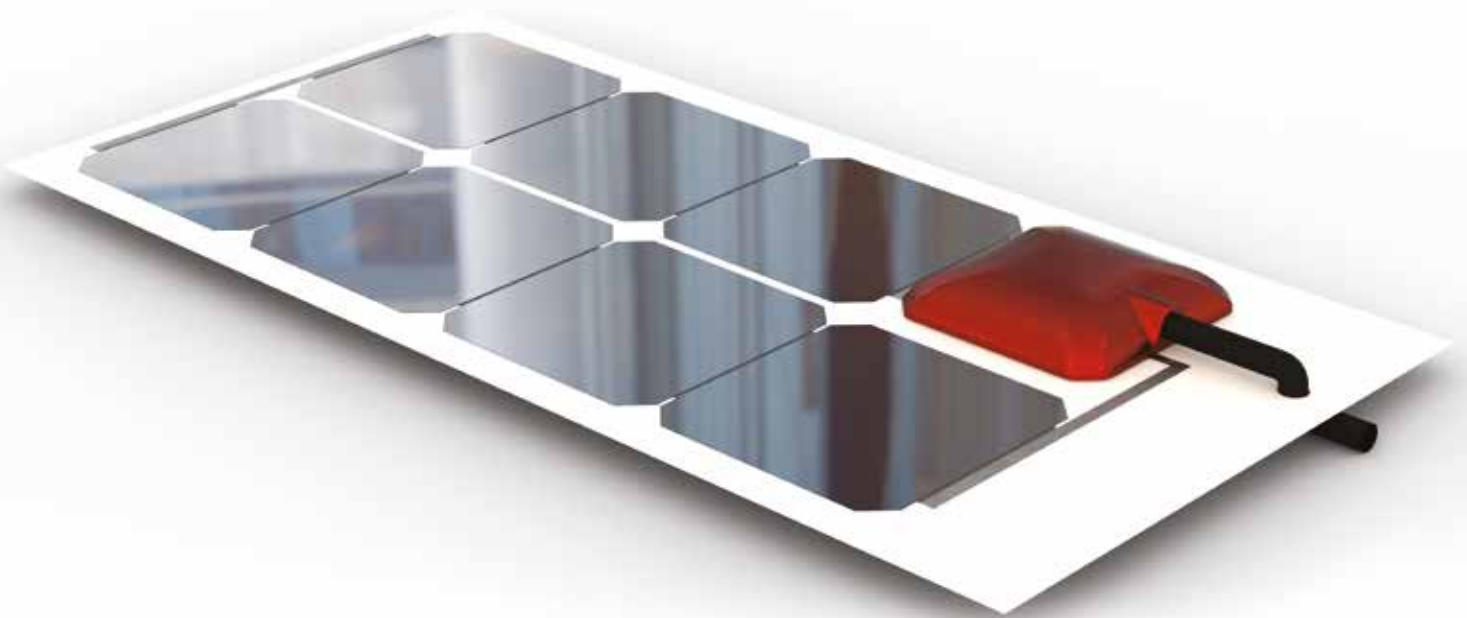
Silicon insulated conductors offer great flexibility over a broad range of temperatures and long service life also in harsh weather conditions.



It's never been so easy to get  
the most from SunPower™ cells

# ALLinONE series

Just connect the output cable to your battery.

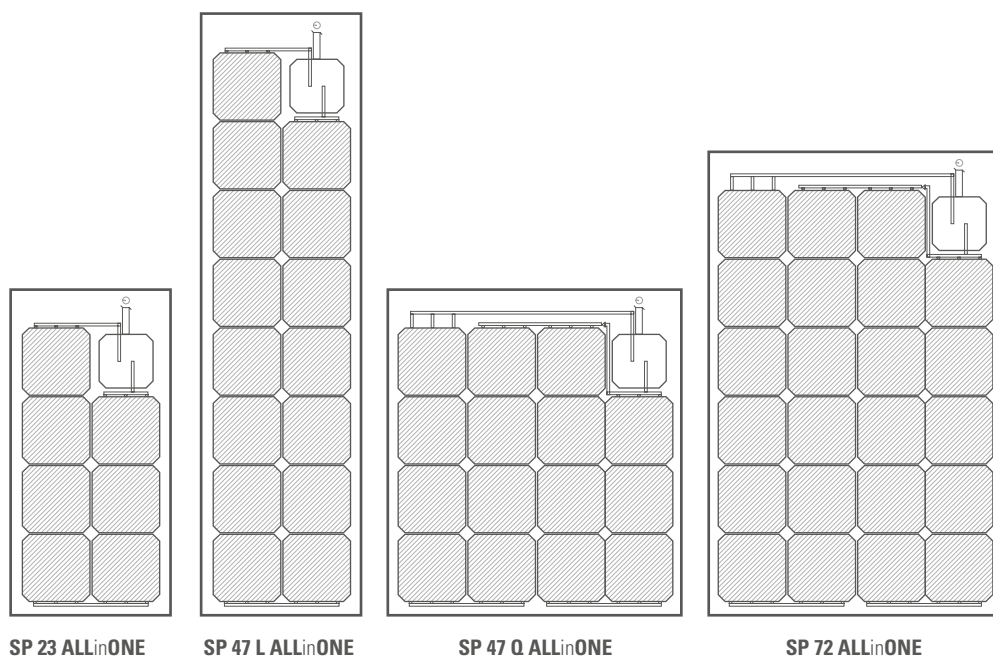


The SP series, top of the Solbianflex range, in a new ALLinONE version: solar panel + charge controller.

All the electronics you need is already packed into the rugged waterproof metal box: a sophisticated MPPT controller capable of boosting the voltage for a perfect fit to your battery.

SunPower™ cells represent the most advanced available technology on the market, and make the Solbian SP series the highest efficiency flexible panels.





From the smallest 23W model, ideal to keep your battery charged, to the 72W panel, with enough power to supply the refrigerator on your caravan or boat. The ALLinONE models can be combined simply by connecting each of them directly to your battery, each panel being completely independent from the others, thanks to the integrated charge controllers.

	SP 23 ALLinONE	SP 47 L ALLinONE	SP 47 Q ALLinONE	SP 72 ALLinONE
Power	23 W	47 W	47 W	72 W
Battery voltage	12/24 V	12/24 V	12/24 V	12/24 V
Maximum Current	2/1 A	4/2 A	4/2 A	6/3 A
Length	600 mm	1109 mm	601 mm	855 mm
Width	292 mm	292 mm	546 mm	546 mm
Thickness	15 mm	15 mm	15 mm	15 mm
Weight	0.6 kg	0.9 kg	0.9 kg	1.2 kg
N. of cells	7	15	15	23







For those who have the courage  
TO ASK  
FOR MORE





# Freedom made-to-measure Custom Panels

MADE IN ITALY



With great versatility, Solbianflex panels are able to meet the most demanding requirements, even in the most unusual installations. They can be mounted and removed with ease, thanks to several accessories, and adapt to various surfaces.

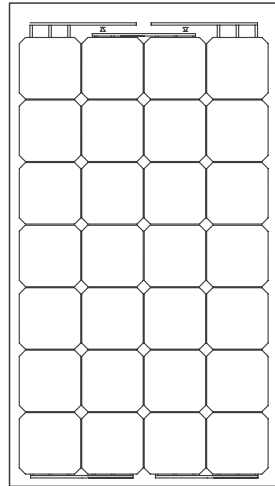


SOLBIANFLEX panel with transparent backsheet to customer request

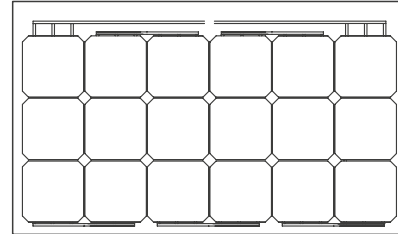


Custom panel with laminated bypass diodes, to minimize shading effects on a flexible panel without junction box

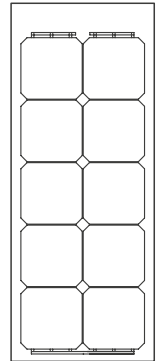




SP 87



SP 56



SP 31

## Discover the Solbianflex customization options.

Every customer can choose the number of cells, colors, electrical features to obtain **a result which perfectly suits to his needs.**

PHYSICAL CHARACTERISTICS	SP 87	SP 56	SP 31
Length	982 mm	474 mm	728 mm
Width	546 mm	800 mm	292 mm
ELECTRICAL CHARACTERISTICS	SP 87	SP 56	SP 31
Peak power (+ / - 5%)	87 W	56 W	31 W
Nominal Voltage - Vmp	15.7 V	10 V	5.6 V
Current Rating - Imp	5.7 A	5.7 A	5.7 A
Open circuit voltage - Voc	19.2 V	12.4 V	6.8 V
Short Circuit Current - Isc	6.1 A	6.1 A	6.1 A

## Custom installations





# New solutions set sail

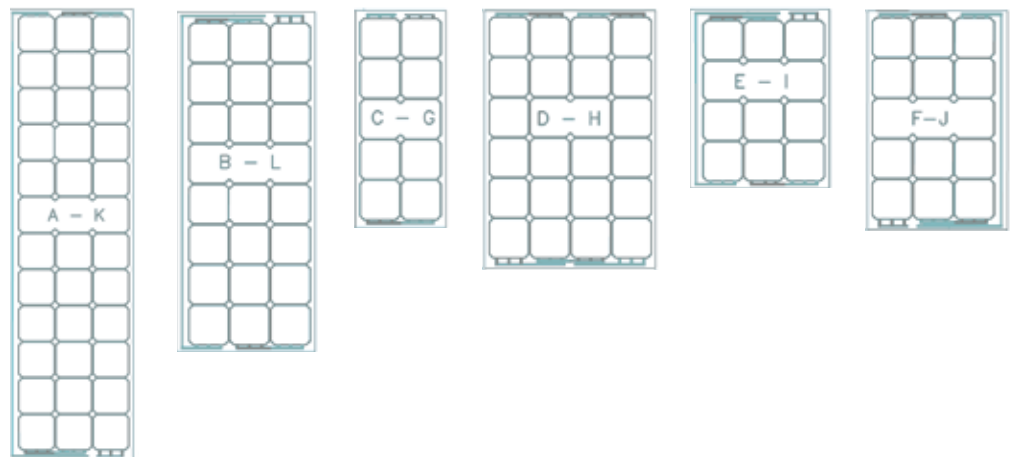
## Engineering division



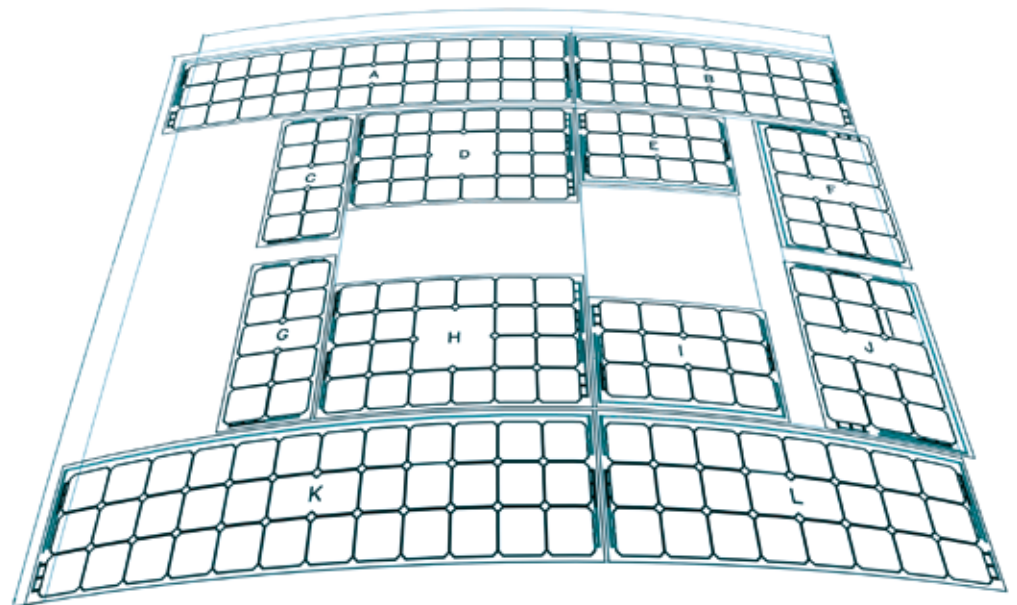
The Engineering division of Solbian Energie Alternative develops turnkey and new solutions with Solbianflex panels. A highly specialized team of engineers, physicists and technically skilled workers, will be able to follow you from planning to realization.

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Special project for a Kanter Yacht.  
Up to 800Wp installed on the hard top.



A + K	
Length	1580 mm
Width	440 mm
Cells number	12 x 3 = 36
Wp	206 W

B + L	
Length	1070 mm
Width	440 mm
Cells number	8 x 3 = 24
Wp	150 W

C + G	
Length	683 mm
Width	285 mm
Cells number	2 x 5 = 10
Wp	62 W

D + H	
Length	815 mm
Width	540 mm
Cells number	6 x 4 = 24
Wp	150 W

E + I	
Length	564 mm
Width	440 mm
Cells number	4 x 3 = 12
Wp	74 W

F + J	
Length	689 mm
Width	440 mm
Cells number	3 x 5 = 15
Wp	94 W









# How to CAPTURE SOLAR ENERGY

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In the picture: the photovoltaic cell is processed in the automatic stringer through a pneumatically driven mechanical arm.



# Contents of a photovoltaic kit

## Panel

Lightweight and extraordinarily flexible, able to adapt to curved surfaces, such as the deck of a boat.



## Cables

For the wiring, provided at required length



## Regulator

Perfect combination between the solar generator and the battery to be charged



## Connectors

Absolutely waterproof, safe and easily removable electrical connections



# Charge controllers

Optimal solar energy management in all conditions.



Solbian offers some of the most advanced charge controllers of the market, for optimal solar power management in all conditions. The golden rule for marine applications suggests “one panel, one controller”, but it can be achieved only with a perfect match between the solar generator and the battery to be recharged.

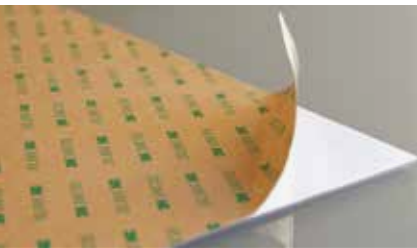
By using our selected DC/DC converters with MPPT optimization system (Maximum Power Point Tracking) you will have all the freedom in choosing panel size and configuration, **and no matter what battery you need to charge (12, 24, 48 V... lead acid or lithium), the charge controller will take care of your needs.**

CTEK, GENASUN, WESTERN CO. and VICTRON. Four renowned international brands, the same controllers chosen and tested by professional sailors and by several automotive companies, to harvest as much energy as possible from the sun.

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# Connections and fixing options



## STRUCTURAL ADHESIVE

The flexible Solbianflex panels can become an integral part of the boat by means of a special double-sided structural adhesive. The electrical connection can be made via the junction box or by direct connection to the positive and negative poles of the panels (Surface Mounting solution).



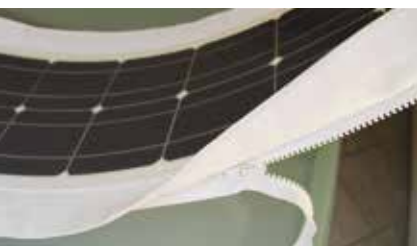
## STAINLESS STEEL EYELETS

They can be fixed on the edges of the panels to allow easy installation and removal. This solution allows you to fix the panel with ropes or screws.



## LOXX SNAP FASTNERS

Snap fasteners, a special kind of eyelets, make the attachment and removal of the panels easier. They are suitable for installation on canvas as well as on hard surfaces.



## ZIPPER

A zipper can be sewn onto the panel, allowing a removable installation, especially on the bimini.

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# Electrical connectors and accessories

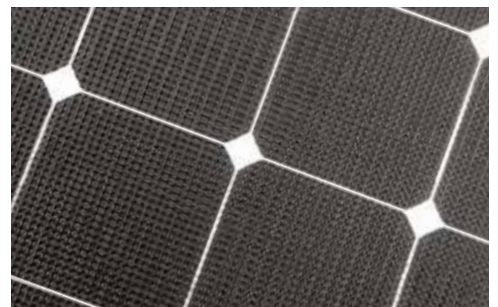
## JUNCTION BOX

Solbianflex panels can be supplied with the junction box to allow connection to the charge controller. Solbian provides a complete kit with cables and connectors for easy installation.



## SURFACE MOUNTING CONNECTION

When gluing panels to a solid surface, the electrical connections can be made by means of the rear-side wires of the panels with the SM option. Holes must be drilled in the support material. Cables are then extended through the holes and routed to the charge controller. The wiring is thus protected and invisible.





## CONNECTORS, CABLES AND EXTENSIONS

On request, Solbian can supply cables and connectors, or extension leads with the right connectors for your junction box.



## Y - CONNECTORS AND BLOCKING DIODES

In order to connect identical panels in parallel, Y-connectors and blocking diodes must be used. Solbian can supply the diodes integrated into connectors which are placed in series with the positive panel terminal.



## DECK SEALS AND WATTMETER

Made from marine grade steel, with two connectors incorporated, deck seal allows you to have a removable installation, with a safe and elegant solution for the cables. The wattmeter, connected in series between the battery and the charge controller, via a simple display shows instantaneous power, current, voltage and total energy produced.





A high-angle, rear-quarter view of a brown Volkswagen California van parked on a paved surface. The van's sunroof is open, revealing a large, rectangular solar panel mounted on the roof. The solar panel has a grid of blue cells. The van's rear window, taillight, and a portion of the rear wheel are visible. The text "Frequently ASKED QUESTIONS" is overlaid on the right side of the image, with "Frequently" in black, "ASKED" in black, and "QUESTIONS" in red.

# Frequently ASKED QUESTIONS



## Charge Controllers and Electrical Connections

### **What is a charge controller and when do I need to buy one?**

A charge controller is an essential part of an isolated photovoltaic system. Its main role is to supply the correct voltage and current to charge the battery. A solar charge controller should also optimize the panel energy production. Solbian offers a wide range of solar charge controllers, including the latest versions which cut-off the charging current when the battery is fully charged and prevent malfunctions which could lead to damage over time. Many of our controllers also perform MPPT.

### **What is MPPT technology and why is it so important so important in mobility applications.**

MPPT (Maximum Power Point Tracking) is used to obtain the maximum possible power from one or more panels. It is particularly important when the solar irradiation is uneven or rapidly changing, as is often the case on boats or caravan. Using fast MPPT technology, the system is able to produce the maximum power at all times, increasing output by up to 30%.

### **Some Solbian panels have an output voltage of less than 10V. How can I charge my 12V battery?**

In this case, it is necessary to use a STEP-UP, or boost, controller, to raise the voltage to the required level. We offer several STEP-UP controllers capable of charge 12, 24, 36 and even 48 V battery (lead and lithium), to allow the maximum freedom in choosing panel size, among standard or custom solutions.

### **Some controllers have a display. What information do they show?**

The most important information is the battery's state of charge, the instantaneous power, input and output current and total energy produced.

### **How many charge controllers do I need if I have two or more panels?**

The best solution is "one panel – one controller", in order to achieve the most efficient energy output under all conditions. Solbian will provide the necessary support to choose the best set-up. Here are some important points to consider:

With series connection the panel voltages sum up, while the current remains that of the single panel. This type of configuration however suffers very much from partial shading, since the current is determined by the panel in the worst shading condition.

Parallel connection is possible between identical panels, producing the same voltage. In this case, the total current is equal to the sum of the currents in all panels, while the voltage remains that of one panel. This configuration reduces the impact of partial shading, but the higher current can be a problem for the circuit. In any case, a single MPPT charge controller in a parallel panel configuration is less efficient than having a controller for each individual panel.



### **How are the electrical connections made and what material do I need**

In the case of an installation with rear wiring, you will need to extend the wires by using cable of a suitable diameter (4 – 6 mm<sup>2</sup> depending on length) and insulate the junctions using shrink-wrap. The other end of the cable is connected to the charge controller. In the case of an installation with junction box, you will need extensions with the right connectors to reach the charge controller (Solbian can supply these on request).

### **What is a Bypass diode?**

Bypass diodes are used to reduce the problems caused by partial shading and to minimize the risk of cells overheating. They are usually placed inside the junction box. Moreover most of Solbian panels have redundant bypass diodes embedded inside the polymer laminate during production. This latest innovation provides customers with more energy and the safest package.

## Choosing the appropriate installation

### **How do you make an installation using adhesive? What are the advantages and disadvantages?**

The panels with double-sided adhesive are designed for permanent installations. This is a common solution on boats and has the advantages of having no visible wiring and making theft impossible. The panel can be removed using a thin steel wire, however the panel is likely to be damaged. Solbian can provide datasheets of suitable adhesives. To avoid damage, it is highly recommended to have a professional installer do this type of installation.

### **What is an installation with metal eyelets? How can I use them? What are LOXX snap fasteners?**

Panels fitted with steel eyelets are designed for removable installations and have a junction box for the electrical connections. This solution is preferred by owners who do not want to drill holes through their boat. LOXX fasteners make the panels easier to fix and remove.

### **What is an installation with zip?**

Designed for easy removal, panels with zips can be fastened onto textile supports, or to each other.

### **Can panels have custom fixation and size?**

Sure! Solbian products are versatile and can be adapted to many different requirements. Our technical staff is available to advise on special requests and customized solutions.



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