



Solarflex SA.

User Manual.

FLEXIBLE 32 WATT SOLAR PANELS.

Key Features:

- Durable, flexible and lightweight, easy storage.
- Glass free frame.
- Low Light Capability.
- Connect more than 1 panel in a daisy chain.
- Weather and sea water resistant.
- Shadow tolerant.
- Tie down eyelets for securing on any surface.
- Mountable on curved surfaces.
- Triple Layer Photovoltaic technology.
- Operating Voltage: Between 12 - 15 volts.
- Maximum power output: 32 Watts.
- Operates at an average of 2.2 Amps per hour.
- Five year limited warranty on power.



Appliances.

The following 12v appliances can be powered by the Solarflex SA Flexible Solar Panels:

- Fridges and Freezers.
- Cordless Blenders.
- Camp Lights.
- Hair Dryers
- Fans.
- Kettles.
- Pumps.
- Spotlights.
- Security Applications.

Following are easily connected:
Charge Controllers.
Batteries - Deep Cycle.

Market Sectors.

- 4X4 Recreational Vehicle users.
- Overland Travel Companies.
- Caravanners.
- Outdoor Campers.
- Medical Vaccine – Rural.
- Security Sector.
- Game Parks.
- Marine Applications and Yachts.



Authorised Supplier.

32 Watt Flexible Solar Panel Information.

Thank you for choosing the Solarflex SA 32 Flexible Solar panel for your recreational power requirements. The following information is applicable to the operation and maintenance of your 32Watt Panel.

The panel is suitable for usage with any 12v products, provided that you are aware of the Amps per Hour input required for the appliance to operate.

The Solarflex SA Panel - Photovoltaic Solar Panels.

- Triple Layer Solar Cell Technology - the heart of the Solarflex SA solar panel.
- Each cell is composed of three semi-conductor junctions stacked on top of each other.
 - The bottom cell absorbs the red light.
 - The middle cell absorbs the green light.
 - The top cell absorbs the blue light.
- The Panel is encapsulated in UV stabilised polymers and are bonded and stitched onto a cushioned backing material.
- Bypass Diodes are connected across each cell allowing the modules to produce power even when partially shaded.
- Blocking diodes are included within each potted junction box which prevents battery discharge into the panel.

The Advantages at a glance.

- Environment friendly - recharge the battery without the need of a generator or vehicle.
- Flexible – mounts virtually everywhere: on vehicle roofs, buoys at sea, yachts, trailer, rooftop-tent etc.
- Durable – covered by materials that are resistant yet flexible.
- No glass – no breakage.
- Shadow tolerant – operates even if partially shadowed.
- High temperature performance – operates where other modules stop.
- Long life – 5 year manufacturer limited warranty on power output @ 90%.
- Lightweight – 40% less weight than traditional solar modules.

Specification.

- Rated Power 32Watt.
- Battery Voltage 12v.
- Typical Amp Hours delivery @ 2 amps per hour at approx 15v.
- Up to 80 Amp hours per week.
- Bypass and Blocking Diode included.
- Length 1.44m.
- Width 0.44m
- Weight 2.15kg.
- Limited Warranty on Power 5 yrs.

Usage for 1 x panel.

Recommended Solar Battery Charge Regulator: 6 Amps.
Operating Voltage per hour average: 14 – 16 volts.
Power input average Amps Per hour: 2.2 Amps per Hour.

For best results it is recommended to calculate the amount of input power that is required by the battery to achieve a minimum 20% loss of power per 24 Hours from the deep cycle battery. Fully charged deep cycle batteries are typically rated at 95AmpHours to 105 Amp Hours.

Assume a 3 day stopover with a 105AmpHour deep cycle battery supplying sufficient power for your needs. That would indicate that the battery is consuming 35 Amps per day. By adding a single 32 Watt solar panel and supplying 2.2Amps per hour to your battery in sunlight hours via the solar panel you can add up to 18 amps per day to the battery, extending the length of the stay if necessary.

A good quality multimeter can accurately measure the amps being delivered from the panel as well as the voltage of the batteries

$$P=V*I.$$

Power = Voltage x current.

$$32Watts / 14 volts = 2.28 Amps.$$

NB> Maintenance of the Panel.

- Do not bend the panel; whilst it is flexible, it is not designed to be folded.
- Do not roll the panel too tightly, it best to store and travel with the panel maintained in a flat position.

Positioning the Panel.

In order to obtain the best possible output from the Panel it is recommended to position the panel in such a way that the Panel is obtaining sunlight from directly overhead as possible. This can be achieved by re-positioning the panel for optimum exposure and at an angle which can best absorb the suns energy.

Tips for wiring your solar panel.

- **It is highly recommended to cover or turn over the panel whilst you are wiring any new cables or components to your solar panel.**
- Make sure that all connectors are inserted together as far as they can go.
- Bad connections and poor quality cable will affect efficiency.
- For best results it is recommended to utilise UV resistant and waterproof connectors.
- Ensure that Positive (Red) cable and connectors are only connected to other positive cables
- The negative (black) cable should only be connected to other negative cables.

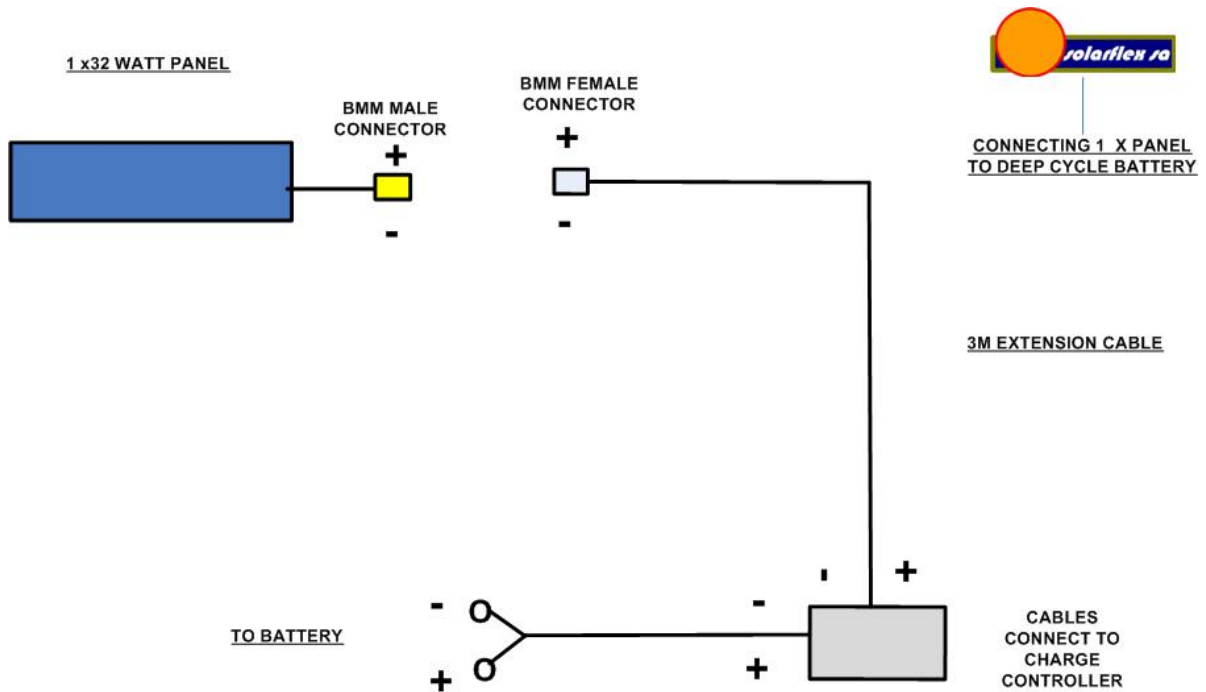
Extension Cables for the Panel.

Extension cables can be added to the Panel should it be necessary to be positioned further away from the Charge Controller or Appliance.

Should it be necessary to employ an extension cable it is highly recommended to use the best quality electrical wiring as well as suitable connectors to avoid any loss or leakage of power through the cable system.

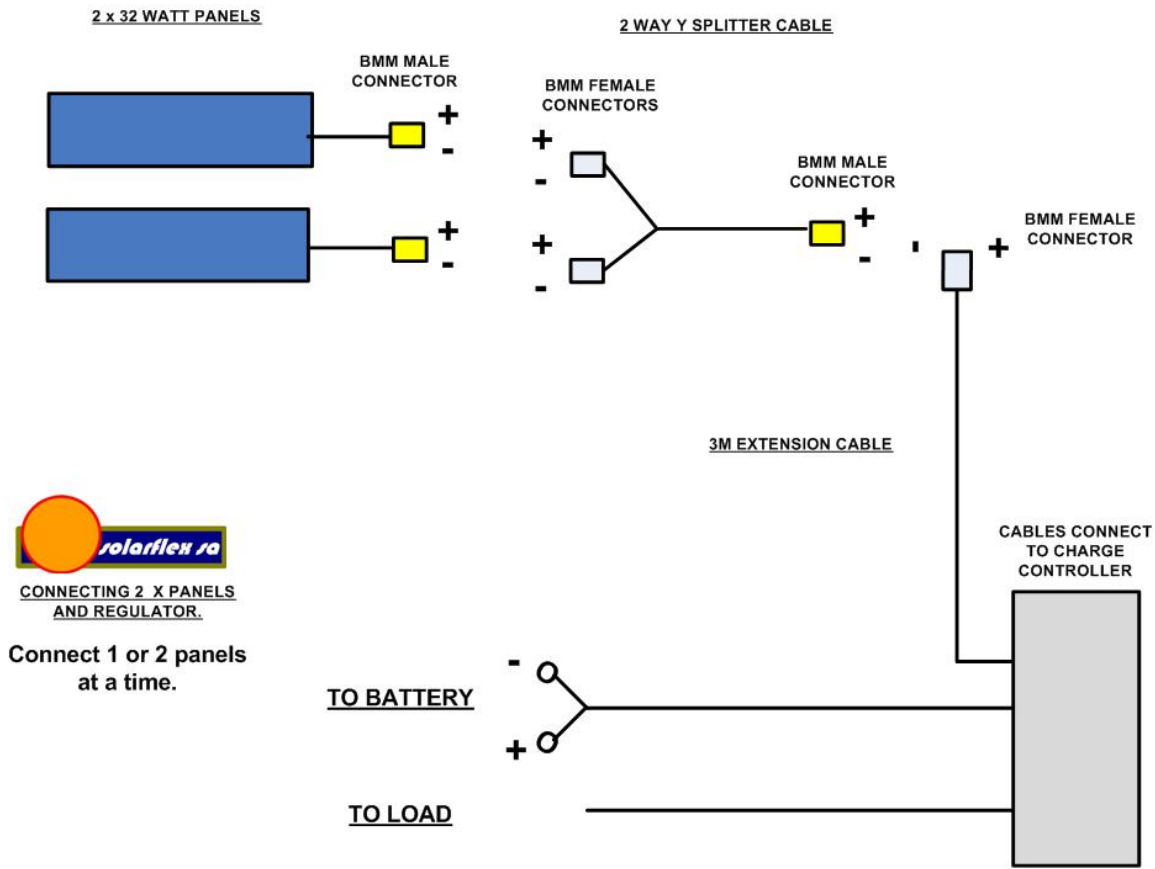
Connecting your Panel to the Appliance.

The plan below illustrates a Solar Panel connected via a 3m Extension Cable to a charge controller, a deep cycle battery and an appliance.



The following is an example for connecting 2 x Panels, a Y-Splitter cable, and a 3m Extension Cable to the Charge Controller.

The Appliance (Load) connects directly to the battery or to the Charge Controller.



Connecting the Battery to the Charge Controller.

The Charge Controller maintains a balance in the system by cutting of the power supplied to the battery to prevent overcharging.

It will also prevent a reverse flow of power from the battery to the panel.

The illustration below shows a typical charge controller.

The Panel is connected directly to the charge controller panel input on the left.

The battery cable can be connected to the battery input, positive and negative in the centre.

The load can be connected directly to the charge controller on the right, or alternatively to the battery itself.

Overcharging the battery may result in damage to the battery.

Longer battery life can be achieved by disconnecting the fridge overnight during cooler temperatures.

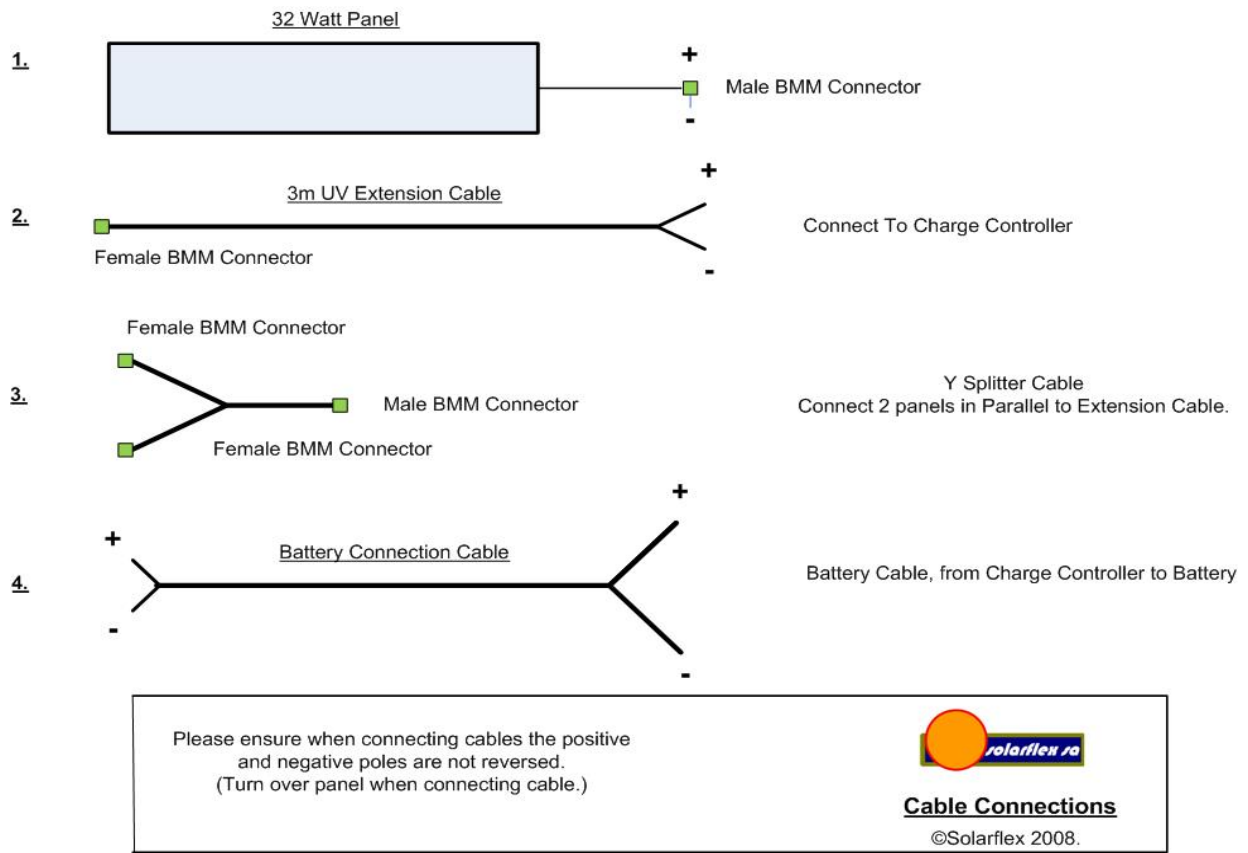
Most fridges consume between 35Ah to 45Ah per day.



Connections: Left = Panel // Centre = Battery // Right = Load.
Please read the Stecca Solsum Connection directions for further instruction.

NB. Please note that the f series Charge Controllers require the battery to be connected for correct voltage regulation between all devices.
The flow of voltage can be disrupted without a battery connected in the circuit.

The figure below illustrates typical cable connections.



Connecting more than 1 Panel for Extra Input power.

It is possible to connect more than 1 x 32Watt panel in a Daisy Chain Connection to the Battery to ensure that more Amperage power is supplied to the Battery when utilising more than 1 panel.

2 or more panels can be connected in this fashion.

Please note that higher amperage Charge Controller would be required when connecting more than 2 panels, typically a 10 amp controller will suffice for 2 panels. A typical Y connector can connect 2 or more Solar Panels to a cable connected to the Charge Controller.



Typical Y Splitter Cable with 1 x Female BMM connector and 2 x BMM Male connectors

When connecting a second panel to an existing panel which is in operation outdoors in sunlight it is recommended to deploy in the following manner:
Cover the original panel or turn it over so that there is no electricity being produced by the module as you make the new wire connections.
Disconnect the original panel from the cable connecting the panel to the battery.
Connect the original panel cable connector into one of the Y-Splitter connectors.
Cover or turn over the second panel and connect the panel cable to the second splitter connector.
Connect the other end of the Y-Splitter connector cable to the cable leading to your battery connection cable.
Should you be using a safety cable with a 4 amp fuse replace the fuse in the with a larger capacity fuse, typically a 14amp fuse.
Uncover or turn over the solar panels so that they are exposed to the sun.



Standard Operation.

Standard operation with the Charge Controller, Battery and Fridge connected.

System Requirements:

Solar Panel with Cable and Male Connector.

Extension cable if required, with 1 x Female connector, typically the extension cable is a bare wire screw type connection to the Charge Controller.

Charge Controller.

Battery Cable Connectors from Charge Controller.

Connection from appliance to battery.

12v input socket on device.

(The types of connectors depend on the cable connectors deployed.)



Cable Strain Relief.

The figure below shows an example of relieving the cable strain at the Panel Junction box. Regular use of the panel and normal wear and tear could lead to unnecessary strain being put on the cable in this particular area.

Use some cable ties and strong tape to protect the cable junction.



Typical Cable Connection for 1 x Panel.

The figure below shows one panel with a 3m Extension cable connected to a 6Amp Charge Controller. There is also a Battery cable connected to the Charge Controller.

The type of connector used on the battery cable would be dictated by the type of battery and individual preference.



Bags for the 32Watt Flexible Panel.

Washable durable denim cloth, Velcro flaps.
Storage and travel bags for the panel and cables.
Also suitable for 2 x 32Watt Flexible Panels.



**Typical Parallel Connection: 2 x 32Watt Solarflex SA Flexible Panels.
Effectively resulting in a 64Watt Solar Panel.**



The picture on the left shows 2 x 32Watt panels, secured with cable ties through the securing eyelets, with the y-splitter cable, connected to a 3m Extension Cable which in turn is connected to the Battery Charge Controller.

The Battery cable (without connectors) is also connected to the charge controller.

In this configuration the panel's operating voltage will stay the same; however the output amperage is increased for greater power generation.

The picture on the right shows 2 x 32Watt panels, secured by cable ties to each other, folded onto each other.

The panels can be safely transported in this manner thereby protecting the solar panel during transportation.

It is not recommended to roll up the panels, best practice is to transport whilst flat.

NB> Maintenance of the Panel.

- **Do not bend the panel; whilst it is flexible, it is not designed to be folded.**
- **Do not roll the panel too tightly, it best to store and travel with the panel maintained in a flat position.**
- **The above is a guideline; 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.**

Please contact your authorised retailer for further information.

Or alternatively please mail: info@solarflex.co.za

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

