

## Motorhome Solar Panel Kit

## INSTALLATION GUIDE for

60 Watt Kit - 05002MK03

85 Watt Kit - 05002MK04

130 Watt Kit - 05002MK05



### Kit Contents

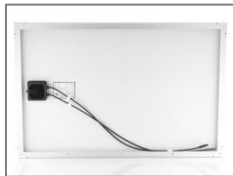
YINGLI solar panel fitted with approximately 1m cable pair, ending in waterproof connectors.

Pair of 4m extension cables, ending in waterproof connectors that fit with panel cable.

10A EPHC charge regulator.

Pair of battery cables with fuse and ring terminals.

Fixing brackets c/w bolts, Twin cable gland and Sikaflex 291 (100ml).



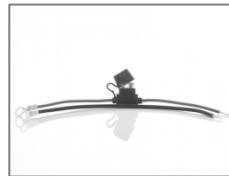
SOLAR PANEL



PANEL CABLING



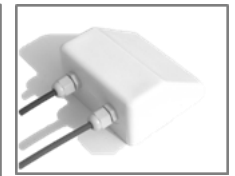
REGULATOR



FUSED BATTERY CABLE



'Z' BRACKETS



CABLE GLAND



SOLAR PANEL



REGULATOR



BATTERY



12V APPLIANCE

Solar power for your motorhome, caravan or boat! These kits are designed to charge your motorhome, caravan or boat 12V battery. They contain everything you need for the installation and are very simple to fit. Intended for permanent mounting on a flat roof, kits include a polycrystalline framed solar panel, 10A charge regulator, cabling and mounting accessories.

- Yingli solar panel with high transmission glass front, aluminium frame and weather proof junction box with screw terminals.
- Panel includes bypass diodes to minimise the effect of shadows.
- 25 year module power output warranty.
- 10A EPHC regulator supplied with each kit ensures that your battery won't be overcharged.
- Comes with approximately 4m of cabling between panel and regulator, with MC3 waterproof connectors.
- Fused battery cables with ring connectors to fit to battery.
- Simple mounting brackets allow you to fix your panel to your motorhome roof, or preferred location.
- Cable gland and adhesive (Sikaflex 291) included in the kit.
- No soldering or difficult wiring is required – we've done it all for you!

## 1 - Preparation

Our solar panels are supplied already pre-wired for easy installation.

- Before fixing the solar panel to your motorhome or boat, it is usually best to plug the 3m extension cables into the connectors fitted to the wire coming from the back of the solar panel. This allows you to position the panel without having to worry about access to rear.
- The cables are identified as '-ve and '+ve' by both tags and colour.
- The cross sectional size of the extension cables is 2.5mm<sup>2</sup>, should you wish to extend them further.

## 2 - Fitting the Panel

- The position of your solar panel should be considered carefully allowing for the physical requirements of its mounting, obstructions on the surface being mounted on and proximity to where you will fit the charge regulator. It is also recommended that you consider your wiring route prior to making any holes in the roof.
- You should leave a minimum clearance gap of 10mm beneath the panel, for heat dissipation from the panel. A panel becomes less efficient when it becomes too hot.
- There are two types of 'Z' brackets depending on model type supplied, but the principle of fitting remains the same, in that the brackets should first be bolted to the underside of the solar panel frame.
- Subject to your roof type the panel can now be fixed to your motorhome or boat, as appropriate.
- Please take care that there is sufficient roof structure to permit the secure fixing and to withstand loads generated when travelling.
- As each application is different, it is the 'fitters' own responsibility to ensure the panel is securely fixed to the roof or structure. Please also note that an appropriate sealant or barrier should be used to prevent moisture ingress inside the motorhome or boat.

At an appropriate point on the motorhome roof the twin cable entry gland housing should be installed, with the cable entry gland/glands facing down.

- Assemble the housing and glands, ensuring that glands are secure and tight to the body.
- After making an appropriate sized access hole in the motorhome for the cabling, bond the plastic housing to the motorhome/boat, using the sealant provided. It may be easier to feed the wiring through the housing and glands, prior to bonding the housing, depending on your situation. Follow the manufacturer's instructions and safety guidelines for the sealant.
- Ensure cable glands are tightened and that cable is secure.

During use please be aware of shadows cast from surrounding buildings and trees etc., as this will affect the efficiency and power generated from the solar panel.

It is good practice to keep the panel clean from dirt and debris at all times and cleaned using a mild solution of soap and water.



### CAUTION

On exposure to sunlight PV panels immediately generate an electric current and although the voltage produced is generally low, touching bare wires or terminals can cause shock and burns. If preferred place a cloth or card over the module to prevent the panel from generating power, while you are installing it.

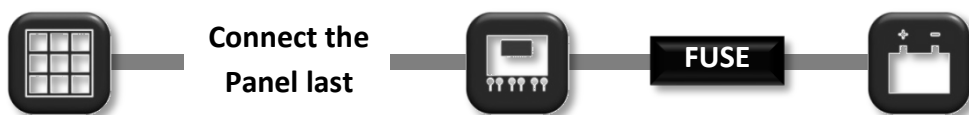
### 3 - Fitting the Charge Regulator

The charge regulator should be fitted in a dry, ventilated environment as close as possible to the battery, to reduce voltage drop. Please refer to and follow instructions that come with the regulator supplied.

- Before installing the charge regulator be sure to unplug the cables from the solar panel.
- The stripped and tinned ends of the extension cables are connected via screw terminals to the base of the regulator.
- Please ensure that the '+ve' and '-ve' leads are connected the correct way round, observing polarity at all times.
- The fused battery cable can now be fitted in a similar manner, ensuring the correct polarity at all times. Should you need to modify the length of these to reach the battery, please bear in mind that they should remain as short as possible at all times.
- Plug the solar panel cables back together.

The final assembly should look similar to the photograph shown.

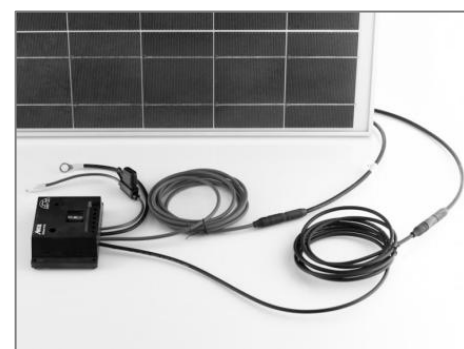
*Please note that although it is possible to connect a load such as a light directly to the charge regulator, for motorhome and boat applications this is not recommended, due to the load limit on this circuit.*



#### IMPORTANT

Connect the charge regulator to the battery first and then connect the solar panel to the regulator.

Warranty may otherwise be affected.



### 4 - Safety and Handling Precautions

- This kit has been designed for mobile leisure applications and as such ring terminals are provided for the battery connections, as crocodile clips are ONLY suitable for stationary batteries.
- Always ensure the correct polarity.
- Stripped cable ends should always be tinned and always use electrically insulated tools.
- For more information please see our range of downloadable guides, including 'An Explanation of Solar Panel Basics', available from [www.selectsolar.co.uk](http://www.selectsolar.co.uk).
- On exposure to sunlight PV panels immediately generate an electric current and although the voltage produced is generally low, touching bare wires or terminals can cause shock and burns. If preferred place a cloth or card over the module to prevent the panel from generating power.
- This product has been designed to be robust. However, we recommend that the module is carefully handled and stored at all times as forceful impacts can cause irreparable damage and void warranty.
- Never twist, bend or otherwise deform the panel, as this will invalidate the warranty.
- Drilling or welding the frame is NOT recommended and will invalidate the warranty.
- Never use a device that concentrates the light on the modules as this could seriously damage them and invalidate the warranty.

## 5 – Technical Specifications



### Panel Characteristics

- Comprising 36 'Polycrystalline' cells connected in series and capable of charging 12V batteries.
- Bypass diodes included to avoid hot spot effect.
- Heavy duty anodised aluminium frame provides high wind resistance and convenient mounting access.
- Cells are laminated between high transmissivity, low iron, 3mm tempered glass and a sheet of TPT material, with two sheets of EVA to prevent moisture entering the module.
- Installation holes for standard brackets systems are provided.
- Weather-proof junction box.
- Panels are manufactured in accordance with IEC 61215 and come with 25 years limited output warranty.

Electrical Characteristics	60w	85W	130W
Typical maximum power (Wp)	60	85	130
Open circuit voltage (Voc)	22.0	22.0	22.0
Optimum operating voltage (Vmp)	17.5	17.5	17.5
Optimum operating current (Imp)	3.40	4.86	7.43
Short circuit current (Isc)	3.80	5.60	8.44

### Standard Parameters

Nominal operating cell temperature (NOCT)	46 <sup>+/-</sup> 2°C
Current temperature coefficient (Isc)	+0.10%/°C
Voltage temperature coefficient (Voc)	-0.38%/°C
Power temperature coefficient (Wp)	+0.47%/°C
Edge grounding	<=1ohm
Wind resistance	2400Pa
Maximum system voltage	1000V

*This information represents the output of typical panels in 12V configuration. This data is based on measurements made in accordance with Standard Test Conditions (STC) 1000W/m<sup>2</sup>, AM 1.5 with a cell temperature of 25°C.*

Standard Parameters	60W	85W	130W
Weight	6.5Kg	8.4Kg	16Kg
Size of panel (mm)	770 x 660 x 35	660 x 1010 x 35	1470 x 680 x 50
Polycrystalline cells	36	36	36

#### Select Solar Ltd

Waterpark Storage, 4 Ermin Way Barns, The Street,  
Latton, Swindon, Wiltshire, SN6 6DN.

[www.selectsolar.co.uk](http://www.selectsolar.co.uk)

phone: 01793 752 032