

## INSTALLATION GUIDE for

### Dual Battery Motorhome Solar Panel Kit

**115 Watt Kit – 05002DB04**

**175 Watt Kit – 05002DB05**



#### Kit Contents

VICTRON solar panel fitted with approximately 0.9m cable pair, ending in waterproof MC4 connectors.

Pair of 3m extension cables with MC4 connectors.

20A Victron 12/24V dual battery charge controller.

Two pairs of 1m fused battery cables with ring terminals.

Set of Z brackets with bolts and self-tapping screws.

Twin cable entry grommet with tube of Sikaflex 70ml.



Solar power for your motorhome, caravan or boat! These kits are designed to charge your two banks of 12V batteries, containing everything you need for the installation and are very simple to fit. Intended for permanent mounting on a flat roof, these kits include a monocrystalline framed solar panel, 20A dual charge controller and mounting accessories.

Victron solar panel with high transmission glass front, aluminium frame and weatherproof junction box with screw terminals.

- Panels include bypass diodes to minimise the effect of shadows.
- 25-year module power output and performance warranty.
- 20A Victron 12/24V dual battery charge controller supplied with each kit to ensure that your batteries will not be overcharged.
- Comes with 3m of cabling between panel and controller, with MC4 waterproof connectors.
- Two pairs of battery cables with ring connectors to fit to a two 12V battery banks.
- Z brackets and cable gland that allow you to securely bond your panel to your motorhome roof, or preferred location, with the tube of Sikaflex included in the kit.
- No soldering or difficult wiring is required – we have 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 extensions cables into the connectors fitted to the cable coming from the back of the solar panel. This allows you to position the panel without having to worry about access to rear cables.
- The cables are identified as '–ve' and '+ve' by both tags and colour.
- The cross-sectional size of the extension cable is 4.0mm<sup>2</sup>, should you wish to extend them further.

## 2 – Siting of Panel

- The position of your solar panel should be carefully considered allowing for the physical requirements of its mounting obstructions on the surface being mounted on and proximity to where you will fit the charge controller. 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.
- Attach the Z brackets to the panel using the pre-drilled mounting holes on the underside of the solar panel, tighten the bolts once through.
- 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 controller should be fitted in a dry, ventilated environment as close as possible to the two battery banks, to reduce voltage drop. Please refer to and follow instructions that come with the controller supplied.

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

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



Connect to battery #1



Connect to battery #2



Connect to PV



### 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 of 36 'Monocrystalline' cells connected in series 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 bracket systems are provided.
- Weather-proof junction box.
- Panels are manufactured in accordance with IEC 61216 and come with 25 years limited output and performance warranty.

### Electrical Characteristics

	115W	175W
Typical maximum power (Wp)	115	175
Open circuit voltage (Voc)	23.32	23.7
Optimum operating voltage (Vmp)	19.0	19.4
Optimum operating current (Imp)	6.04	9.03
Short circuit Current (Isc)	6.61	9.98

### Standard Parameters

Nominal operating cell temperature (NOCT)	-40°C to +85°C
Current temperature coefficient (Isc)	+0.04/°C
Voltage temperature coefficient (Voc)	-0.25/°C
Power temperature coefficient (Wp)	-0.45/°C
Edge grounding	<=1 ohm
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	115W	175W
Weight	8kg	11kg
Size of panel (mm)	1015 x 668 x 30	1485 x 668 x 30
Monocrystalline panels	36	36

#### Select Solar Ltd

Unit 11a, Sullens Farm, Sunnings Lane  
Upminster, Essex, RM14 2DQ

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

Telephone: 01708 223 733