

## RomaGear – Foldable Solar Panels



### Installation Guide

#### Introduction

The standard RomaGear Foldable Solar Panel Kits consist of the following:

- 1) Foldable Solar Panel – with short cable and XT90 high current connector
- 2) Protective canvas cover
- 3) 5m Solar Panel cable – 4mm with XT90 connector on solar panel side
- 4) Victron PWM charge controller / regulator with solar/battery/load connector
- 5) User manuals

This document will serve as a guide for most common integration and electrical connection – please contact us for assistance in any other configuration or integration requirement.

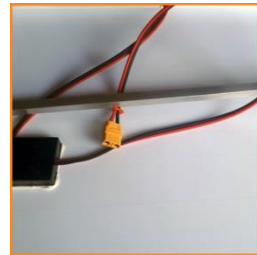
Ecoficiency can also assist with professional on-site installation to your requirement or supply any custom cabling for your specific installation.



Controller / Regulator

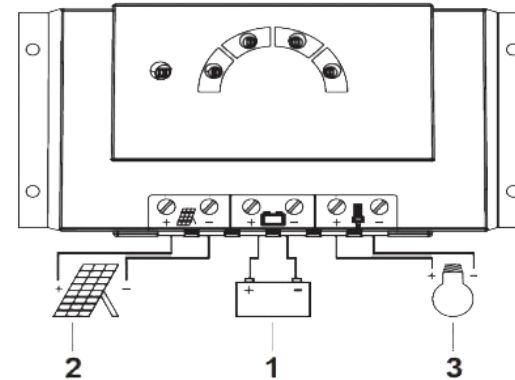


5m Cable with XT90



Panel with XT90

#### Controller Electrical Connections



1 - Battery | 2 - Solar Panels | 3 - Load (lights etc)

The supplied controller will have 1x solar panel input and 1x battery output.

ALWAYS – First connect your battery before connecting the solar panel.

The controller will also have a load output and can be used to directly connect any load (fridge/lights) to the controller instead of to the battery. By using the controller load output – you will be able to make use of further protection managed by the controller to prevent dangerous deep discharge of your battery that could significantly reduce battery life.

Using the controller load output is optional – loads can be connected directly on the battery as well.

Inverters must be connected directly to the battery – NOT the controller load output.

An in-line fuse on both battery positive and load positive is recommended – not exceeding the Amp rating of the controller.

## Cabling Electrical Considerations

The foldable solar panel kit will be supplied with adequate cable diameter for the specific panel. This standard cable will be 5m. An extension cable can be purchased to extend this to a maximum recommended 15m.

Cabling between the controller and battery is not supplied as this will depend on client configuration, layout and battery type.

The controller should be located as close to the battery as possible.

Care should be taken to install good quality cable with adequate diameter. Cable diameter from controller to battery should never be less than the supplied solar panel cable.

Min of 4mm cable is recommended between controller and battery for panels up to 150w.

Solar Panels larger than 150w – we recommend a cable diameter of min 6mm.

These recommended diameters are based on cables no longer than 3m – increase cable diameter on longer battery cables.

Sub-standard cable and connectors, and electrical connections not properly secured and insulated could cause significantly reduced system performance and can pose a short circuit and fire risk.

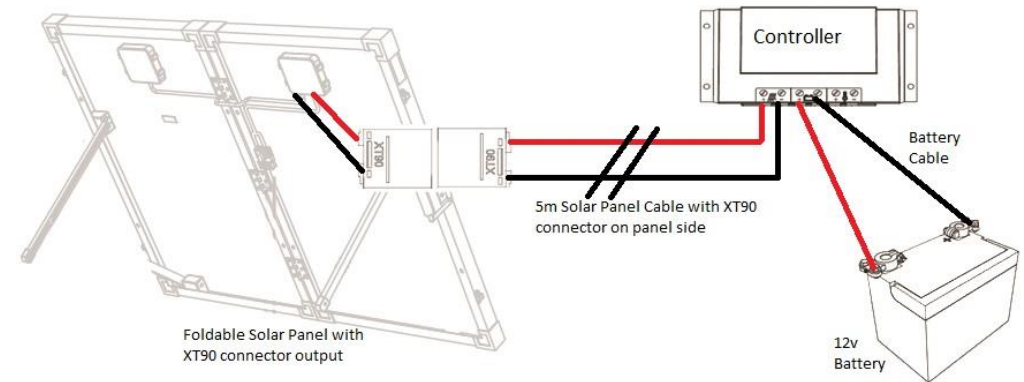
## Installation

Most installations can be done with basic DIY knowledge following the included user manuals.

This guide can further assist with a few tips to complete a good and practical installation.

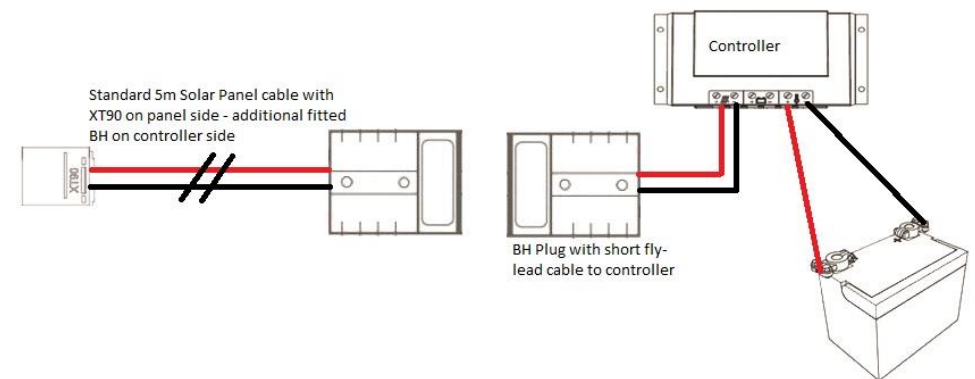
Ecoficiency can assist with and supply any cable for your requirement.

## Basic Electrical Diagram



## Trailers with no current battery system.

If you do not have any current battery system – you may simply follow the above diagram to complete your installation. To assist with easy plug-and-play of your solar panels – we do suggest adding a short fly-lead cable from the controller with a connector plug of your choice – and then adding the same connector plug on the 5m solar panel cable (controller end). We recommend using Red Brad Harris (BH / Andersen) plugs for this purpose. This plug can be mounted on the outside of the trailer on inside eg the nose cone.



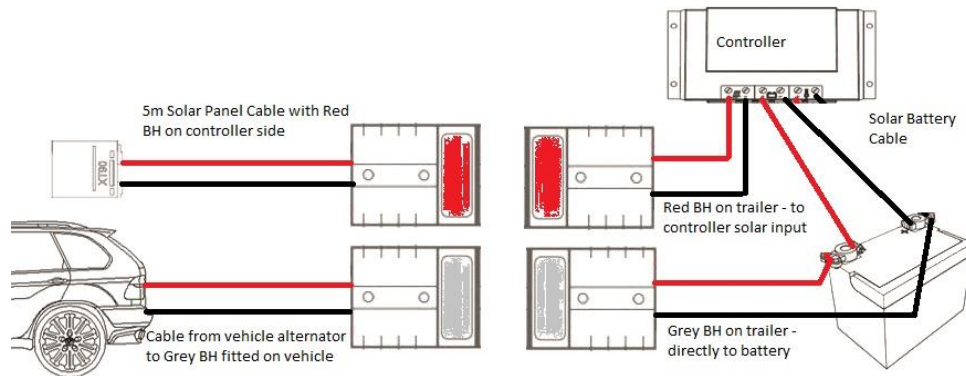
### Trailers with current battery system charged from vehicle.

Trailers may be fitted with a Grey BH (Brad Harris / Anderson) plug used to charge the trailer battery from the vehicle while driving. The vehicle will then also have a Grey BH plug at the back – usually connected to the vehicle alternator.

This Grey BH plug on the trailer is normally directly connected to the trailer battery. If this BH plug is used for the solar panel – the cable between the plug and battery need to be cut and the solar controller fitted in-line as discussed earlier.

Take note – this Grey BH plug should now ONLY be used to charge with solar panels and should NOT be used to charge from vehicle while driving as the vehicle alternator current will exceed the controller limit and will damage the controller.

An alternative would be to rather fit a second BH plug on the trailer – dedicated to the solar panel charge, and leave the Grey BH as is for charging from vehicle.



It is always recommended to still install an in-line fuse on the positive battery cable going to the controller – rated no more than the amps rating of the controller.

### Trailers with current battery system with control box.

Some trailers may also include a manufacturer fitted battery system control box. In some cases – this control box may have a solar charge controller built-in. The controller supplied with your solar panel may not be required. Please confirm with the manufacturer the maximum solar panel that can be connected. The supplied solar controller can still be used in parallel with the manufacturer battery system to ensure a highly efficient solar system.

### Keeping your trailer battery charged.

It is extremely important to keep your trailer battery charged while not in use to extend life and prevent sulfation and subsequent failure.

Our solar panel kits can be left connected permanently to keep the batteries healthy. Alternatively we recommend a Victron IP65 12v / 7A Charger (or similar) to keep the batteries charged. This charger is also available from ecoficiency.



BH on Trailer – charge from vehicle



Additional Red BH – Solar Charge



BH Red and Grey and XT90



Victron 12v DC Charger with Bluetooth