



# Assembly guide :

## Solar panels for Pulau Hatamin

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## Working principle

- Photovoltaic panels transform solar radiation into electricity (direct current), thus enabling the supply of suitable devices (Low consumption lamps, televisions, radios ...).
- The storage on batteries allows to restore, at the moment required, the energy accumulated during the day.
- The controller ensures optimal system management.
- This kit has been specially designed and calibrated to power devices with low power consumption in 48V (battery output in parallel) and 230V (output of the converter).

## Instructions for use

In order to obtain maximum performance and to guarantee its longevity, please pay attention to the following operating instructions before commissioning your solar kit :

- The energy available depends on the power of the photovoltaic panels and not on the battery.
- Remember to turn off the devices when not in use.
- Make sure the photovoltaic panels are clean, if necessary wash them in clear water.
- Make sure the cables remain secure, protect them or attach them if you see that they are likely to be damaged. A short circuit is dangerous and may cause a system failure.
- Do not use the battery in your solar system to start a vehicle.
- Do not add different batteries to the solar kit.

## Commissioning phase

- In order to obtain the maximum output of the solar panel, make sure that it is never in the shade (trees, walls ...). Install them, if possible, facing North with an inclination of 10° to the horizontal.
- Cover the solar panels with a blanket during installation as long as the electrical connections are not made.

## Solar kit contents

- 6 solar panels REC of 280Wc
- 4 SEC - CELLYTE TSG 12V 250Ah Solar Batteries
- 1 solar charge regulator 12/24 /48V BlueSolar MPPT Victron Energy 150/35
- 1 48V-230V Pur Sine Victron Energy Converter
- 1 Victron Energy BMV-700 battery monitor
- 2 solar electric cable 6mm<sup>2</sup>
- 1 pair of connectors type MC4
- 1 pair of connectors type MC4 Y form
- 6 flat lugs M8
- 3 inter-battery cables 0.25m of 25mm<sup>2</sup> section
- 1 Color control GX

## Required tooling

- Flat screwdriver
- A clamp (for crimping)
- A key of 6 - 8 - 13
- A wire stripper

## Assembly guide

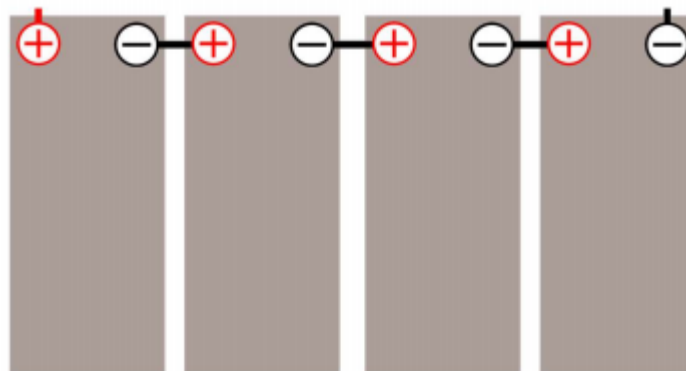
### Step 1 - Secure the regulator

- The appliance must be installed in a dry, well-ventilated area, as close to the batteries as possible but not on top of it. Keep a clearance of at least 10cm around the unit for cooling.
- Please read carefully the instructions for the Victron BlueSolar MPPT 150/35 Solar Controller.

### Step 2 - Connect the batteries

#### 1. Connect your 4 batteries in series to get 48V tension.

- Tight a cable between the negative terminal (-) and the positive (+) terminal of each of your aligned batteries (see below).



#### 2. Connect your charge regulator to your 48V battery bank:

- a. Crimp the M8 flat lugs provided in the kit on to one end of each (+) and (-) cable that will relay the battery bench to the regulator.
- b. Starting from your charge regulator, connect the positive battery (+) terminal to the positive (+) terminal of your battery bank.
- c. Starting from your charge controller, connect the cable from the negative (-) battery terminal to the Load (P4) terminal on the Shunt.
- d. Starting from the Battery (P1) terminal of the Shunt, connect a cable to the negative terminal (-) of your battery bank.
- e. Starting from the terminal (B1) of the Shunt, connect the small red cable supplied in the box of the BMV to the positive (+) terminal of your battery bank.

- f. Starting from the RJ12 port of the Shunt, connect the cable provided in the BMV box to the other RJ12 port on the BMV display.

The cables connecting the regulator to the batteries must not be more than 2 m long. If not, please use a larger cable section (6mm<sup>2</sup> up to 5m long).

### Remark

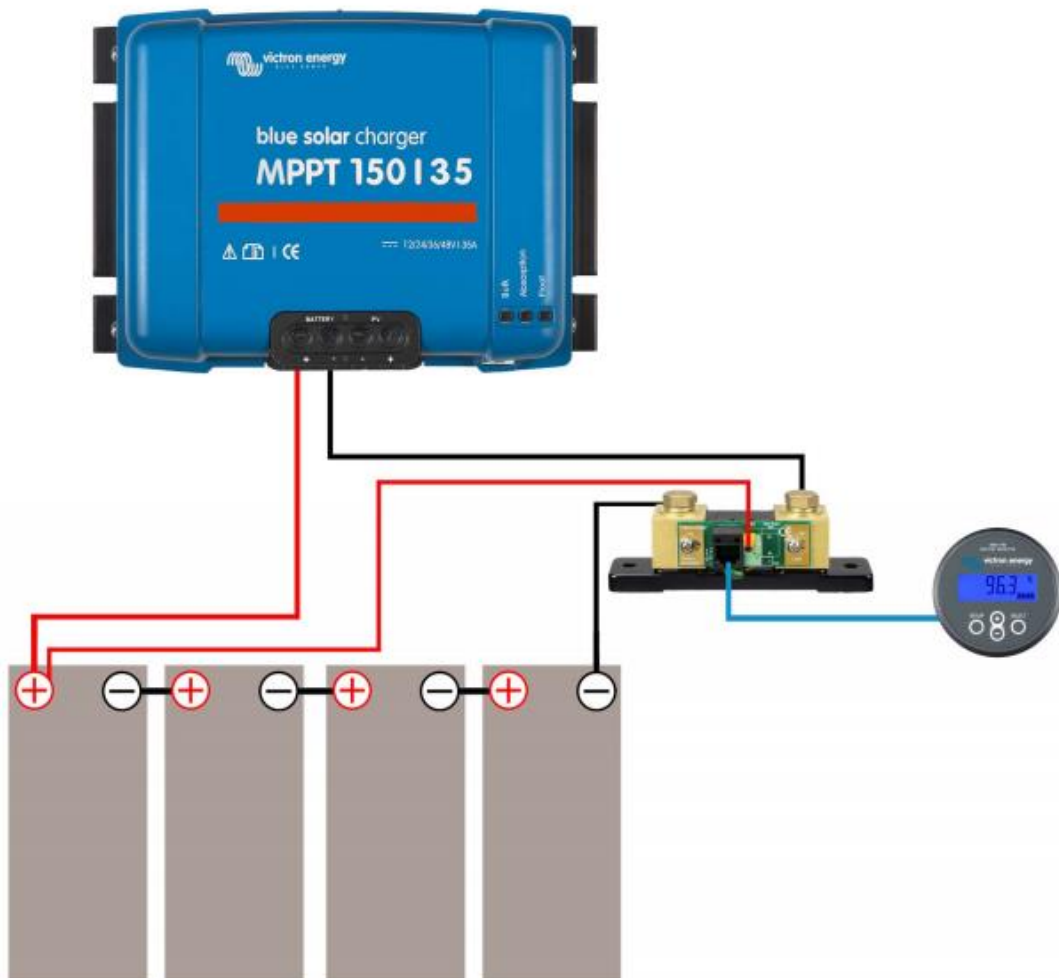
Protect the end of the bare cable when making connections to avoid short circuits.

### Warning

Caution in case of short circuit, deterioration of the battery and risk of projection.

Do not reverse the connection of the positive and negative pole of the battery: this grids the protective fuse.

### Final result:



### Step 3 - Connect the solar panels

**IMPORTANT:** Always connect the batteries to the regulator **BEFORE** the solar panels.

1. To connect the panel, make two extensions long enough to cover the length between the solar charge controller and your solar panels. For each extension, you will need:

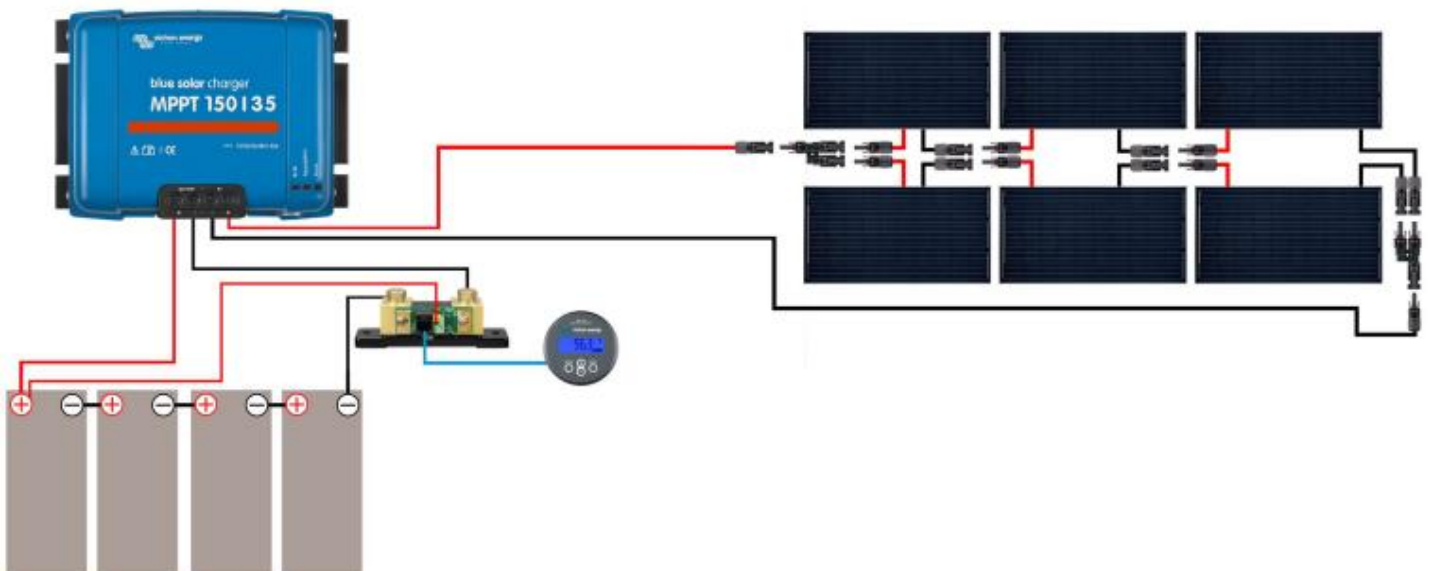
- A first crimped cable with a MC4 Male Tip connected to the negative (-) terminal of the regulator.
- A second crimped cable with a MC4 Female tip connected to the positive (+) terminal of the regulator.



2. Make two sets of three panels in parallel, as shown in the diagram below:

- Each group of 3 panels will see its positive (+) pole clipped on an MC4 Y connector.
- Each group of 3 panels will see its negative pole (-) clipped on an MC4 Y connector.
- Connect the MC4 Y to the respective extension cables from the regulator.

### Final result:



## Remark

It is preferable not to exceed a length of 12m of cable between the solar panels and the regulator, under penalty of seeing the solar panel's power consume in the cable.

## Step 4 – 48V Devices Connection

For using 48V devices like lighting or something else, you must plug your equipment directly on the batteries bank. Be careful to not discharge your batteries over than 50% to not deteriorate them.

**Connect the power supply of color control to batteries.**

## Step 5 – Connect the Multiplus inverter/charger

To plug the voltage inverter/charger 48V/230V:

1. Fix the M8 flat lugs to the extremities of each cables (+) and (-) of the inverter/charger.
2. Link the cable of the positive terminal (+) to the fuse and to the battery positive terminal (+).
3. Link the black cable of the negative terminal (-), to the Load (P4) terminal of the Shunt.

## Remark

It is possible that there is a spark during the inverter/charger first plug. This is due to the first charging of the inverter/charger capacities.

Each plugging mistake from the cable to the battery can produce damages !

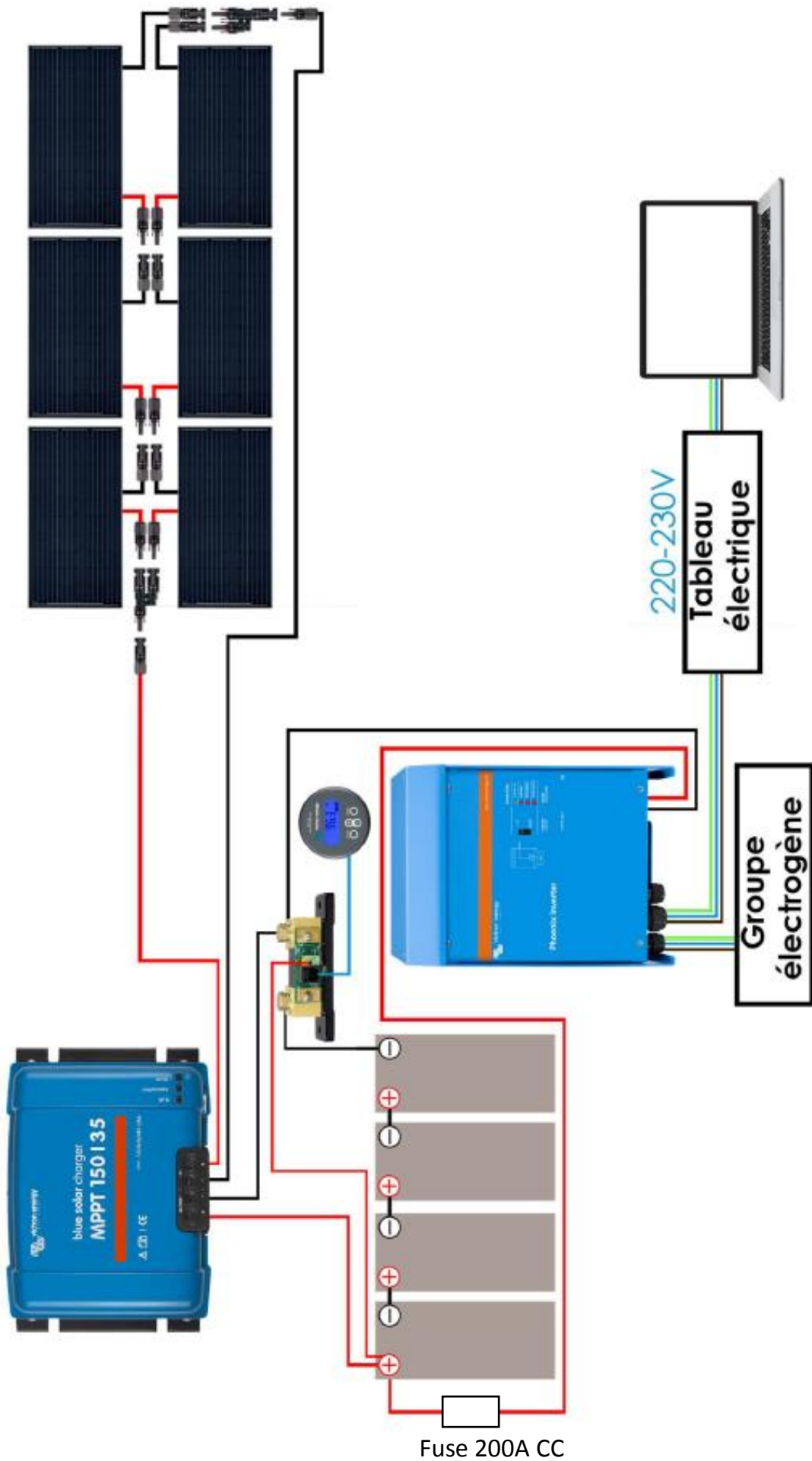
**Be sure that the switch is in "0" position before plug the battery !**

## Warning

Alternative voltage 230V, electrocution risk!

Don't plug the converter output to another electric source, it can damage it!

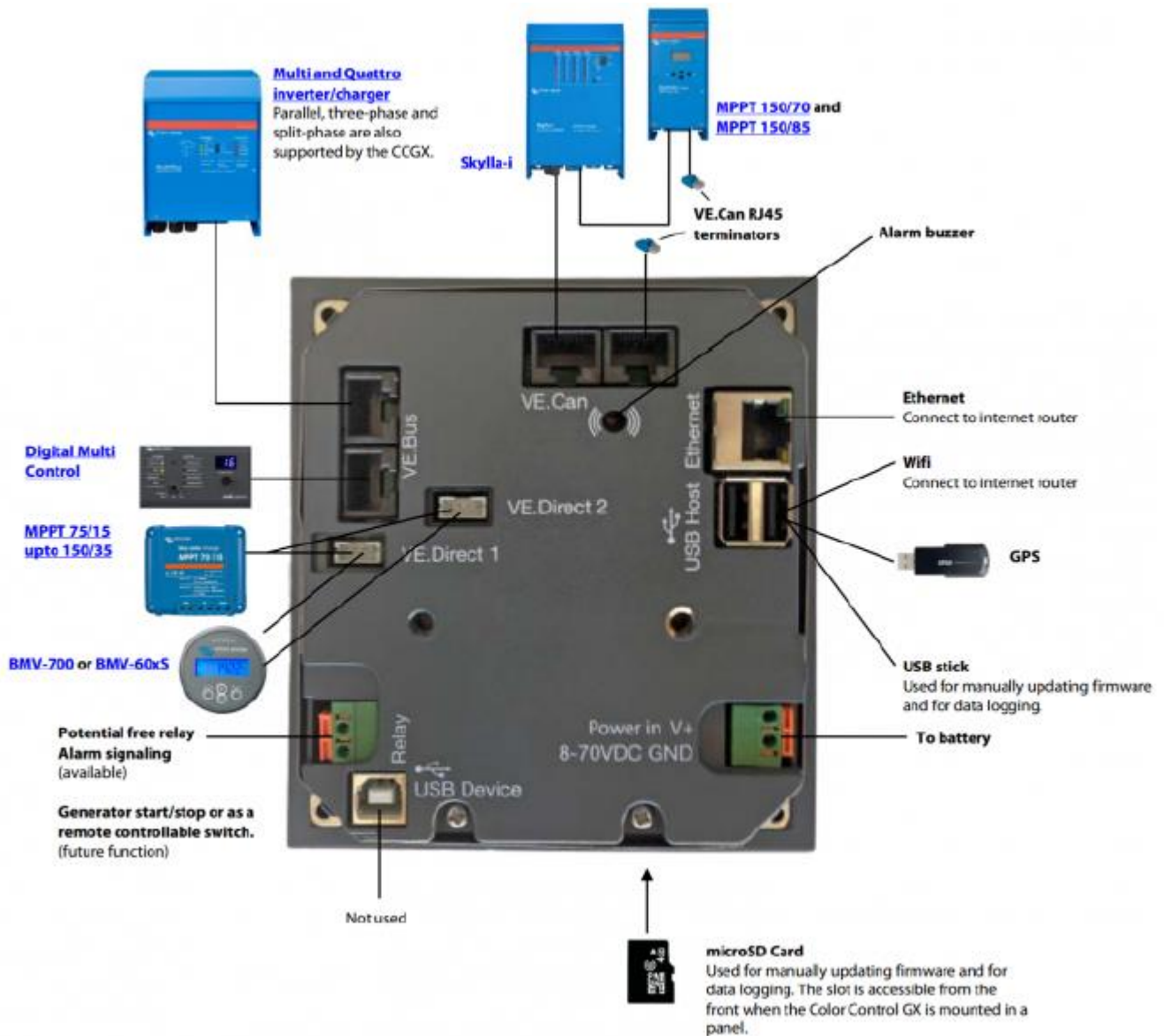
# General electrical diagram





## Step 6 – Connect the Color Control

Connect the Multi inverter/charger, MPPT 150/35, BMV-700 and the router to the color control .



If you have some questions or some doubts,  
call an experienced electrician.