

## Chapter 1

# Hardware Installation

If you have just purchased your WattmonPRO device, you will need to go through several steps before you can start using it. The WattmonPRO can come with a variety of modules and components. The first chapter of this guide explains the steps necessary to physically connect your Wattmon up. You will require a pair of pliers, a wire stripper and cutter and the right spanner size for your battery terminal in order to complete this part of the installation.

## Solar Monitoring Setup

If you depend on solar or other renewables for your energy, the WattmonPRO solar setup is meant for you to monitor your battery bank and give you detailed graphs of your energy generation and consumption. It can be used to monitor battery banks up to 60V DC directly, and upto 330V when connected through an adapter. For this, can purchase the various components from us, which are as follows :

- 1 x WattmonPRO Device
- 1 x Wattmon Current Sensor Module
- 2 x RJ45 Patch cable (1m)
- 1 x DC Power cable
- 2 x DC Lug for 16mm<sup>2</sup> cable



Figure 1.1 Wattmon solar monitoring components prior to hooking up with the battery

Your battery bank will already have cables connected to the positive and negative terminals. The positive terminal is marked by a + sign or a red dot, and usually a red cable connects to this. If you also have a solar charger attached, you would typically have two cables going to the + terminal. One of these will connect to the solar charge controller and the second will go to the inverter.



**Warning:** Before disconnecting the cables from the battery, make sure you switch off the inverter and the DC breaker for the charge controller.

## Hooking up the C752 Current Sensor Module

The WattmonPRO device requires at least one current sensor in order to collect data and compute battery capacity. The C752 Current Sensor Module is a dual hall-effect sensor which is used to monitor both solar input and load. For setups without solar, and a grid charger integrated into the inverter, you can hook up the load side only.

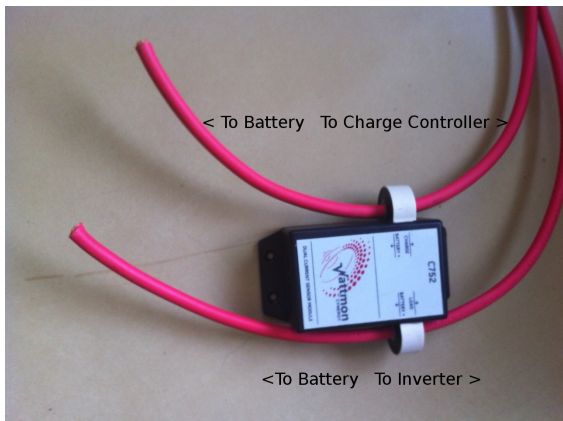


Figure 1.2 C752 Sensor with cables

After removing the two cables from the positive terminal, cut off the lugs at the end of the cables, and insert them through the holes in the wattmon C752 current sensor as shown in the picture above.

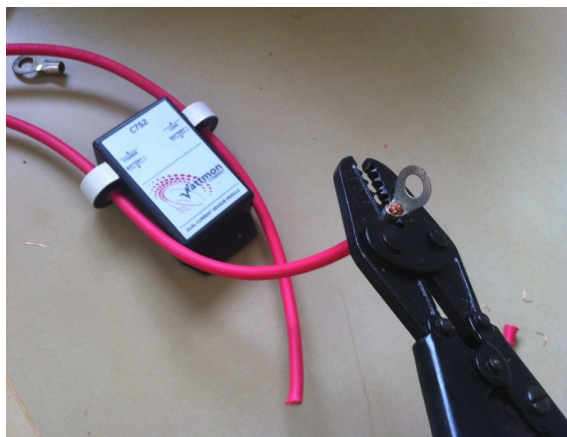


Figure 1.3 Crimping on the lugs

Next, strip the ends of both cables, insert the lugs, and crimp it with a crimping tool or a pair of strong pliers.

**Warning:** High currents will be flowing through this so make sure that the contact between the cable and the lug is very good or it could result in sparks or corrosion.



Figure 1.4 Negative battery terminal connection

Loosen the negative battery terminal (black one, marked with a - ) and remove the nut. Fix on the black wire of the wattmon power cable to this and re-tighten.



Figure 1.5 Positive battery terminal connection

Next, connect both of the thick cables together with the red end of the wattmon power cable to the positive terminal of the battery, and tighten.



**Warning:** Be very careful when reconnecting the cables to the positive battery terminal, especially at higher voltages, because you will get a large spark as the internal capacitors of the inverter charge up. Once you make contact again with the battery terminal, do not remove the lug or else it will spark again upon contact each time.

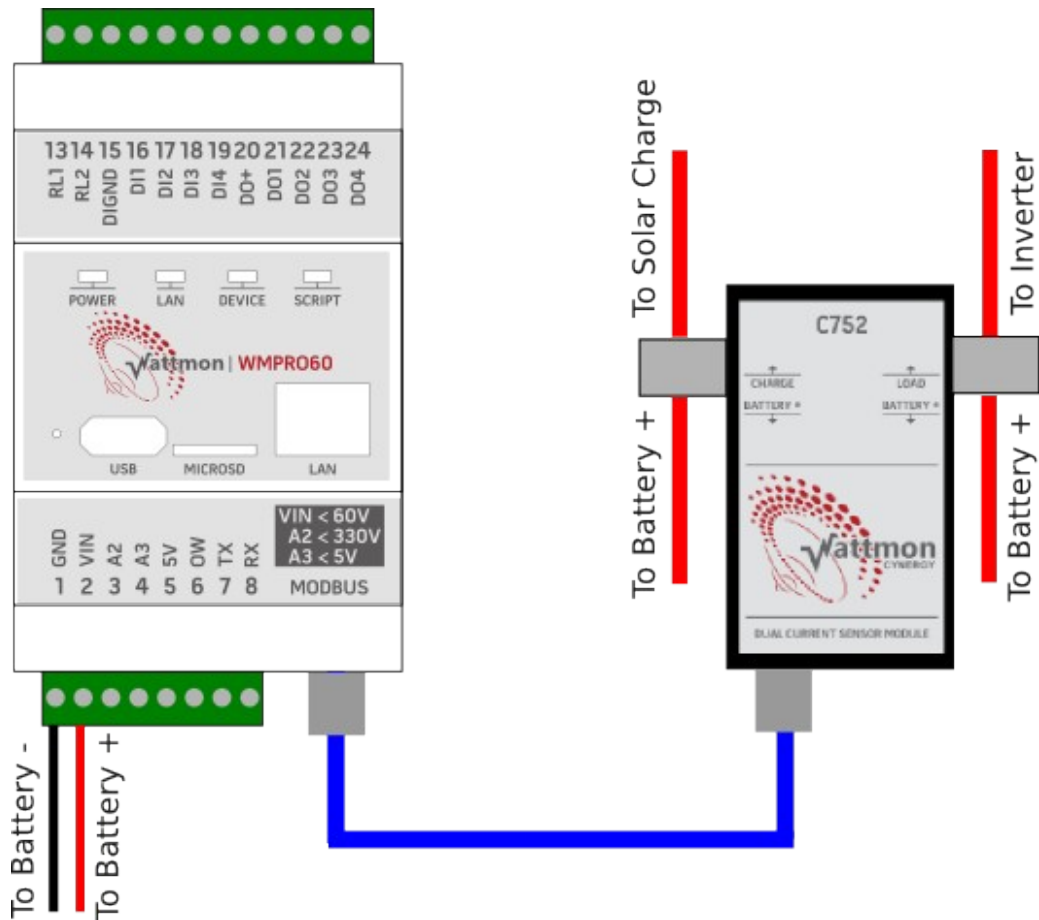


Figure 1.6 Final layout of your Wattmon solar monitoring setup

The final setup should look something like the image above.

One blue patch cable connects between the Device plug on the WattmonPRO to the C752 current sensor device (you can plugin it in to either of the two ports on the current sensor). The second blue patch cable goes from the LAN plug on the WattmonPRO device to your Internet router. If your router is further than 2 meters away, you will need to buy a longer cable. The device will work at up to 100 meters from the router.



**Note:** Make sure you connect a standard patch cable and not a crossover cable. Connecting a computer directly to the watttmon device over a crossover may not work properly.

Finally, plug in the power jack and make sure the *Power* light comes on. The *Script* light should start blinking to indicate activity. The *LAN* light should also come on.

The hardware portion of the WattmonPRO setup is now complete. In the next chapter, you will learn about the various software steps to setting up the device.

## High Voltage Monitoring Setup

The WattmonPRO can be used to monitor high voltage battery banks above 60V DC, up to 330V DC. The setup is identical to that of the solar monitoring, except for the power inputs. This requires an additional AC to DC or DC/DC power adapter to power the WattmonPRO device.

The 12V AC adapter plugs into 1 *GND* and 2 *VIN/AC*, which are terminals one and two respectively of the WattmonPRO. Then the battery negative goes into terminal 1 *GND*, and the battery positive is attached in terminal 3 *A2*. **Be sure to not attach the battery positive into the A1 as that supports voltages only up to 60V.**

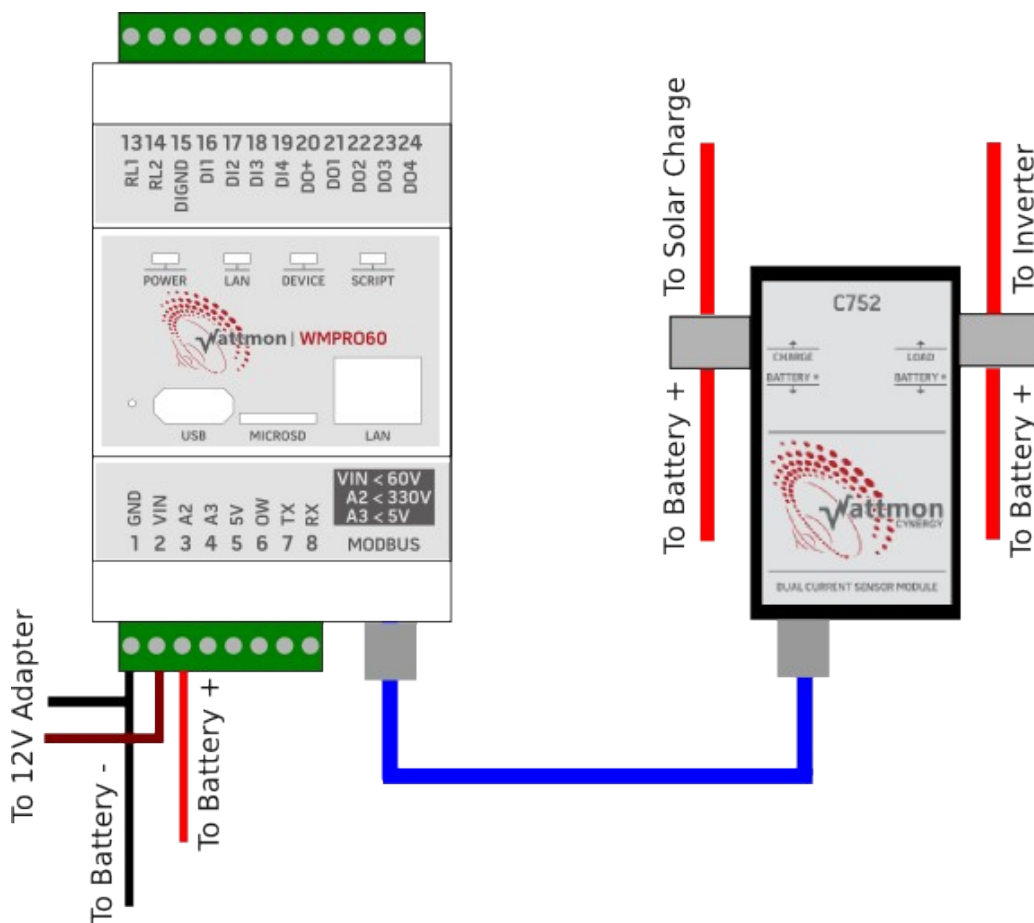


Figure 1.7 Final layout of your Wattmon high voltage monitoring setup



Warning: High voltage DC is lethal! Do NOT attempt to do this unless you know what you are doing, and make sure to switch of ALL devices and breakers before connecting anything to the battery terminal. Wear shoes, and never touch both the battery positive and negative terminals at the same time.