



Solar Controllers

Part 2

MPPT SOLAR CONTROLLERS

What's the difference? We're often getting asked this or similar questions. The main difference is more of your Solar Panels (PV) useable power is harvested *or* you could say less is wasted! Because the gains will increase the more Watts you are wasting, from only a little on small panels but on systems of say 300W (for example) you could possibly be losing up to 100Watts! (1/3 of rated output) at times.

This occurs due to Solar Panels being rated at their **Maximum Power Point** produced under Standard Test Conditions

E.g. **VOLTECH SP200ML**

This panel is rated at 200W (STC);

Maximum Current (Imp): 9.44 Amps

x *Maximum Volts (Vmp); 21.2 Volts*

= **200.12 Watts**



Fig. 1

Now if we were to connect this Solar Panel to a discharged 12V Battery using a standard Regulator (commonly referred to as PWM type) then the PV output voltage will be forced to almost match the Battery Voltage.

PWM TYPE: BASIC ANOLOGY

The PWM (Pulse Width Modulated) is basically an electronic switch which connects the circuit from the PV to the Battery, therefore allowing Current to flow into the Battery. When the Battery Voltage reaches the set point of say 14.2V for example, the switch turns off to stop charging and the Voltage from rising further. It can now continue to switch the current on/off at high speed to maintain a constant average as required.

TECH ARTICLE

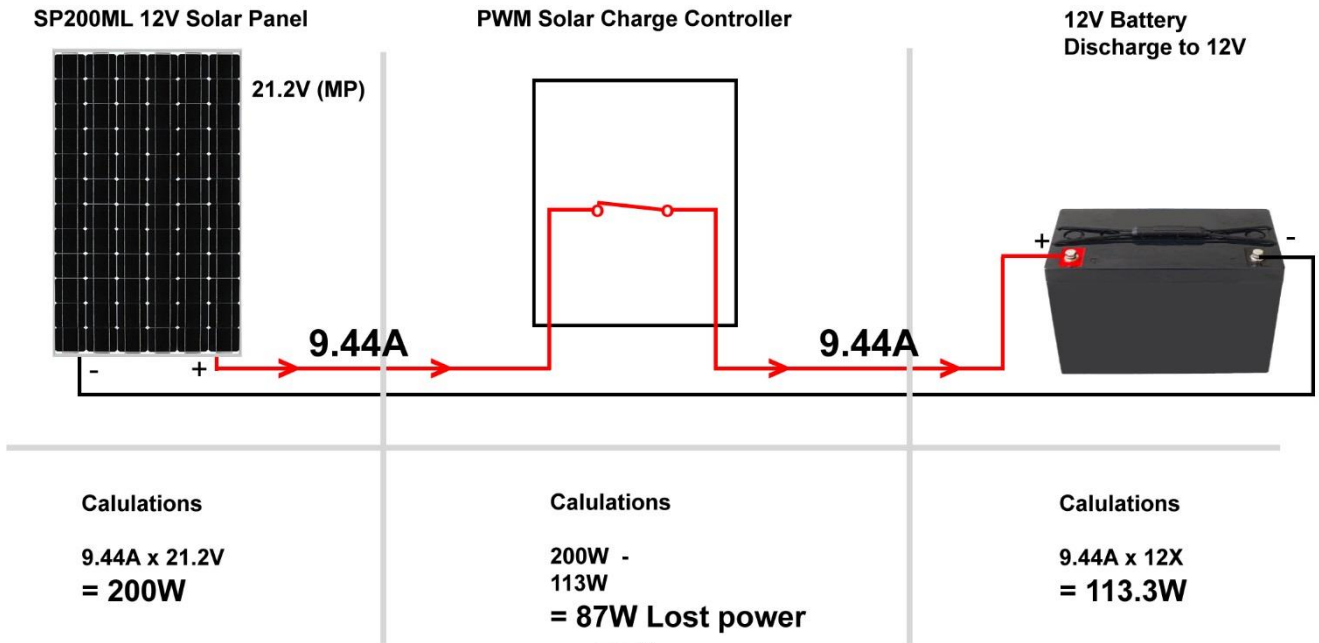


Fig. 2

MPPT TYPE: BASIC DESCRIPTION

MPPT (Maximum Power Point Tracking) is terminology commonly used to describe a circuit which converts the available PV power into the required output Voltage. A lot like a 'Voltage Converter' but also one which regularly tests the input source to find the best combination of voltage & current (power) at the time, then efficiently converts to 12 or 24V etc to charge batteries.

Fig.3 is a simulated example of the above using a [VOLTECH ISC-5040](#) Solar Controller whereby the Input is varying around 200W @9.35Amps and the Output is nearly 190W @14 Amps! giving an approx' total loss of only 4% including the converter's internal loss.



Fig.3



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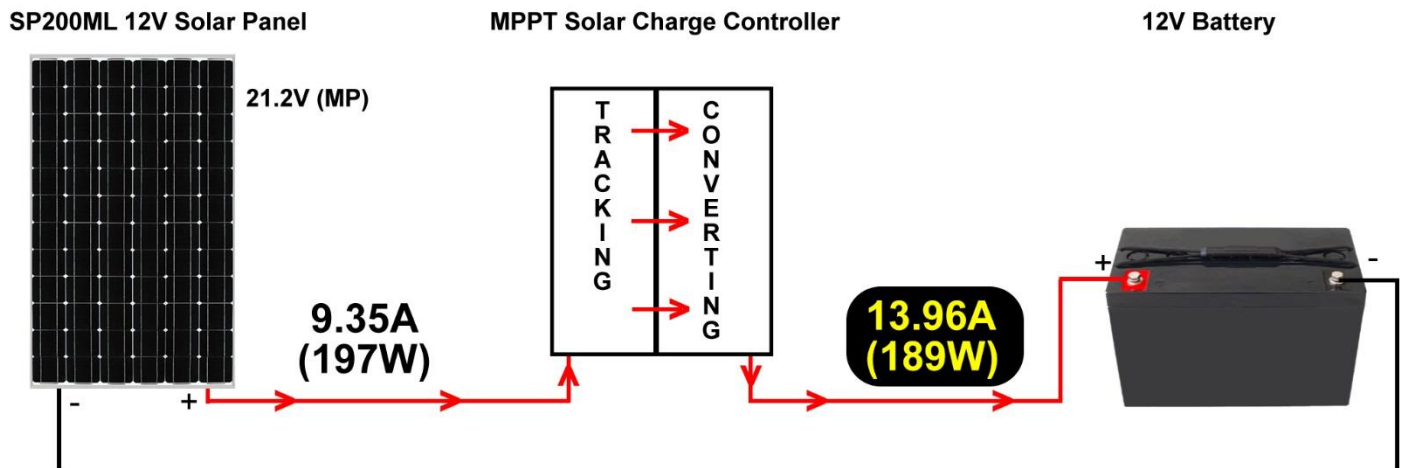


Fig. 4

In another article we'll look at some further advantages of using Voltech MPPT Solar controllers for larger & higher input Voltage PV setups, As well as Dual input DC to DC models such as the SCM-030 & SBC-5926.

In the meantime, if you require further information on anything discussed here or you have a question please contact us as below;

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