



MaxPower Charge Controller

MaxPower is a Maximum Power Point Tracking (MPPT) charger, designed specifically for use in temperate and colder climates.

Main characteristics

- Maximum power point tracking (MPPT)
- Three charging modes for optimum operation and battery life: MPPT, boost and float
- Temperature compensation
- Low current consumption
- Battery type selection
- Internal blocking diode
- Good electrical protection
- Large, robust screw terminals

Three different charging modes

MaxPower's maximum power point, float and boost charging modes maximise the power from the solar module and keep the battery as fully charged as possible, at the same time minimising battery water loss and corrosion caused by overcharging. A discharged battery receives the full benefit of maximum power point charging, followed by float charging to ensure the battery charge is fully restored. If the battery has been very deeply discharged, it will be boost charged to ensure a full recharge.

Internal blocking diode

The internal blocking diode prevents night-time leakage current from the battery to the module and also protects the controller and battery, for example in the case of a module cable short circuit.

Low own current consumption

At night time or in very dark conditions, MaxPower requires only 6mA current from the battery, which even in mid-winter consumes well below 3Ah per month.

Large robust screw terminals

MaxPower's large screw terminals accept up to two 4 sq mm cables.

MaxPower acts as an electrical "gear-box", helping to get the highest possible power from a solar module when it is most needed, especially in demanding circumstances. For example when the battery has been deeply discharged or when there are very long array cables, MaxPower allows the module to deliver a higher charging current than a controller that connects the battery directly.

The highest gains from using MaxPower are obtained when a 44 cell module is used instead of the normal 36 cell type of module.

Losses in long cables can be reduced by connecting two modules in series to a 12V battery through MaxPower. Another benefit of using MaxPower is that a one module MaxPower system can be very easily expanded by connecting a second module in series, without having to add new cabling between the modules and MaxPower.

MaxPowerTechnical information

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|---------------------------------------------------------|-------------------|
| Nominal system voltage | 12V |
| Maximum input voltage (module open circuit voltage) | 45V |
| Maximum input current (module short circuit current) | 7A |
| Maximum module power | 125W |
| Maximum output current | 10A continuous |
| Operating temperature range | -25°C to +40°C |
| Efficiency (typical) | 90 to 94% |
| Size (h*w*d) | 145 x 110 x 50 mm |
| Weight | 0.7 kg |
| Protection class | IP20 |
| Battery current drain | 6 mA typical |
| Float charging voltage @ +25°C | 14.2V |
| Maximum boost charge voltage @ -25°C | 15.6V |
| Charge voltage temperature compensation | -24mV /°C |

Illustration of increased charging with a 44 cell module in typical Nordic country conditions

If the module maximum power point is more than 1.5V higher than the battery charge voltage, MaxPower operates in MPPT mode, giving the highest possible charging current. In the example shown in the graph, MaxPower gives 30-40% increased daily charging to a deeply discharged battery and 10-20% more to a nearly-charged battery in most months.

For the most accurate operation, MaxPower should be mounted close to the battery, so that both are at the same temperature and the losses in the battery cables are small.

