

Mini MPPT controller 12/6V - 25W

For the optimal charge of a 6V battery by a 12V solar module

Charge control

The Mini MPPT 12/6 – 25W is a PC board designed to charge a 6 V battery with a 12V photovoltaic module. The energy transfer uses a high yield DC/DC converter working at maximum power point of the module (MPPT).

The battery charge works the following way, according to the situation :

- in the morning, if the battery is discharged, the power of the module is entirely transferred to the battery so its voltage increases as a function of its state-of-charge and the power received.
- as soon as this voltage reaches the end-of-charge value, this voltage is maintained during 1 hour with a reduced current, so that the battery can end its charge.
- After this phase, the voltage is set back to a floating value for the rest of the day.

An internal sensor allows to compensate these voltage set points (end-of-charge and floating) as a function of temperature.

The set points of the standard Mini MPPT are adapted to Lead acid CYCLON batteries*.

Discharge control

The load output of the card is connected or disconnected depending on the battery state of charge : when the battery voltage is too low, this output is disconnected (on the negative pole) and when the battery has recovered enough, the output is reconnected. An additional « alarm output » informs that the battery is discharged before this disconnection set point is reached.

Night mode

When the PV module voltage is too low, the controller turns to a « night mode » in order to lower its electrical consumption : in that state, the voltages are measured only every 10 seconds, and the controller goes back to the « day mode » as soon as 3 consecutive measurements are found above the set point. The discharge and the alarm are still under control in that mode at each measurement.

Electrical characteristics

Charge controller

PV module open circuit voltage :	15 – 25 V
Maximum PV module power :	25 W
Maximum charge voltage :	7.40 V
Floating voltage :	6.80 V
Thermal compensation :	- 9 mV / °C

Discharge controller

Maximal load current :	5.00 A
Series resistance :	< 27 mOhms
Cut-off voltage :	5.60 V
Alarm voltage :	5.80 V
Reconnection voltage :	6.20 V

*Other settings on request



General

DC/DC conversion efficiency :	> 92 % (10 – 90 % Pnom)
Self consumption « day mode » :	< 5 mA
Self consumption « night mode » :	< 2 mA
Temperatures :	-50 / +50 °C
Dimensions :	141 x 50 x 30 mm with 2 holes for assembly