

This revolutionary maximum power point tracker solar charger was designed using the technology that won GSL Electronics the prestigious “2008 EDN Innovation award”. A simple, compact and low cost alternative. Ideal for charging batteries with the new low cost and high efficiency grid type panels.



MPPT30HV Unit

PATENT APPLIED FOR - 2010901565

The MPPT is designed to charge sealed and vented lead acid batteries from photovoltaic pannels. Silicon based panels such as monocrystalline, polycrystalline and amorphous are suitable.

MPPT30HV Specifications

Efficiency typical	97%
Input voltage	16V to 180V
Output voltage	Float - 13.5V / 27V / 54V Absorption - Vented LA batteries 14.5V / 29V / 58V Sealed LA batteries 14.2V / 28.4V / 56.8V Calcium Batteries 15V / 30V / 60V
Output power	1800W / 30A MAX
Quiescent current	0.05A
Thermal protection	Automatic output derating to 70°C
Dimensions (mm)	306 X 177 X 70mm
Indications	LED display – OUTPUT STATUS



MPPT30HV General Information:

- Green LED On – Battery voltage above nominal.
- Green LED Flashing – Battery voltage below nominal.
- This MPPT is designed to auto detect 12V, 24V or 48V battery systems.
- The MPPT30HV is shipped in a sealed battery setting. But if your batteries are vented or calcium then, **BEFORE** wiring the MPPT in, follow the **CHANGING BATTERY TYPE SETTING PROCEDURE**.
- This MPPT has an automatic output power derating to 70°C to improve product reliability while maximising output power availability.
- The maximum continuous output power is 1800W in 48V systems, 900W in 24V systems and 450W in 12V systems. The output current is limited to 30A.
- **For additional safety and reliability we recommend the MPPT30HV to be used in conjunction with the MIHV240.**

Important notes:

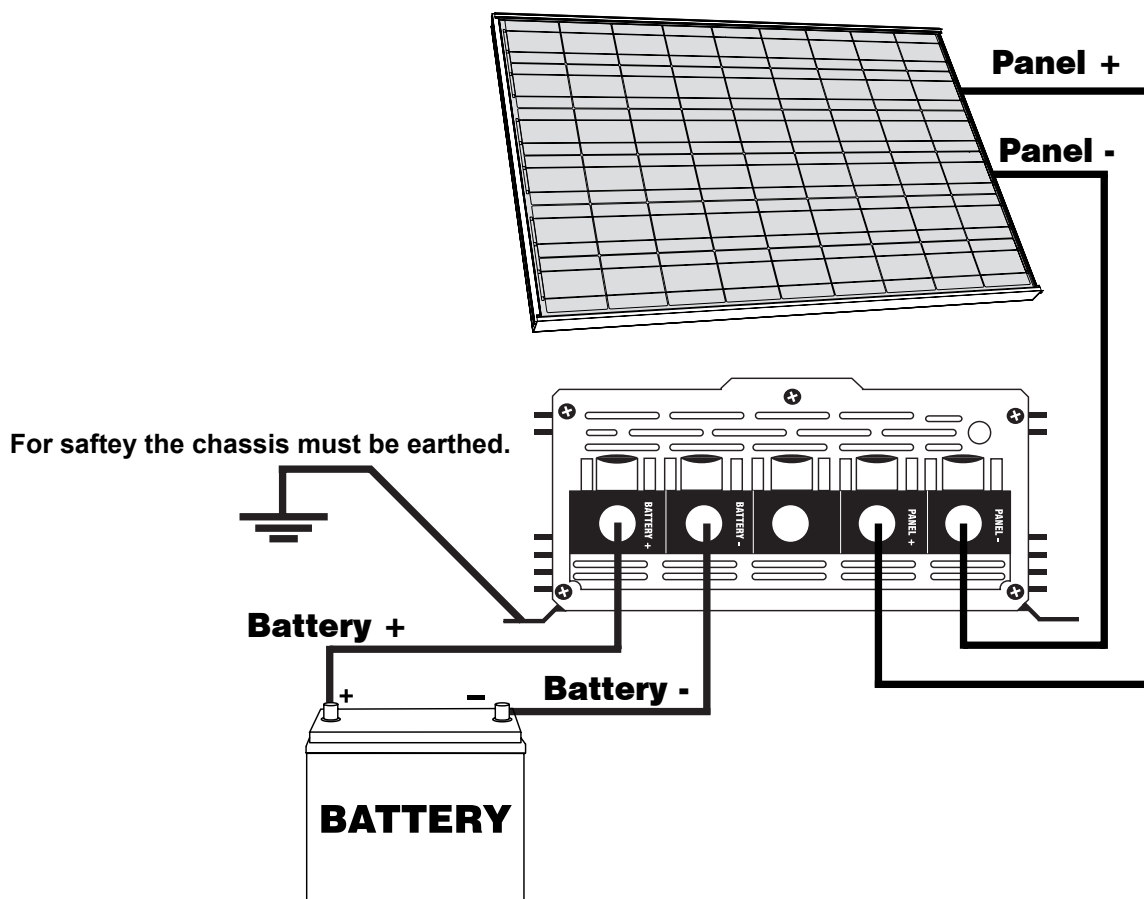
- Only qualified electricians or technicians who are familiar with solar system design and wiring practices should install this product.
- Use only PV Systems with open circuit voltage below 180V and a minimum V_{MP} of 16V for 12V batteries, 32V for 24V batteries and 64V for 48V batteries.
- This equipment must be installed by qualified personnel only and incorrect wiring can cause fire, injury or death – GSL will accept no responsibility for MPPT misconnection or misuse.
- Use only sealed, vented or calcium 12V, 24V or 48V lead acid batteries and confirm the MPPT settings charge voltages and currents are correct for your battery system – if in any doubt seek qualified advice!
- Use wires suitable for at least 40A, but if wire runs are over 3m then larger wires are recommended to limit voltage drop and losses.
- Install the unit in a dry place out of direct sunlight and away from flammable liquids or gases.
- The MPPT preferred mounting position is vertical with the fan on the lower side and at least 50mm clearances on top and bottom.
- Battery fuse (BF) is always required and must be located as close to the battery as possible, its sizing depends on the wire size and load ratings. (Always use DC fuses rated to match your batteries and charging situation.)
- Before connecting the battery always check the battery and PV panel polarity.
- **The MPPT30HV chassis must be properly earthed - if in any doubt seek qualified advice!** (We Recommend at least one of the one of the mounting fixtures is fitted with an external star washer against the heatsink.)
- Make sure that if the electrical circuit requires grounding that it is only grounded in one point. Ground on multiple points, such as on PV and Battery, may compromise MPPT Protections.
- **Make Sure that the connection sequence is as follows. 1st “Panel -”, 2nd “Panel +”, 3rd “Battery -”, 4th “Battery +” and finally 5th “Load -”**



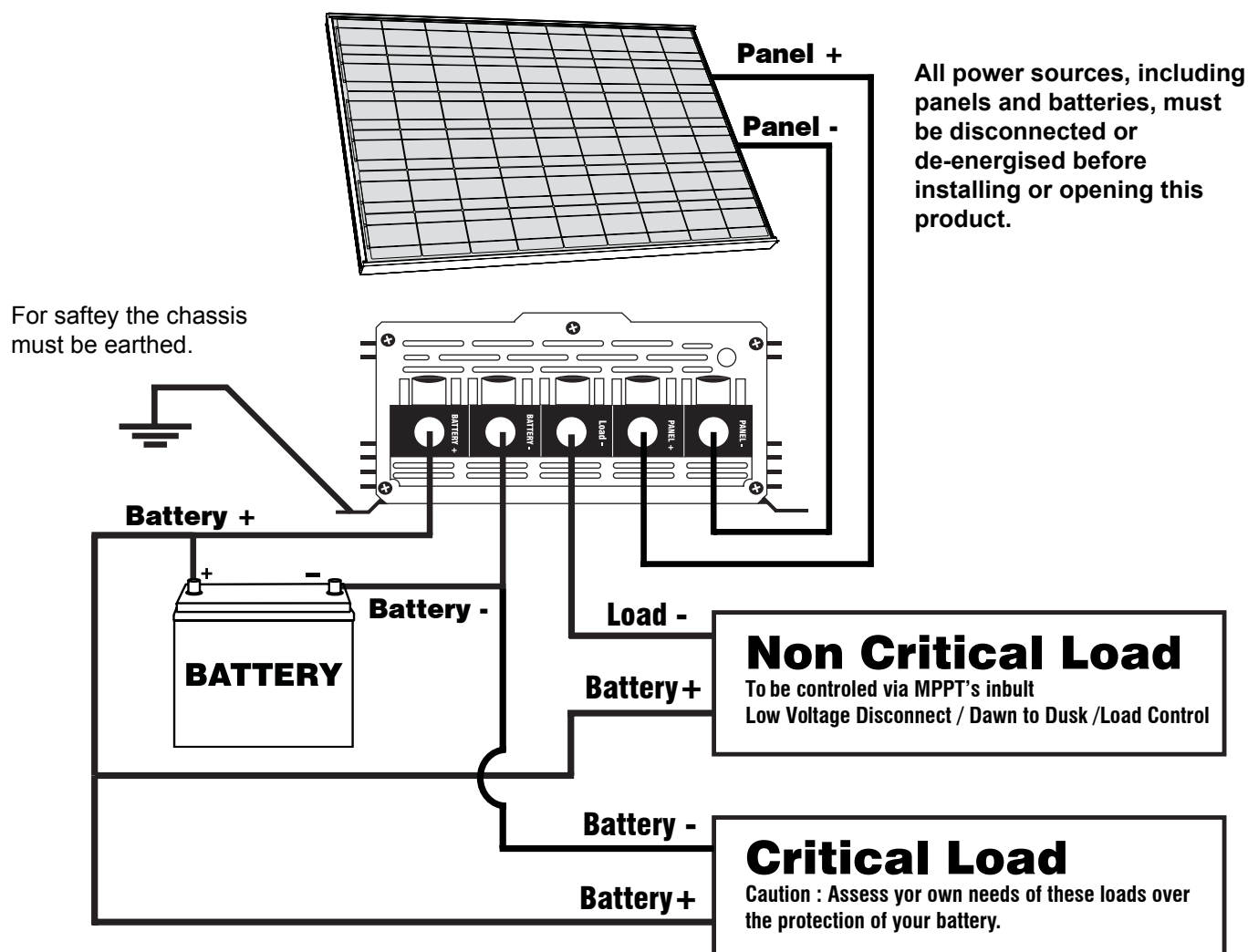
All power sources, including panels and batteries, must be disconnected or de-energised before installing or opening this product.

For safety the chassis must be earthed. If in doubt about the earthing or connections seek qualified advice!

Basic Wiring Instructions:



Load Wiring Instructions:



Wiring with MCM option:

Connecting the optional MCM-30 to the MPPT will allow various system parameter displays, output voltage and alarm settings and enable the programmable dawn to dusk or remote load control options.

The 9-pin D-Sub connector for the MCM is located at the rear of the unit

For full connection details please refer to MCM Manual.

Changing Battery Type Setting Procedure

- 1.Ensure all the MPPT wires are disconnected.
 - 2.Remove 7 front panel screws and the front panel and slide out cover – **see Figure 1.**
 - 3.Locate connector J4 – **see Figure 1.**
 - 4.Shift link on J4 to desired position – **see Figure 2 , 3 or 4.**
 - 5.Slide back cover and fit in front panel carefully, insuring led fits properly into housing, and screw back the 7 mounting screws.
- The above procedure can be repeated to change to a different mode.

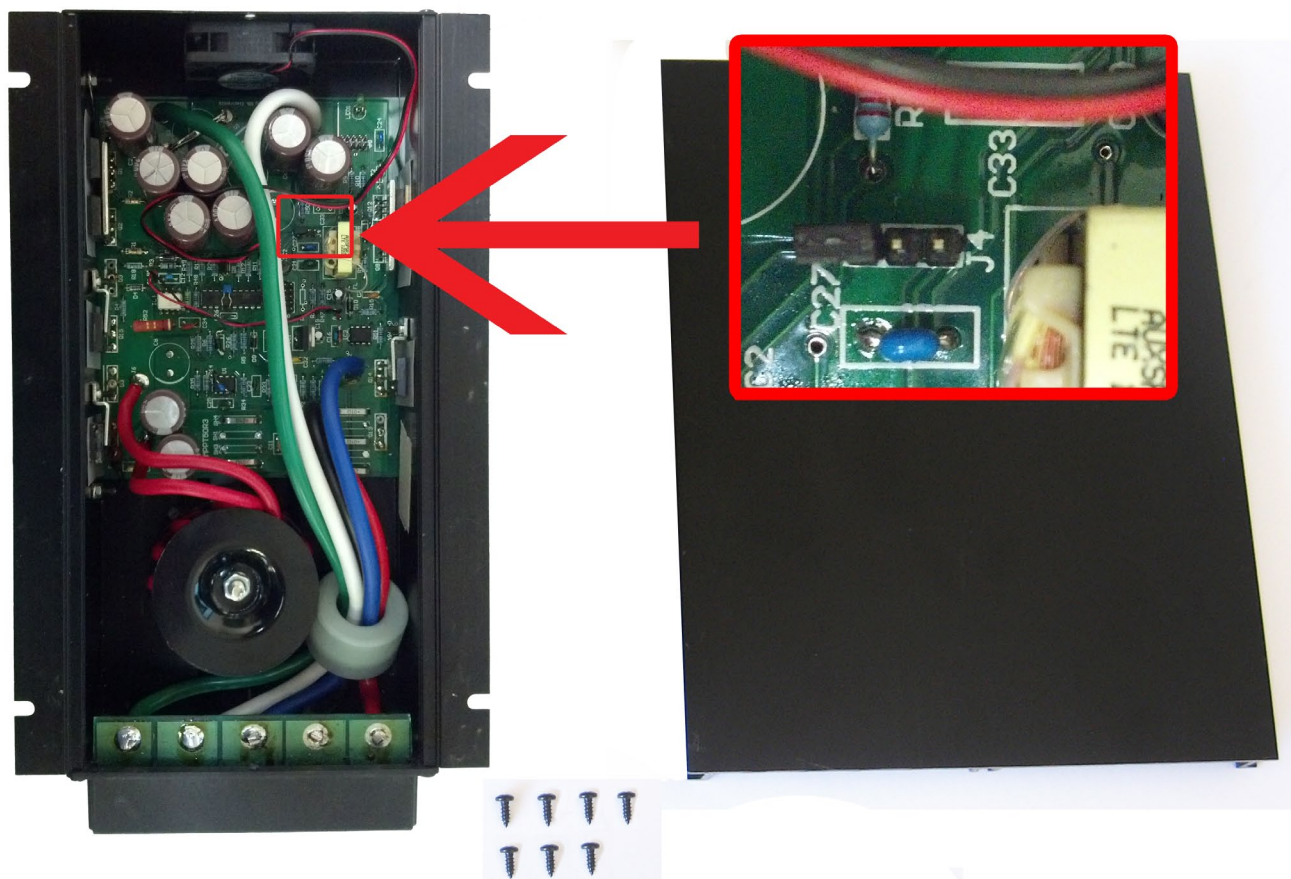


Figure 1.

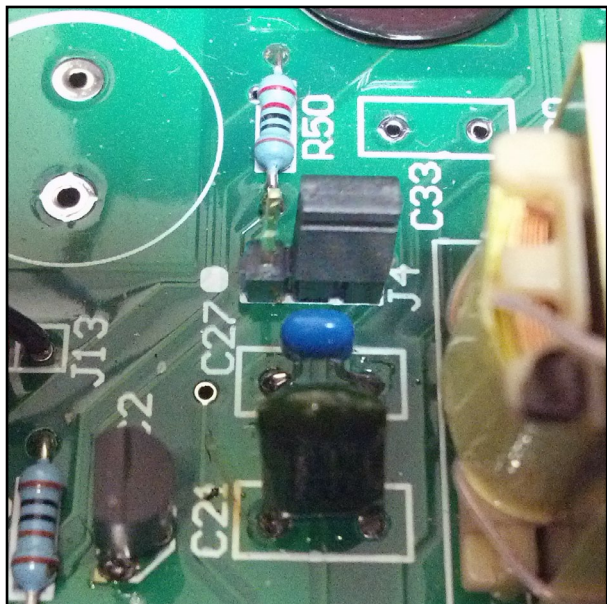


Figure 2 (Above): Vented Battery Setting

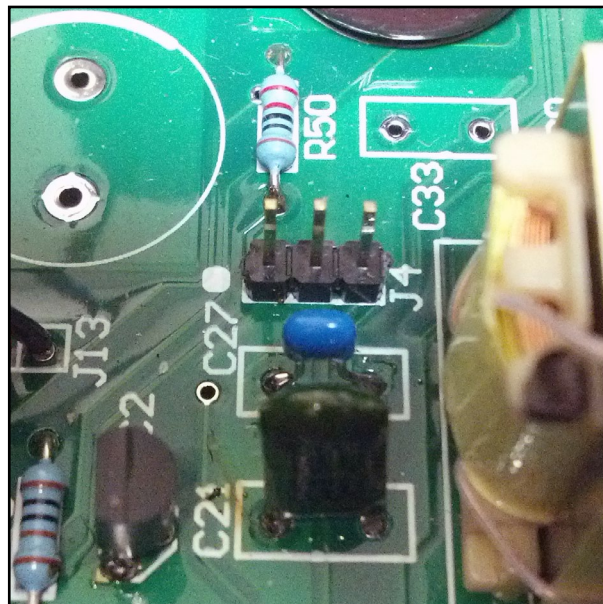


Figure 3 (Above): Calcium Battery Setting

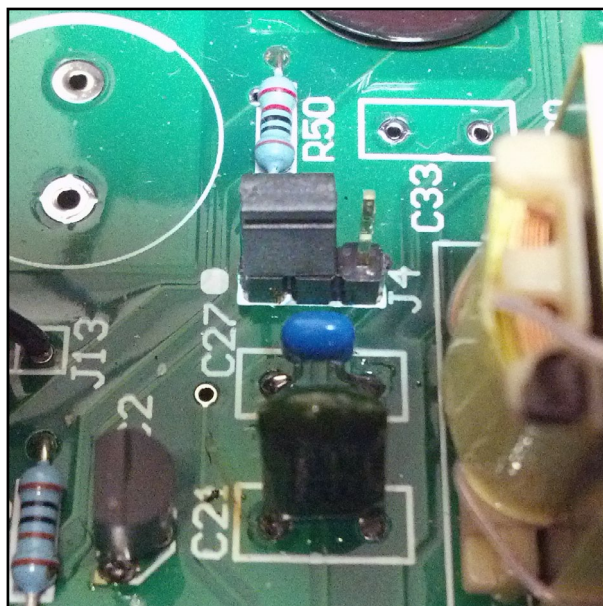


Figure 4 (Above): Sealed Battery Setting



MPPT FAQs

Q: What is an MPPT?

MPPT stands for Maximum Power Point Tracker and is a specialized converter designed to maintain the PV voltage at the level in which it delivers maximum power to the load or battery. The panel's nominal output power can only be obtained with the use of an MPPT.

Q: What are the GSL MPPT's advantages compared to standard solar regulators?

1. Suitable for lower cost non battery type PV since the MPPT can efficiently charge the batteries from relatively high voltage, say 24V batteries from 40V MPP panels.
2. Less interference and more accurate voltages during absorption and float.

Q: What sorts of loads can I power with the MPPT30HV?

1. The maximum bulk charge current with the MPPT30HV on a 12V battery and 400W panel is approximately 30A, so you can expect about 100AH per day which means a 100W load for about 10 hours daily.
2. Following the same reasoning with a 24V 800W panel the MPPT30HV will supply a daily load of 200W for about 10 hours.
3. Following the same reasoning with a 48V 1600W panel the MPPT30HV will supply a daily load of 400W for about 10 hours.

Q: Why are MPPT not more common in standalone solar systems?

Until now and despite their overwhelming advantages MPPTs have not been commonly used in standalone solar systems because of cost. The new GSL MPPT specifically addresses this issue making economic sense in a wide range of solar systems.

Q: What sort of batteries should I use?

1. A deep cycle battery is a must due to the cyclical nature of the solar system with a recommended battery capacity of at least a few days of running your load.
2. A larger battery will not only give longer run time during low light but also will be able to avoid available PV power being unstored such as when battery reaches the float stage.

Q: How do PV temperatures affects charge current?

Temperature increase brings down the PVs maximum power point voltage reducing the MPPTs current gain available. In principle at 25C it is possible to achieve 30% gain but at 40C, a more realistic average temperature, about 20% is still available.

Q: What happens at low PV currents?

The MPPT will outperform the conventional regulator above 3% of nominal panel power. Below 3%, about 10W in a 400W panel, the MPPT will have a slightly lower output current than a non MPPT.

Q: Is interference possible? and If so what do I do?

GSL's MPPTs produce far less interference than conventional solar regulator during the absorption and float stages, that is during most of its operating time, and its designed to comply with local and international EMI standards however some interference is still possible. If interference occurs first try and reorient the aerial or move the sensitive equipment away from the MPPT wires. Ensure the MPPT chassis is grounded. Grounding a battery terminal (but only ground one point in circuit do not ground both input and output) may also help and finally you can try adding ferrite clamps.

Warranty Conditions: Our products come with guarantees that cannot be excluded under the Australian Consumer Law. The customer is entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage.

The customer is also entitled to have the products repaired or replaced if the products fail to be of acceptable quality and the failure does not amount to a major failure.

GSL Electronics (GSL) warrants that its products will, under normal use and service, be free of defects in material and workmanship for a period of two (2) years from the date of the original purchase by the customer as marked on the customer's original invoice.

Please refer to our website for full warranty and return information which can be found at <http://www.gsl.com.au/faq.html>

Visit our website
www.gsl.com.au

For our complete range of Products and Information

