

# 250W Solar Charger Booster Maximum Power Point Tracker

Operating Instructions  
Please read these instructions before use



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, low cost and highly efficient way to cycle charge 24V and 48V batteries from low voltage or parallel panels.



**BMPPT250-1 Unit**

PATENT APPLIED FOR - 2010901565

BMPPT250-1 Specifications	
Efficiency Typical	95%
Panel Voltage	14V to 58V
Output Voltage (24V)	29V ± 1%
Output Voltage (48V))	58V ± 1%
Panel Power Max	250W
Quiescent Current	0.04A
Thermal Protection	Multilevel type
Dimensions (mm)	35 X 75 X 142mm
Indications	LED display – battery OK / LOW





### **BMPPT250-1 General Information:**

- Green LED ON – battery charging and all normal.
- Green LED FLASHING – battery voltage low, below 0.9 of nominal voltage.
- **This MPPT is designed to cyclic charge 24V and 48V rechargeable batteries ONLY.**
- Custom float and absorption voltages and times are possible but minimum orders apply.
- This BMPPT has a built in multilevel over temperature protection to improve product reliability while maximising output power availability.
- The BMPPT will efficiently cycle charge 24V batteries from 12V panels and 48V batteries from 12V panels or 24V panels
- Maximum open circuit voltage below 58V for 48V batteries and below 29V for 24V batteries.
- The lowest maximum power point required for operation is 14V

### **Important Notes:**

- **On the panel side use wires suitable for at least 20A. If the wire run is going to be longer than 3 Meters, larger wires should be used to limit voltage drop and losses.**
- **On the battery side use wires suitable for at least 10A. If the wire run is going to be longer than 3 Meters, larger wires should be used to limit voltage drop and losses.**
- Install the unit in a dry place out of direct sunlight and away from flammable liquids or gases.
- 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. Typically a 10A 60VDC fuse would do.
- Before connecting battery always check battery and PV panel polarity.
- This charger is intended for cyclic systems where the batteries are periodically loaded and is not recommended for systems where the batteries are unloaded for long periods of time.

**Settings And Configurations:**

Before installation check the position of the switch and adjust the switch to match the battery voltage of your system. The switch is located through the hole of the faceplate of the unit.

For safety reasons this should only be changed whilst the BMPPT has been disconnected from both the Panels and the Battery. Preferably before installation

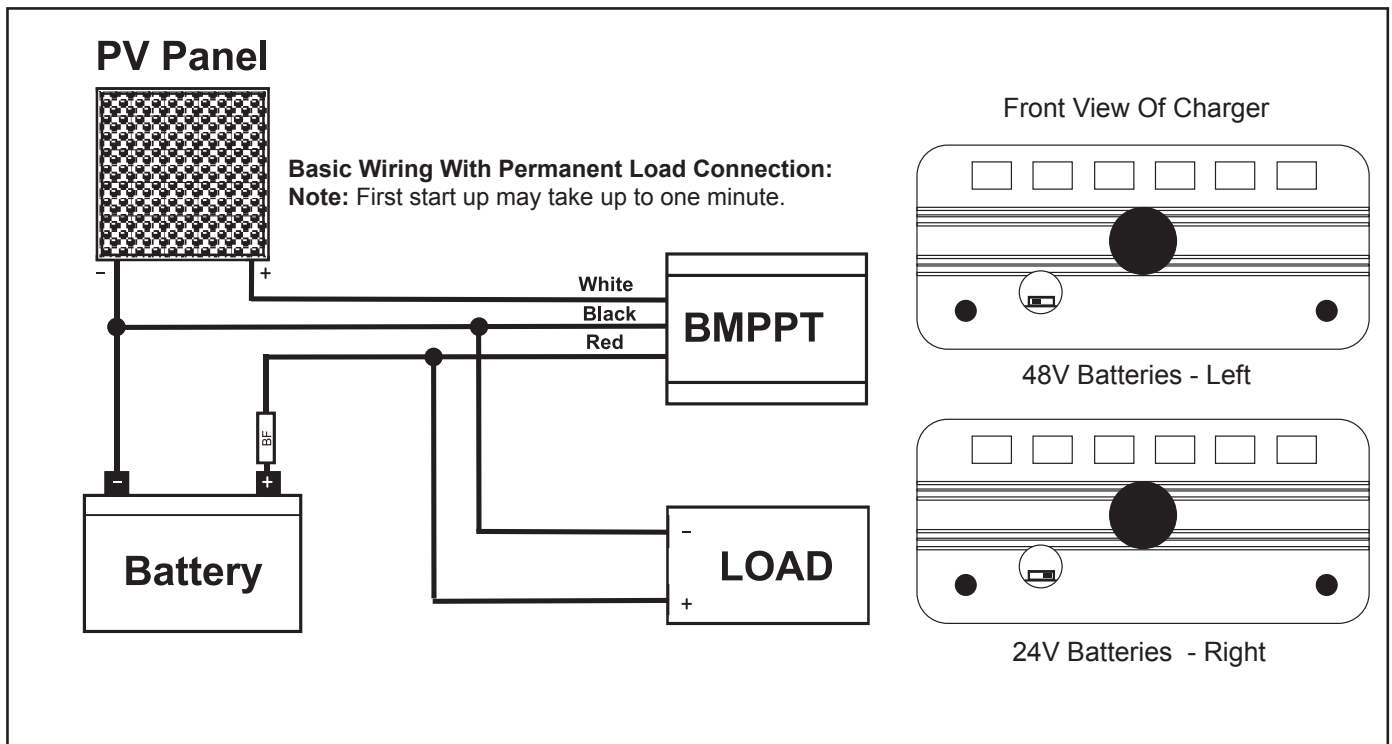
We also suggest the switch be changed gently with a non conductive tool.

**Always ensure that the Switch is set for the Correct Battery Type:**

When looking at the unit face on (cable side) with the LEDs at the bottom of the unit:

**LEFT position : for 48V batteries**

**RIGHT position : for 24V batteries**





#### MPPT FAQs

**Q: What is a BMPPT?**

BMPPT stands for **Booster Maximum Power Point Tracker** and is a specialised converter designed to maintain the PV voltage at the level in which it delivers maximum power to the load or battery while at the same time boosting the output voltage above the input. The nominal panel output power can only be ensured with the use of an BMPPT.

**Q: When is the BMPPT required?**

The BMPPT is required when the panel voltage is below the battery voltage such as when a 12V panel needs to charge a 24V battery.

The BMPPT enables the parallel connection of panels which can make the system more tolerant to partial shading when compared to series panel connection.

**Q: What output can I expect from a 250 BMPPT?**

The maximum bulk charge current with a 48V battery and 250W panel is approximately 5A, so you can expect about 20AH per day which is close to 100W load for about 10 hours.

**Q: Why are BMPPT used mainly in high power systems?**

Until now and despite their overwhelming advantages BMPPTs have been excluded from low power systems because of cost. The new GSL BMPPT specifically designed for low power makes economic sense even in small systems.

**Q: What sort of batteries should I use?**

1. A deep cycle battery is a must due to the cyclical nature of solar systems with a recommended battery capacity of at least 100AH.
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 the battery reaches the float stage.

**Q: How does PV temperatures affects charge current?**

Temperature increase brings down the PVs maximum power point voltage resulting in lower panel output.

**Q: What is the smallest panel size for the BMPPT250-1?**

The smallest panel size recommended for the BMPPT250-1 is 20W, below that level the BMPPT will not function effectively.

**Q: Is interference possible? And If so what do I do?**

GSL's BMPPTs 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 BMPPT wires. Ensure the BMPPT chassis is grounded. Grounding a battery terminal may also help and finally you can try adding ferrite clamps.

*Warranty Conditions:* The product is warranted to be free from defects in materials and workmanship under normal use and service for a period of 24 months from the date of sale. This warranty covers defective parts and workmanship provided that the product is shipped prepaid to the seller within 24 months of purchase of goods. This warranty is limited to the repair or replacement (at the manufacturers' discretion) of parts and shipping prepaid to the original despatch destination. We regret that no liability can be accepted for consequential or special damages of any kind howsoever arising in connection with products supplied by the seller. This warranty is in lieu of all other warranties expressed or implied. No representative is authorised to assume for the seller any other liability in connection with the seller's products.