

# OFF-GRID SOLAR ELECTRONICS

## PRODUCT CATALOGUE



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# MPPT OVERVIEW

- Increase output while using new, low cost and high efficiency panels
- Select the features you need from our wide product range
- Innovative design leads to breakthrough MPPT price
- Winner of the prestigious Australian EDN Innovation Awards in 2008 & 2009

## Why Use an MPPT?

The performance of photovoltaic (PV) solar panels can vary during the day, due to environmental factors such as the time of day and shading. Standard solar regulators allow the PV voltage to move away from maximum power while also requiring a good panel to battery voltage match.

Maximum Power Point Trackers (MPPTs) use clever algorithms to maintain the PV voltage at a level which maximises the power delivered to a load or battery, allowing a significant panel to battery voltage difference. When the panel voltage is significantly higher than the battery voltage an MPPT can efficiently be used. When the panel voltage is lower than the battery voltage a BMPPT (Booster) must be used.

## Benefits

The benefits of using MPPTs over standard regulators include:

- Improved electrical efficiency;
- Reduction in the size and cost of the PV system used;
- Suitability for use with lower cost, off-grid type PVs since MPPTs can efficiently charge batteries from higher or lower panel voltages, say 12V batteries from 24V panels or 24V batteries from 12V panels (with a BMPPT);
- Less interference and more accurate voltages during absorption and float.

GSL Electronics' internationally patented software and unique board design reduces the manufacturing costs of our MPPTs, allowing a breakthrough in MPPT price without compromising performance.

Our product offerings now include the new HV range which allows even higher input voltages from PV panels.

## Applications

Our MPPTs are used for off-grid solar lighting, pumping and signalling applications. Generally they are used where solar PV panels charge one or more batteries (lead acid, gel, AGM cells etc.). We have also developed units that charge Lithium Batteries. In some instances they can also be used where the MPPT directly connects to the device to be powered, such as a low voltage DC pump.



# PRODUCT SELECTION TABLE

Select from our wide range of MPPTs that allow you to match the right MPPT Solar Charge Controller to your application.

## GSL Electronics - MPPT Solar Charge Controllers

Model Type	Max. Input Panel Power	Nominal Input Voltage	Dawn to Dusk, LVD or Remote Control	PV Short & Surge Protection	Monitoring (Via)	Lithium Battery Charging
MPPT12-1	150W with 12V output 200W with 24V output	17Vmp-55V (55Voc Max) 34Vmp-55V (55Voc Max)	No	No	LED	No
MPPT12-2	150W with 12V output 200W with 24V output	17Vmp-55V (55Voc Max) 34Vmp-55V (55Voc Max)	Yes	Yes	LED (Remote Alarm)	No
MPPT30-1	450W with 12V output 900W with 24V output 1800W with 48V output	18Vmp-95V (95Voc Max) 36Vmp-95V (95Voc Max) 72Vmp-95V (95Voc Max)	No	No	LED	Lithium Model Available
MPPT30-2	450W with 12V output 900W with 24V output 1800W with 48V output	18Vmp-95V (95Voc Max) 36Vmp-95V (95Voc Max) 72Vmp-95V (95Voc Max)	Yes	Yes	MCM & LED	Lithium Model Available
MPPT60-1	900W with 12V output 1800W with 24V output 3600W with 48V output	18Vmp-95V (95Voc Max) 36Vmp-95V (95Voc Max) 72Vmp-95V (95Voc Max)	No	No	LED	Lithium Model Available
MPPT60-2	900W with 12V output 1800W with 24V output 3600W with 48V output	18Vmp-95V (95Voc Max) 36Vmp-95V (95Voc Max) 72Vmp-95V (95Voc Max)	Yes	Yes	MCM & LED	Lithium Model Available
MPPT10HV	150W with 12V output 300W with 24V output 500W with 48V output	15V-90V (90Voc Max) 30V-90V (90Voc Max) 60V-90V (90Voc Max)	Yes	Yes	LED	Lithium Model Available
MPPT30HV	500W with 12V output 900W with 24V output 1800W with 48V output	15V-180V (180Voc Max) 30V-180V (180Voc Max) 60V-180V (180Voc Max)	Yes	Yes	MCM & LED	Selectable

## BMPPT (Boosters)

Model Type	Max. Input Panel Power	Nominal Input Voltage	Dawn to Dusk, LVD or Remote Control	PV Short & Surge Protection	Monitoring (Via)	Lithium Battery Charging
BMPPT60	80W with Vbat/Vmp $\approx$ 2 60W with Vbat/Vmp $\approx$ 4	6V-25V (25V Max Voc)	No	No	No	Lithium Model Available
BMPPT150	150W with Vbat/Vmp $\approx$ 2 100W with Vbat/Vmp $\approx$ 4	14V-54V (54V Max Voc)	Yes	Yes	No	No
BMPPT250	300W with Vbat/Vmp $\approx$ 2 200W with Vbat/Vmp $\approx$ 4	14V-54V (54V Max Voc)	Yes	Yes	No	Selectable for Lithium
BMPPT800	800W with Vbat/Vmp $\approx$ 2 400W with Vbat/Vmp $\approx$ 4	14V-54V (54V Max Voc)	Yes	Yes	MCM & LED	Lithium Model Available
BMPPT1500	1500W with Vbat/Vmp $\approx$ 2 750W with Vbat/Vmp $\approx$ 4	14V-54V (54V Max Voc)	Yes	Yes	MCM & LED	Lithium Model Available

Design and specifications may change without notice.

CE - on selected models

N1408



# MPPT12-1 / MPPT12-2

- Improved performance over standard regulators
- Efficient, compact and low cost
- Robust maximum power tracking algorithm
- Maximum Output 12 Amp / 200 Watts



## MPPT12-1

- Ideal for charging batteries with new low cost and high efficiency grid type panels
- Simple 3 wire “plug and play” connection
- Autoselect for 12V and 24V panels and batteries

## MPPT12-2

Additional features for the more advanced user:

- Variable and adaptive dawn to dusk
- Low voltage disconnect
- Remote alarm and programming capability for load control
- Additional surge and PV short protection
- Dual chemistry, sealed and vented cells

Specifications	MPPT12-1	MPPT12-2
Maximum Output Current	12A at 12V	12A at 12V
Maximum Input Panel Power	200W with 24V batteries 150W with 12V batteries	200W with 24V batteries 150W with 12V batteries
Input Voltage	17V to 55V	17V to 55V
Battery Voltage	12V/24V	12V/24V
Typical Efficiency	97 %	97 %
Monitoring & Control	-	Yes (Basic)
Dawn to Dusk, LVD or Remote Control	-	Yes
PV Short and Surge Protection	-	Yes
Thermal Protection	Yes	Yes
Dimensions [LxWxH]	100 x 75 x 35 mm	100 x 75 x 35 mm

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CE - on selected models

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# MPPT30 & MPPT 60 RANGE

- Maximum Output 30 Amp / 1800 Watts & 60 Amp / 3,600 Watts

## MPPT30-1 & MPPT60-1

- Ideal for charging batteries with the new low cost and high efficiency grid type panels
- Simple 3 wire “plug and play” connection
- Autoselect for 12V, 24V to 48V panels and batteries
- Dual chemistry vented and SLA
- MPPT30-1L and MPPT60-1L are optimised for charging lithium batteries



## MPPT30-2 & MPPT60-2

Additional features for the more advanced user:

- Built in load switch configurable as a variable dawn to dusk or low voltage disconnect
- Remote load control option and alarm
- Low voltage discontnet
- Surge, PV short and reverse current protection
- Connectivity to the MCM product for Remote Monitoring and Control
- MPPT30-2L and MPPT60-2L are optimised for charging lithium batteries

Specifications	MPPT30-1	MPPT30-2	MPPT60-1	MPPT60-2
Maximum Output Current	30A	30A	60A	60A
Maximum Input Panel Power	1800W with 48V batteries 900W with 24V batteries 450W with 12V batteries	1800W with 48V batteries 900W with 24V batteries 450W with 12V batteries	3600W with 48V batteries 1800W with 24V batteries 900W with 12V batteries	3600W with 48V batteries 1800W with 24V batteries 900W with 12V batteries
Input Voltage	18V to 95V	18V to 95V	18V to 95V	18V to 95V
Battery Voltage	12V/24V/48V	12 V / 24V / 48V or programmable 5V - 58V via MCM and GUI	12V/24V/48V	12 V / 24V / 48V or programmable 5V - 58V via MCM and GUI
Typical Efficiency	97 %	97 %	97 %	97 %
Monitoring & Control	-	Yes (full via MCM)	-	Yes (full via MCM)
Dawn to Dusk, LVD or Remote Control	-	Yes programmable and enabled via MCM	-	Yes programmable and enabled via MCM
PV Short and Surge Protection	-	Yes	-	Yes
Thermal Protection	Yes	Yes	Yes	Yes
Dimensions [LxWxH]	175 x 177 x 67 mm	175 x 177 x 67 mm	280 x 177 x 67 mm	280 x 177 x 67 mm

Design and specifications may change without notice.

CE - on selected models

N1408



# HIGH VOLTAGE MPPT RANGE

- Maximum Output 10 Amp / 400 Watts & 30 Amp / 1800 Watts
- Use when higher input PV panel voltages are required
- Autoselect for 12V, 24V and 48V panels and batteries
- Variable and adaptive dawn to dusk
- Low voltage disconnect
- Remote alarm and programming capability for load control
- Surge and PV short protection
- Dual chemistry, lead acid and Lithium
- 30HV models connect to the MCM product for Remote Monitoring and Control
- MPPT30HVC model also available for cyclic charging



MPPT10HV



MPPT30HV

Specifications	MPPT10HV	MPPT30HV
Maximum Output Current	10A	30A
Maximum Input Panel Power	400W with 48V batteries 200W with 24V batteries 150W with 12V batteries	1800W with 48V batteries 900W with 24V batteries 500W with 12V batteries
Input Voltage	15V to 90V	15V to 180V
Battery Voltage	12V/24V/48V	12V / 24V / 48V or programmable 2v - 70v via MCM and GUI (programmable from 2V-70V or Vmp if Vmp<70V)
Typical Efficiency	97 %	97 %
Monitoring & Control	Yes, basic via wires	Yes (full via MCM)
Dawn to Dusk, LVD or Remote Control	Yes	Yes programmable and enabled via MCM
PV Short and Surge Protection	Yes	Yes
Thermal Protection	Yes	Yes
Dimensions [LxWxH]	143 x 75 x 35 mm	260 x 145 x 67 mm

Design and specifications may change without notice.



# BMPPT BOOSTER RANGE

- Use when panel voltage is lower than the battery voltage
- Improves system efficiency in real operating conditions
- High output voltage to improve power distribution
- Proven award winning technology
- Most of the range can charge Lithium and lead acid batteries



**BMPPT60**  
**BMPPT150**  
**BMPPT250**



**BMPPT800**  
**BMPPT1500**

Specifications	BMPPT60	BMPPT150	BMPPT250	BMPPT800	BMPPT1500
Maximum Output Current	-	5.2A at 29V	-	14A at 58V	26A at 58V
Maximum Input Panel Power	80W with Vbat/Vmp=2 60W with Vbat/Vmp=4	150W with Vbat/Vmp=2 100W with Vbat/Vmp=4	250W with Vo/Vin > 2 350W with Vo/Vin < 2	800W with Vbat/Vmp=2 400W with Vbat/Vmp=4	1500W with Vbat/Vmp=2 750W with Vbat/Vmp=4
Input Voltage	6V to 25V (See Note 1)	14V to 54V (See Note 1)	14V to 54V (See Note 1)	14V to 54V (See Note 1)	14V to 54V (See Note 1)
Battery Voltage	12V / 24V / 48V (See Note 2)	24V / 48V (See Note 2)	12V / 24V / 48V	24V / 48V or programmable 14V - 58V via MCM and GUI	24V / 48V or programmable 14V - 58V via MCM and GUI
Typical Efficiency	95 %	95 %	97 %	96 %	96 %
Monitoring & Control	No	Yes	Yes, basic via wires	Yes (full via MCM)	Yes (full via MCM)
Dawn to Dusk, LVD or Remote Control	No	Yes	Yes	Yes programmable and enabled via MCM	Yes programmable and enabled via MCM
PV Short and Surge Protection	Yes	Yes	Yes	Yes	Yes
Thermal Protection	Yes	Yes	Yes	Yes	Yes
Dimensions [LxWxH]	100 x 75 x 35 mm	100 x 75 x 35 mm	143 x 75 x 35 mm	220 x 177 x 67 mm	220 x 177 x 67 mm

*Note 1: The panel's open circuit voltage must always be lower than the battery charge voltage.  
Note2: On 48V batteries only a fixed float charge at 54V is available.*

Design and specifications may change without notice.



# MONITOR & CONTROL MODULE (MCM)

- Feature rich monitoring and control of selected GSL MPPT and BMPPT range
- PC GUI included
- Can be positioned up to 1m from MPPT
- Compatible with MPPT30-2, MPPT60-2, BMPPT800 , BMPPT1500 and MPPT30HV

## DISPLAY

- Battery voltage
- Battery current and Amp/h
- Load current and Amp/h
- MPPT/BMPPT temperature
- Low battery voltage alarm
- High temperature alarm



## CONTROL

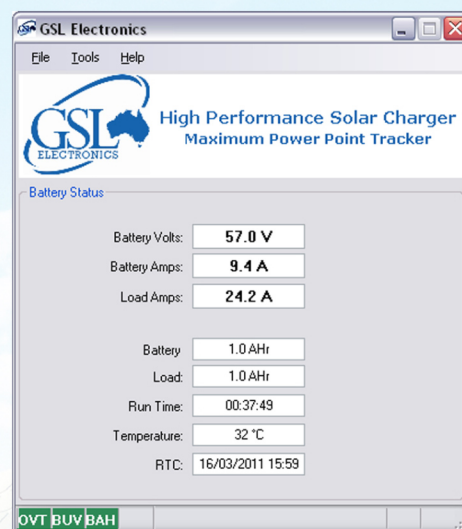
- Adjustable Low Voltage Disconnect.
- Adjustable Dawn to Dusk.
- Load On/Off Control
- Adjustable Amp/H Alarm
- Output voltage programming
- Alarm (ot and lv) level setup

## CONNECTIVITY

- PC via USB
- PC GUI for all display and control
- MPPT via standard 9 pin connector

## DISPLAY TYPE

- Dual line 32 character LCD





# HIGH VOLTAGE DISCONNECT MIHV160 & MIHV240

- High voltage microprocessor controlled disconnects are ideal for use with GSL Electronic's MPPTs and BMPPTs. The MIHV units provide additional battery protection and can also be used as a general purpose battery disconnect.
- Auto detects 12V/24V/48V/72V/96V nominal battery voltages
- Enables safe battery charge even in the case of MPPT/BMPPT failure
- User programmable as Over Voltage Disconnect (OVD) or as Controlled Disconnect (CD)
- Built in self resetting Over Temperature Protection (OTP)
- On/Off indication and remote status wire
- Compact heavy duty aluminium extrusion with easy mounting and connection



Specifications	MIHV160	MIHV240
Input Voltage Range	15V - 95V	15V - 180V
Peak Current	80A	55A
Constant Current	60A	40A
OVP Voltage	15V/30V/60V	15V/30V/60V/90V/120V
Dimensions	135 x 70 x 50 mm	135 x 70 x 50 mm



# HIGH VOLTAGE LED / LUMINARE DRIVER & MPPT SOLAR BATTERY CHARGER

## LMS2025

Designed specifically for solar lighting applications the LMS2025 is a one stop device for charging and driving high voltage LED lighting and their attached batteries.



Combining our award winning MPPT charger with a stable constant current LED Driver. Built to run a LED lighting/Luminaires 0.45A at voltages from 15V to 55V from a 12V Battery with 95% efficiency. Coupled with keeping a battery charged from a 200W panel (maximum Voc of 55V) also at 98% efficiency (typical).

All of these power packed features fit into a small form factor measuring just 170mm x 175mm x 40mm making it compact and capable of fitting into the tightest of situations.

The driver has a digital remote wire allowing the light to be switched off. Via either a grounded switch or attached to a Light Sensor Switch connected to ground to enable the light to be turned on or off automatically at night time.

### ADDITIONAL FEATURES THAT CAN BE CONSIDERED (MOQ APPLIES):

DIMMER VIA EXTERNAL CONTROLS

ON/OFF DAWN TO DUSK CONTROLS

VARIABLE CURRENT SETTINGS

LED CURRENTS FROM 0.1A TO 2A @ 15V-80V

REMOTE ALARM

HIGHER PANEL VOLTAGES UP TO 90V

### SPECIFICATIONS

PANEL  
BATTERIES  
LED  
EFFICIENCY (MPPT)  
EFFICIENCY (LED DRIVER)  
LED CURRENT REGULATION  
QUIESCENT CONSUMPTION

### LMS2025

40W TO 200W MINIMUM VMP = 15V MAXIMUM VOC = 55V  
12V  
0.45A 15V-55V  
98% (TYPICAL)  
95%  
-/+ 2%  
20mA



# REC25HV

## 22V-80V TO 12V/24V HIGH VOLTAGE REDUCER/CHARGER

Suitable for applications where either 12V or 24V charging or reducing is required from higher voltage battery systems. This removes the need to have more expensive high voltage lighting or appliances compared to their easily available 12V and 24V counterparts. As well as offers the ability to charge 12V and 24V auxiliary batteries.



- High voltage microprocessor controlled charging and reducing offering accuracy and precision
- Charging modes suitable for Lithium, AGM, GEL and Flooded cell batteries
- Remote enable can be disabled via internal jumper.
- Jumper selectable for Reducer or Charger Modes
- Built in self resetting Over Temperature Protection (OTP)
- Input/Output status display
- Compact heavy duty aluminium extrusion with easy mounting and connection

Specifications	REC25HV
Input Voltage Range	22V-80V in 12V   44V-80V in 24V
Peak Current	25A
Stand By Current	40mA
Protections	Thermal, Short Circuit and Over Voltage
Dimensions	155 x 177 x 68 mm



# SWB SERIES

## 12V AND 24V TO 240V

### HIGH FREQUENCY INVERTERS



- High efficiency switchmode technology
- USB Socket for charging phones and other accessories (1A Max)
- Lighter Construction using new high frequency switching techniques
- Overload protection
- Input to output protection
- Compact and lightweight aluminium heatsink construction
- Suitable for most automotive, marine and industrial applications

Model No.	Rating	Surge	DC Input	GPO's	Wave Form	Efficiency	No Load Current	Low Battery Alarm/Shutdown	DC Input Range	(L x W x H) (mm)	Weight (Kg)
<b>12V DC Input – 240V AC Output</b>											
SWB1000-12	1000W	1230W	Lugged Lead	2	Sine Wave	>85%	<800mA	10.7V/10V ±0.5V	10-15.5V	290 x 226 x 86	3.7
SWB1800-12	1800W	2050W	Lugged Lead	2	Sine Wave	>85%	<1200mA	10.7V/10V ±0.5V	10-15.5V	440 x 226 x 86	6.2
SWB2500-12	2500W	2750W	Lugged Lead	2	Sine Wave	>85%	<1500mA	10.7V/10V ±0.5V	10-15.5V	535 x 226 x 86	7.9
<b>24 DC Input – 240V AC Output</b>											
SWB1800-24	1800W	2050W	Lugged Lead	2	Sine Wave	>85%	<1200mA	21.4V/20V ±0.5V	20-31V	440 x 226 x 86	6.2
SWB2500-24	2500W	2750W	Lugged Lead	2	Sine Wave	>85%	<1200mA	21.4V/20V ±0.5V	20-31V	535 x 226 x 86	7.9