CLASSIC MPPT CHARGE CONTROLLERS

The world's most sophisticated MPPT charge controller

BAR NONE!!!
THE CLASSICS

The Classic line of MPPT charge controllers are one of the most powerful in the RE industry. The Classics substantially increases the flexibility, features and range currently found on MPPT controllers at an incredible price. With all Classics you receive reliability, functionality and an incredibly powerful MPPT charge controller.

CLASSIC 150, 200 & 250

FEATURES

- 150, 200, 250 Operating Voltage
- 12-72V battery charging standard
- DC-GFP and Arc Fault Protection
- Solar, Wind and Hydro modes
- Exclusive HyperVOC extends VOC limits
- Manual and Auto EQ
- Full Internet Capable
- Remote and local displays possible
- 380 days of daily history, 24 hours of data a 5 minute intervals
- Communications – Ethernet, Modbus and RS232
- Parallel operation for multiple Classic systems
- ETL listed for the USA and Canada
- Made in America
THE CLASSIC LITE

The Classic Lite line of MPPT charge controllers has all the power of the Classics have but at a reduced price. The Classic Lite, like the Classic, can charge from 12 to 72 volt batteries with output up to 96 amps. Why would you choose a lesser controller for your system?

All Classics have free upgradeable firmware, making sure these units never are out dated.

CLASSIC LITE 150, 200, 250 & 250KS

FEATURES

- 150, 200 & 250 Operating Voltage
- Dip switch programming
- 12-72V battery charging standard
- Solar, Wind and Hydro modes
- Exclusive HyperVOC extends VOC limits
- Manual and Auto EQ
- Full Internet Capable

- Works with the Classic MNGP remote display
- LED indicators for charge state (Bulk, Absorb and Float)
- 380 days of daily history, 24 hours of data a 5 minute intervals
- Communications – Ethernet, Modbus and RS232
- Parallel operation for multiple Classic systems
- ETL listed for the USA and Canada
- Made in America
SOLAR, WIND & HYDRO

All Classics are Solar, Wind and Hydro capable. The Classic has several different tracking algorithms. This allows it to work with Solar, Wind and Hydro. Each mode is fully adjustable to allow the user to fine tune to their input source.
The Classic uses a published Modbus Protocol allowing users to interface with the Classic. Modbus allows you to tailor your own software to communicate with your Classic.

MidNite also offers software for communicating with the Classic.
DC-GFP & ARC FAULT

The Classic’s DC-GFP and Arc Fault capabilities are at the forefront of the industry saving you time, space and money. The Classic is the world’s only Arc Fault detecting controller and comes standard in all models except the Classic Lite.

Ground fault protection is a built-in feature on the Classic.

DC-GFP & ARC FAULT PROTECTION

The Classic is made to work in conjunction with our new GFP breaker assembly. Arc Fault detection is required by NEC code.
AUTO OR MANUAL EQ MODES

The Classic has 2 modes you can use to Equalize the battery in either manual or auto.

Auto EQ has a user adjustable interval between EQ charges as well as a “Days” function to retry if the EQ did not complete on the first day.
CLASSIC LED MODES

The Classic has several LED indicators that can be programmed to display a variety of information.

- OFF: No LED activity
- Rick Mode: Displays errors only
- LED Mode1 - Aux 1 and 2 indicators: Displays errors and warnings as well as a Float indicator
- Blinky Mode: LEDs cycle around in a loop (good for discos and parties)
UPGRADEABLE FIRMWARE

All Classics have free upgradeable firmware, making sure these units never are out dated.

The Classic’s built in USB port allows the user to upload firmware updates. USB cable included.

FIRMWARE UPDATES

New features are easily added to the Classics in the field by doing a simple firmware upgrade. Firmware upgrades will always be available on our website for no cost to every Classic owner for life.
MONITORING YOU CLASSICS

Graphs and data are displayed on your PC using the “Local App”.

Graphs can be displayed by Line, Bar, Round and Sketch.

LOCAL APP

VALUES THAT CAN BE CHARTED

- Battery Voltage
- kWh
- Total kWh
- FET Temperature
- Input Voltages
- Watts
- Total Amp Hours

- PCB Temperature
- Battery Current
- Input Current
- Battery Temperature
My MidNite is a free web based monitoring solution that MidNite Solar offers to its customers. It allows you to monitor your charge controller from anywhere you have Internet access. You simply plug the Classic into the Internet, go to My MidNite and register for an account.

My MidNite allows you to chart values, download data and much more. In the very near future My MidNite will allow for email and SMS alerts and system status reports. It will also allow for guest accounts as well as installer accounts.
ALL THE DATA

All Classics log 380 days of data in its daily logs.

DATA LOGGING AND GRAPHING

The Classic and Classic lite log data every 5 minutes in its Recent logs. The Classics also have graphing capabilities on screen as well.
Auxiliary 1 and 2.

Auxiliary 1 can be configured as a 12VDC signal out or as a rely contact. Auxiliary 2 can be used as an output or as an input.

Auxiliaries can be used as On/Off signals or PWM signals.

**AUXILIARY FUNCTIONS AVAILABLE**
- Vent Fan low and Vent Fan high
- Float low and Float high
- Clipper Control
- Day Light
- Nite Light
- Toggle Test
- PV Voltage on low
- PV Voltage on high
- Waste Not low
- Waste Not high
- Low battery disconnect
- Diversion
WHIZBANG JUNIOR

The Whizbang Junior is a current sense module that attaches to a standard 50mv / 500A Shunt. The Whizbang Junior wires into the Classic and K1D charge controllers to give Amperage readings from the shunt. The Whizbang Junior allows for EndAmps to function based on system amps or Classic amps.

BATTERY MONITORING

For our customers that already own similar products, the Whizbang Junior has been designed for cooperative attachment.
The Power Graphs on this slide and the following display the relation between input voltage, battery voltage and output current. Using and understanding these graphs will help when designing the most efficient system and choosing the correct Classic for the task at hand.
These graphs display efficiency differences between lower input voltages compared to higher levels along with the balance between wire length and input voltage.
For example, typically a 0 – 150ft wire run from an array will require the Classic 150. For a 150-250ft length the Classic 200 should be used and over 250ft the Classic 250 is the optimal choice.
The MidNite Clipper will reduce wear, tear and noise on your turbine.

The MidNite Clipper was designed to work in conjunction with the Classic MPPT controller to offer safe and reliable control of your turbine may it be wind or hydro.

The Clipper assures safe operating voltages for the Classic as well as keeping the turbine loaded so it will not free wheel.

The Clipper allows 3 stage charging and will reduce wear and tear on your turbine.
The Classic String Sizing Tool helps design the array.

The string sizing tool determines the best Classic model to use and the number Classics needed. It can be found on MidNite's website.
HyperVOC, a non-operative VOC safety zone over and above the maximum input voltage.

On cold mornings the PV panels will put out full voltage even before you can see the sun. Ambient light may not have much current behind it but it does have voltage exceeding the possible voltage limits that destroy the controller. The MidNite Solar controller gives you bonus headroom for those cold mornings that would potentially destroy any other controller.
Follow me allows Classics to talk to each other.

"Follow Me" allows the Classics to share charge stages, as well as battery temperature info and Ground Fault coordination. "Follow Me" also allows you to program a single Classic for Equalize charging and it will instruct all the others to Equalize as well.

Any system with 2 or more charge controllers must have a coordinated charge or the batteries could be destroyed.
# Charge Controller Comparison Chart

## Classic MPPT Charge Controller Comparison Chart

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Classic 150</th>
<th>OutBack</th>
<th>Blue Sky</th>
<th>Xantrex</th>
<th>Morningstar</th>
<th>Apollo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>MidNite</td>
<td>FM60</td>
<td>FM80</td>
<td>3648DLP</td>
<td>TSMPPT60</td>
<td>TS60</td>
</tr>
<tr>
<td>Rated Amps</td>
<td>60 - 56</td>
<td>60</td>
<td>60</td>
<td>30</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Max Operating Voltage</td>
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<td>145</td>
<td>145</td>
<td>112</td>
<td>140</td>
<td>150</td>
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<tr>
<td>Max Voc</td>
<td>162, 175, 200</td>
<td>150</td>
<td>150</td>
<td>140</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>Max Battery Voltage</td>
<td>72</td>
<td>60</td>
<td>60</td>
<td>48</td>
<td>60</td>
<td>72</td>
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<tr>
<td>Solar</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Wind</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Hydro</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>List Price With Display</td>
<td>$850</td>
<td>$749</td>
<td>$849</td>
<td>$849</td>
<td>$685</td>
<td>$793</td>
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<tr>
<td>Cost Per Amp With Display</td>
<td>$10.63</td>
<td>$12.48</td>
<td>$10.61</td>
<td>$21.83</td>
<td>$11.42</td>
<td>$13.22</td>
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<td>Digital Display</td>
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<td>●</td>
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<td>Internet Ready</td>
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<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Ground Fault Detector</td>
<td>●</td>
<td></td>
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<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Arc Fault Detector</td>
<td>●</td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Wizard Setup</td>
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<td>●</td>
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<tr>
<td>Graphical Display</td>
<td>●</td>
<td></td>
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<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Free User Upgradeable Firmware</td>
<td>●</td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Multiple Display Support</td>
<td>5 MNGP</td>
<td>1 MATE</td>
<td>4 MATE</td>
<td>SB30RD25</td>
<td>XW-SCP</td>
<td>TS-RM-2</td>
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<tr>
<td>Aux Output</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Aux Input</td>
<td>1</td>
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<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Sealed Or Vented Configurable</td>
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<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Warranty (Years)</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Oscilloscope Display</td>
<td>●</td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Battery Status Meter</td>
<td>●</td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Substantially Made In USA</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Voice</td>
<td>●</td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Partial Shading Indicator</td>
<td>●</td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Sunrise/Sunset Map Of World</td>
<td>●</td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Bonus Amps Based On Voltage</td>
<td>●</td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>ModBus Communications</td>
<td>●</td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>External Shunt Input</td>
<td>●</td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>HyperVOC Extended VOC Limit</td>
<td>●</td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

1. The Classic comes in four models, 150, 200, 250, and 250HS
2. This number is based on the max operating voltage of the unit plus nominal battery voltage.
3. The Classic MNGP display and/or a secondary display can monitor many controllers. The MNGP display can be removed from the Classic and used remotely.
4. If more than one controller is used you must also add a hub 4 or hub 10.
5. Wireless remote and internet available with additional purchases

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## COMPARISONS
## Classic & Classic Lite Comparison Chart

### MIDNITE SOLAR'S STANDARD CLASSIC AND CLASSIC LITE COMPARISON CHART - Jan 01, 2014

<table>
<thead>
<tr>
<th></th>
<th>Standard Classic</th>
<th>Classic Lite</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
<td>150 200 250</td>
<td>150 200 250</td>
</tr>
<tr>
<td><strong>Rated Amps</strong></td>
<td>80-95 65-74 55-60</td>
<td>80-95 65-74 55-60</td>
</tr>
<tr>
<td><strong>Max Operating Voltage</strong></td>
<td>150 200 250</td>
<td>150 200 250</td>
</tr>
<tr>
<td><strong>Max VOC</strong></td>
<td>190 240 280</td>
<td>190 240 280</td>
</tr>
<tr>
<td><strong>Max Battery Voltage</strong></td>
<td>72 72 72</td>
<td>72 72 72</td>
</tr>
<tr>
<td><strong>Solar</strong></td>
<td>● ● ●</td>
<td>● ● ●</td>
</tr>
<tr>
<td><strong>Wind</strong></td>
<td>● ● ●</td>
<td>● ● ●</td>
</tr>
<tr>
<td><strong>Hydro</strong></td>
<td>● ● ●</td>
<td>● ● ●</td>
</tr>
<tr>
<td><strong>List Price</strong></td>
<td>$850 $850 $950</td>
<td>$700 $700 $800</td>
</tr>
<tr>
<td><strong>Cost Per Watt - 48 Nominal Battery V</strong></td>
<td>$0.19 $0.22 $0.30</td>
<td>$0.19 $0.18 $0.25</td>
</tr>
</tbody>
</table>

- **Internet and Ethernet Ready**
- **Ground Fault Detector**
- **Arc Fault Detector**
- **Graphical Display**
- **Free User Upgradable Firmware**
- **MNOP Multiplex Display Support**
- **Aux Output**
- **Five Year Warranty**
- **Oscilloscope Display**
- **DIP Switches For Programming**
- **Substantially Made In USA**
- **Partial Shading Indicator**
- **Bonus Amps Based On Voltage**
- **ModBus Communications**
- **HyperVOC Extended VOC Limit**
- **Free PC & Internet Software**
- **380 Days Data Logging**
- **8 Built In Data Logging Params**
- **11 Software Data Logging Params**
- **Graphing Capabilities**

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1. This number is based on the max operating voltage (MOV) of the unit plus nominal battery voltage (NBV) up to 48V. The difference between MOV and NBV + MOV is the HyperVOC Extended VOC range.
2. With PC and provided software.

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1. The Classic MNOP display and/or a secondary display can monitor many controllers.
2. The MNOP display can be removed from the Classic and added remotely.
MidNite Solar Support

MidNite has superior tech support with contact information at www.midnitesolar.com. If you call you will talk to a real person.

There are videos, webinars and a variety of help documents in the “Documents” section of the website as well.

The Forum has many vital discussion topics that can help with your questions. Check it out on MidNite’s website.
MIDNITE SOLAR INC

17722 – 67TH Ave NE
Arlington, WA 98223
Ph. 360-403-7207
Fax 360-691-6862
info@midnitesolar.com