



CLASSIC MPPT CHARGE CONTROLLERS

The worlds 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.



SOLAR, WIND & HYDRO



ETHERNET MODBUS & RS232

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.



COMMUNICATIONS

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 fore front of the industry saving you time, space and money. The Classic is the worlds 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.



AUTO OR MANUAL EQ



CLASSIC LED MODES

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



LED MODES

- 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

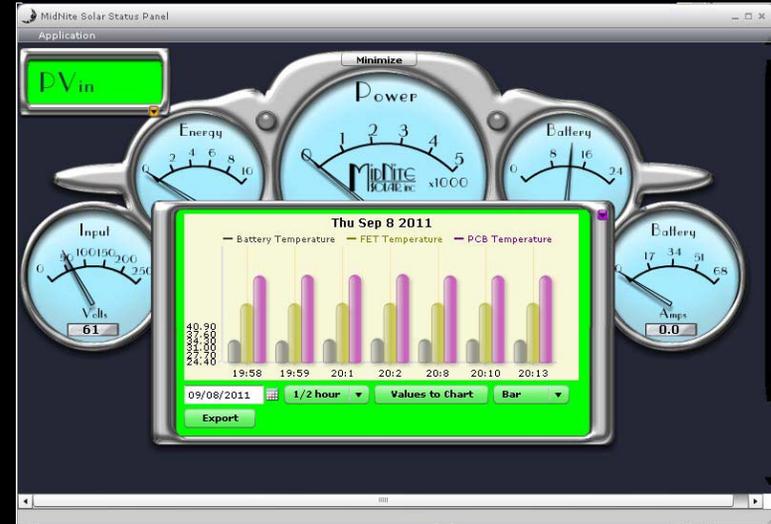
New features are easily added to the Classics in the field by doing a simple firmware upgrade. Firmware upgrades will always be available on our website for no cost to every Classic owner for life.



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

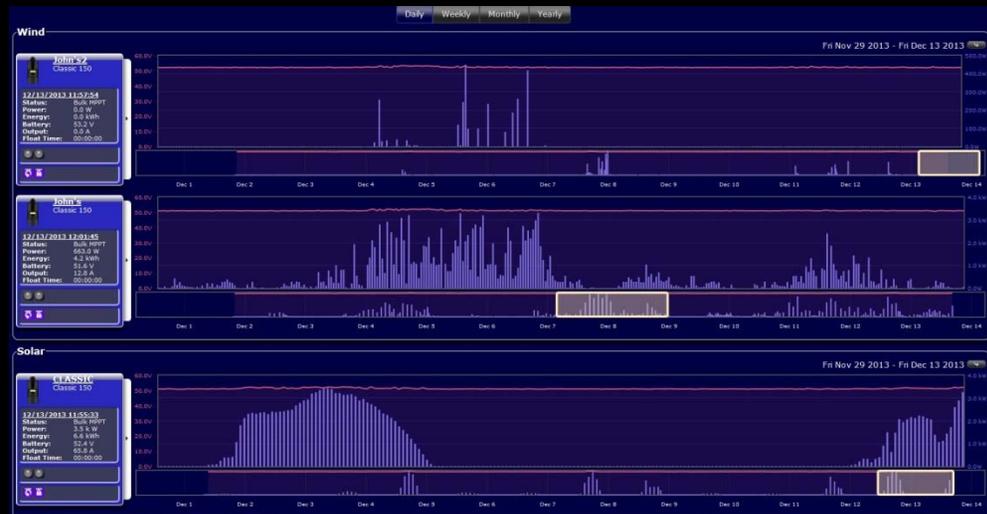
VALUES THAT CAN BE CHARTED

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



INTERNET MONITORING

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.



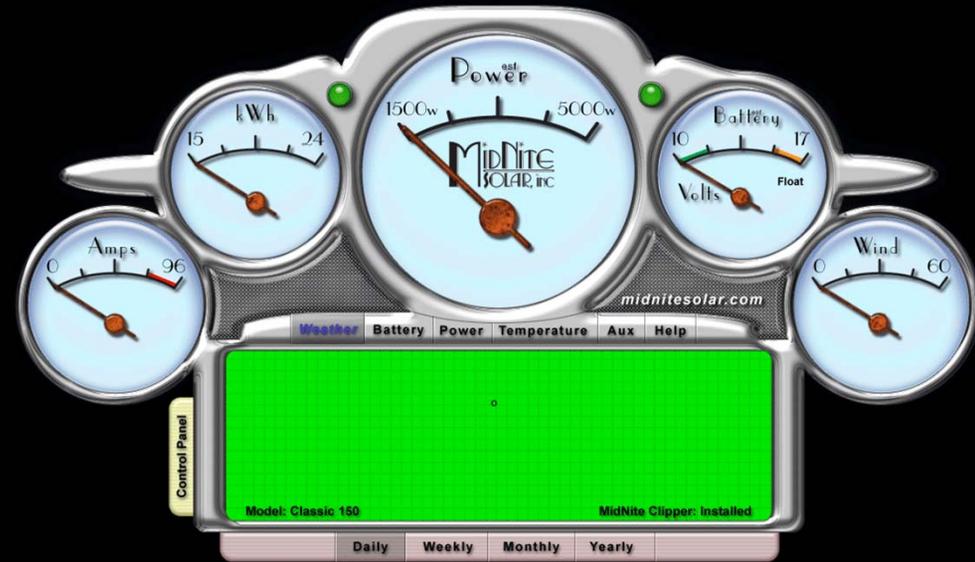
MYMIDNITE.COM

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 relay 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 OUTPUTS

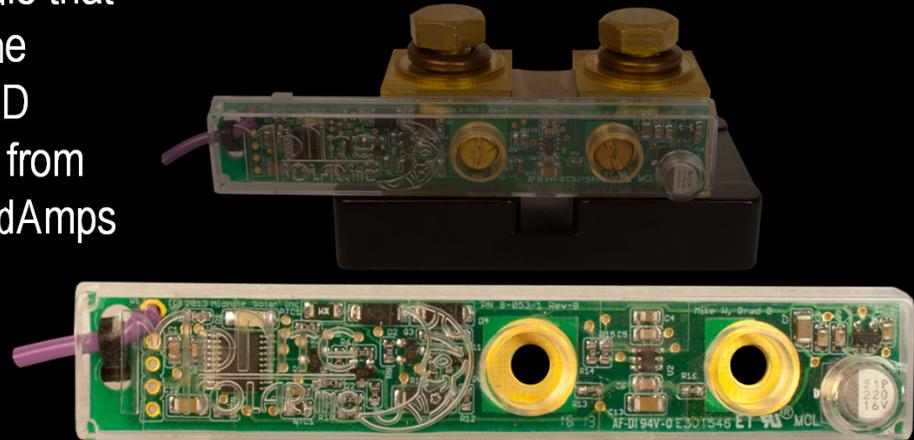
AUXILIARY FUNCTIONS AVAILABLE

- 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 KID charge controllers to give Amperage readings from the shunt. The Whizbang Junior allows for EndAmps to function based on system amps or Classic amps.

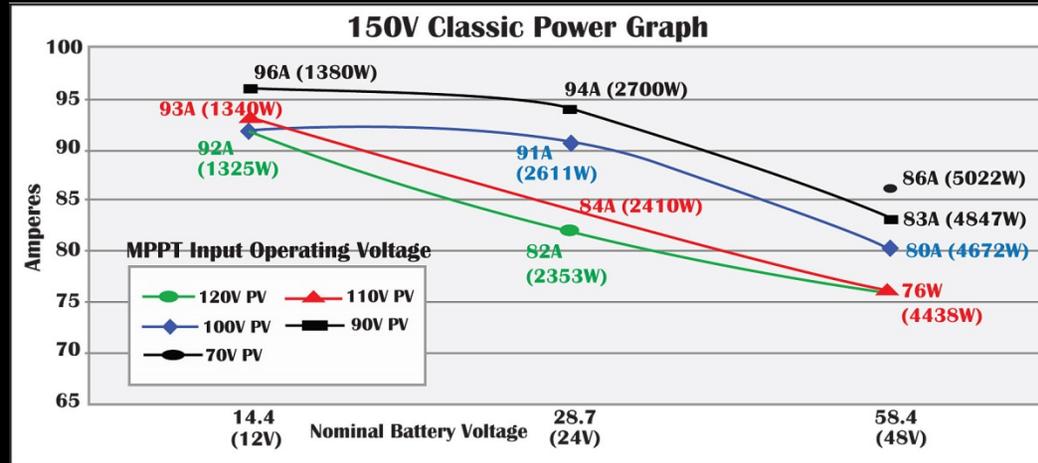


BATTERY MONITORING

For our customers that already own similar products, the Whizbang Junior has been designed for cooperative attachment.



Classic 150 & Classic Lite 150 Power Graph

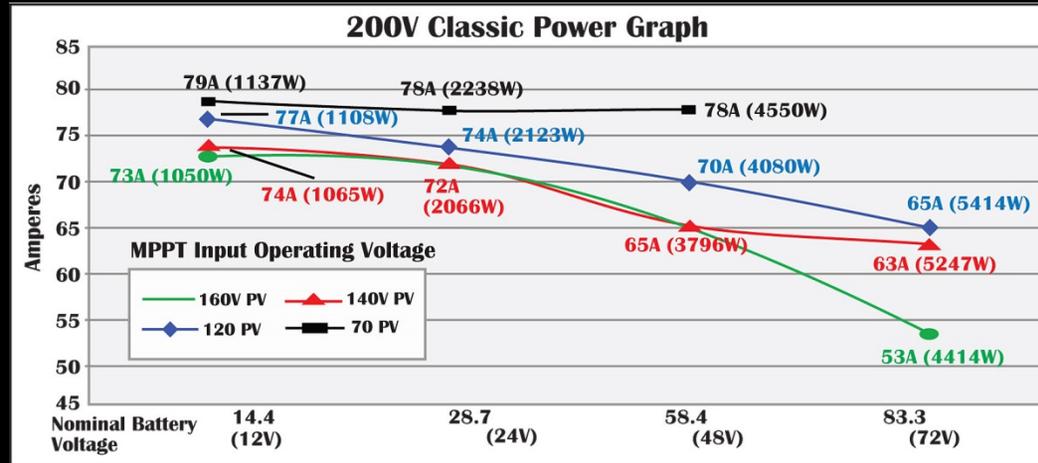


150 POWER GRAPH

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.



Classic 200 & Classic Lite 200 Power Graph

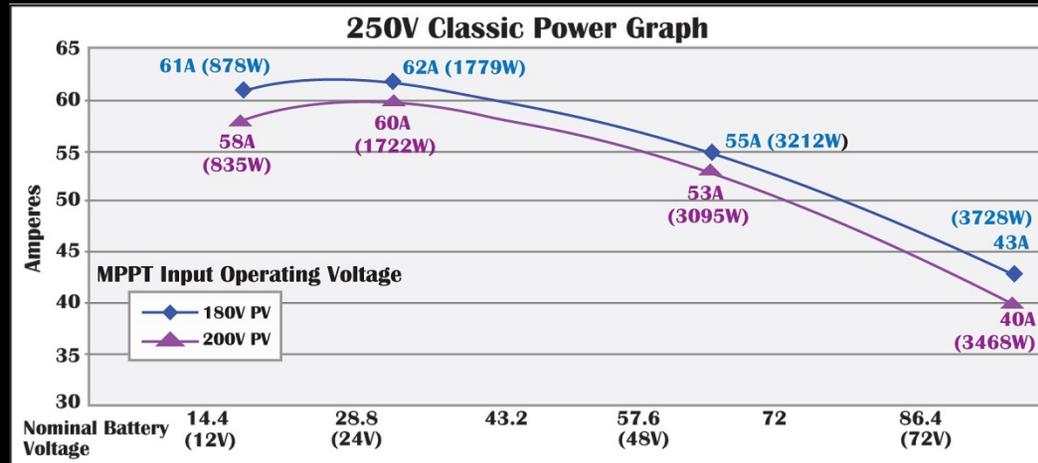


200 POWER GRAPH

These graphs display efficiency differences between lower input voltages compared to higher levels along with the balance between wire length and input voltage.



Classic 250 & Classic Lite 250 Power Graph



250 POWER GRAPH

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.



MIDNITE CLIPPER

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.



Temperature C° F° °

PV Module Data (STC)
(Found on back of module or spec sheet)

Power (Watts)

VOC (Open Circuit Voltage)

VMP (Maximum Power Point Voltage)

ISC (Short Circuit Amperage)

IMP (Maximum Power Point Amperage)

VOC Temperature Coefficient C° (Default is -0.33%) %

VMP Temperature Coefficient C° (Default is -0.45%) %

Environmental Data

Coldest Ambient Temp C°

Hottest Ambient Temp C°

Nominal Battery Voltage (Volts)

PV Array

Number Of Modules In Series

Number Of Parallel Strings

Total Modules

[PRINT RESULTS](#)

PV Array

Rated PV Array Power:	3520	Watts
Anticipated Array Power @ 40C:	3282	Watts
Rated PV Array Current:	31.48	Amps
Battery Charging Current @ 57.6 V:	61.1	Amps
VMP (Maximum Power Point Voltage):	122.4	Volts
VOC (Open Circuit Voltage):	150.4	Volts
VMP @ -30 C°:	152.8	Volts
VOC @ -30 C°:	177.6	Volts

Charge Controller Selection	Classic150/Lite	Classic200/Lite	Classic250/Lite	Classic250KS
Max Operating Voltage	150	200	250	250
Max Non operating VOC (HyperVOC) @ 48V Nominal Battery Voltage	198	248	298	298
Maximum Number Of Modules In Series	3	4	5	5
Max Number Of Modules In Series (Using HyperVOC)	4	5	6	6
Max Allowable Output Current Per Classic Based On This Current Configuration	76	65	55	50
Max Allowable Wattage Per Classic Based On This Current Configuration	4438	3796	3212	2900
Present PV Array Wattage Of This Configuration	3520	3520	3520	3520

Design Check

	Classic150/Lite	Classic200/Lite	Classic250/Lite	Classic250KS
Max VOC	MARGINAL (HyperVOC)	OK	OK	OK
Temperature The Classic Will Enter HyperVOC	ALWAYS	-75 C°	-176 C°	-176 C°
Array Power (Wattage)	OK	OK	EXCESSIVE	EXCESSIVE
Classics Required	0.8	1	1.1	1.3

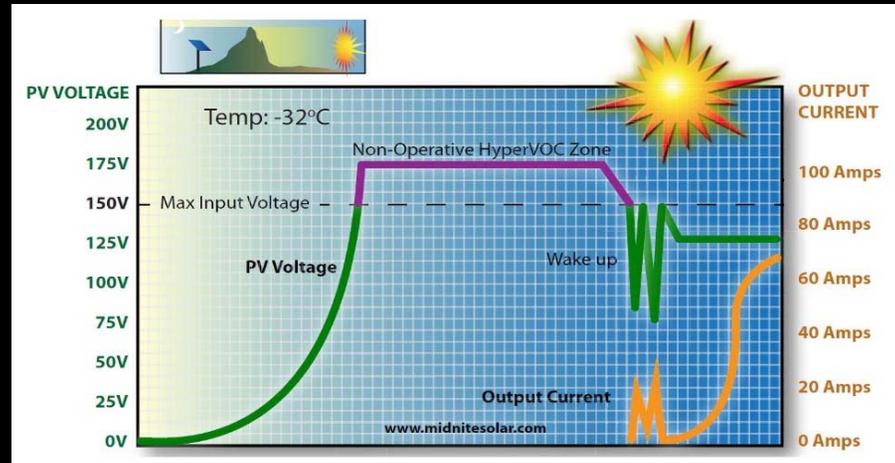
NOTE: MidNite Solar recommends a second controller be added after 1.2
WARNING: MidNite Solar makes no representation, warranty or assumption of liability regarding the use of the String Calculator. This tool uses data provided by other parties (such as PV module specs) and makes calculations based on assumptions which may or may not prove to be valid.

CLASSIC STRING SIZING TOOL

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.



CLASSIC & CLASSIC LITE HYPERVOC

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.



CLASSIC FOLLOW ME

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							
Manufacturer	MidNite	OutBack		Blue Sky	Xantrex	Morningstar	Apollo
Model	¹ Classic 150	FM60	FM80	3048DL	XWMPPT60	TSMPPPT60	TS80
Rated Amps	80 - 96	60	80	30	60	60	80
Max Operating Voltage	150	145	145	112	140	150	112
Max VOC	² 162, 175, 200	150	150	140	150	150	200
Max Battery Voltage	72	60	60	48	60	72	48
Solar	●	●	●	●	●	●	●
Wind	●						
Hydro	●	●	●				
List Price With Display	\$850	\$749	\$849	\$649	\$685	\$793	\$849
Cost Per Amp With Display	\$10.63	\$12.48	\$10.61	\$21.63	\$11.42	\$13.22	\$10.61
Digital Display	●	●	●	●	●	Option	●
Internet Ready	●	\$595 Option				●	\$398 Option
Ground Fault Detector	●				●		
Arc Fault Detector	●						
Wizard Setup	●						
Graphical Display	●						
Free User Upgradable Firmware	●					●	
Multiple Display Support	³ MNGP	⁴ MATE	⁴ MATE	SB50RD25	XW-SCP	TS-RM-2	⁵ RD-Wired
Aux Output	2	1	1		1		2
Aux Input	1						
Sealed Or Vented Configurable	●						
Warranty (Years)	5	5	5	5	5	5	5
Oscilloscope Display	●						
Battery Status Meter							●
Substantially Made In USA	●	?	?	?			
Voice	●						
Partial Shading Indicator	●						
Sunrise/Sunset Map Of World	●						
Bonus Amps Based On Voltage	●						
ModBus Communications	●				●	●	
External Shunt Input				●			
HyperVOC Extended VOC Limit	●						

¹ The Classic comes in four models, 150, 200, 250, and 250KS
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

COMPARISONS



Classic & Classic Lite Comparison Chart

MIDNITE SOLAR'S STANDARD CLASSIC AND CLASSIC LITE COMPARISON CHART - Jan 01, 2014							
	Standard Classic				Classic Lite		
Model	150	200	250		150	200	250
Rated Amps	80-96	65-74	55-60		80-96	65-74	55-60
Max Operating Voltage	150	200	250		150	200	250
Max VOC ¹	198	248	298		198	248	298
Max Battery Voltage	72	72	72		72	72	72
Solar	•	•	•		•	•	•
Wind	•	•	•		•	•	•
Hydro	•	•	•		•	•	•
List Price	\$850	\$850	\$950		\$700	\$700	\$800
Cost Per Watt - 48 Nominal Battery V	\$0.19	\$0.22	\$0.30		\$0.16	\$0.18	\$0.25
Internet and Ethernet Ready ²	•	•	•		•	•	•
Ground Fault Detector	•	•	•		•	•	•
Arc Fault Detector	•	•	•				
Graphical Display	•	•	•				
Free User Upgradable Firmware	•	•	•		•	•	•
MNGP Multiple Display Support ³	•	•	•		•	•	•
Aux Output	2	2	2		2	2	2
Five Year Warranty	•	•	•		•	•	•
Oscilloscope Display	•	•	•				
DIP Switches For Programming					•	•	•
Substantially Made In USA	•	•	•		•	•	•
Partial Shading Indicator ²	•	•	•		•	•	•
Bonus Amps Based On Voltage	•	•	•		•	•	•
ModBus Communications	•	•	•		•	•	•
HyperVOC Extended VOC Limit	•	•	•		•	•	•
Free PC & Internet Software	•	•	•		•	•	•
380 Days Data Logging ²	•	•	•		•	•	•
8 Built In Data Logging Params	•	•	•				
11 Software Data Logging Params ²	•	•	•		•	•	•
Graphing Capabilities ²	•	•	•		•	•	•

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.

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.

CLASSIC & CLASSIC LITE COMPARISONS

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 screenshot shows the homepage of 'The MidNite Solar Forum'. At the top right is the MidNite Solar, Inc. logo. Below the logo is a search bar and a 'News' link. A navigation menu includes 'Home', 'Help', 'Search', 'Login', and 'Register'. The main content area is titled 'General Category' and contains a table of forum categories.

Category	Posts / Topics	Last Post
General FAQ'S Moderator: Halfcrazy	28 Posts 7 Topics	Last post by tecnodave in A Different approach to ... on November 11, 2013, 09:54:23 AM
Online Training sessions A place to find upcoming Online trainings hosted by Midnite Solar Moderators: Halfcrazy, TomW	24 Posts 1 Topics	Last post by TomW in Re: Follow-Me charge sta... on February 11, 2013, 10:20:33 AM
MidNite Solar "Power Time" A series of videos documenting MidNite Solar's product line Moderators: Halfcrazy, Rob	15 Posts 3 Topics	Last post by nigel in Re: DC systems with and ... on April 13, 2013, 11:43:24 AM
General Discussion Moderator: Halfcrazy	997 Posts 96 Topics	Last post by vtmaps in Re: Bad Cell? on Today at 05:02:51 AM
New Product Ideas and Discussion A place to hang out and suggest new product ideas that you would like to see. Moderator: Halfcrazy	296 Posts 25 Topics	Last post by Westbranch in Re: The BRAT...???? on October 28, 2013, 06:28:16 PM
System Design and Layout Moderator: Halfcrazy	578 Posts 60 Topics	Last post by mtdoc in Re: MNPV6 used as DC loa... on December 05, 2013, 05:29:53 PM

TECH SUPPORT

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

