

*** For Training Purposes Only ***

Morningstar's ProStar MPPT™ (PS-MPPT) Versus Midnite's Kid (MNKID)



Summary: The Morningstar ProStar MPPT charge controller has many technical advantages versus the Midnite Kid as shown in the summary table below:

Benchmark	Morningstar ProStar MPPT	Midnite Kid
Warranty	5 years.	2 years.
Efficiency	98% peak efficiency. 97% at full power.	97% peak efficiency. 95% at full power.
Max. Operating Temperature At Full Power	+60C. May de-rate above +45C for 12V battery systems.	+50C. De-rates above 25C for 12V & 24V battery systems.
Communications	Open non-proprietary MODBUS & free software.	MODBUS specs & software not available on website.
Ease of Setup/Configuration	Plug & play options: no calibration needed.	Requires calibration and labeling.
Wiring Space	Sufficient space to allow larger terminals and wires.	Constrained wiring space.
Display Features	Larger screen, multi-language, logged data, performance metrics & diagnostics info.	Small complicated English-only screen with limited data and information.
100% Solid-state	Yes.	No.
Lighting control	Multiple fully programmable ON/OFF settings.	Limited programming capability.

Read further for more comparative details

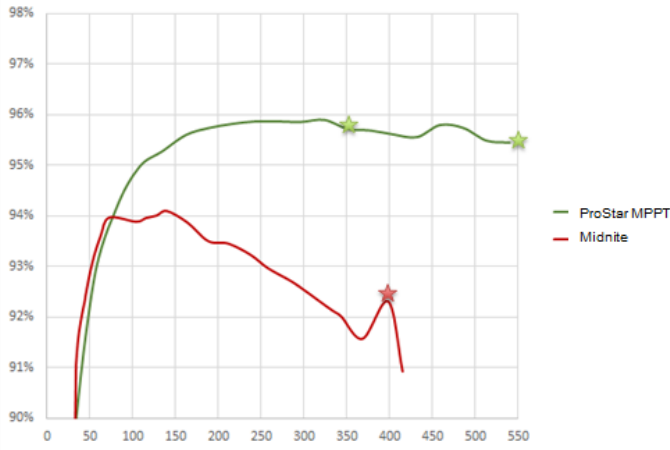
Detailed Controller Comparisons

	Morningstar ProStar MPPT	Midnite Kid
General	5 year warranty. Designed for 15 year expected operating life.	2 year warranty.
	25A and 40A versions.	30A (only one version).
	Metered and lower cost non-metered versions are available. The non-metered versions offer a less expensive solution for remote unattended sites.	Only a metered version is available, and it requires calibration. No lower cost non-metered options are offered.
	Weight is 3.1 Lbs (1.4 kg).	Weight is 6 Lbs (2.7 kg).
	Generous space between terminals to allow for any wire bending. Maximum wire size is 35mm. (#2 AWG) when used with optional wire box.	Tight space between terminals increases the chance of short circuits and inhibits wire bends. Maximum allowable wire size is #10 AWG.
	Allows surface mounting, without compromising access to wiring terminals.	No wire access when surface mounted.
	Grounding is easily accomplished with the single internal built-in ground lug.	Grounding requires an internal and an external ground connection. Installing the ground lug, requires a hole to be drilled through the back cover.
	Optional wire box has five concentric knockouts [glands] to support wire bending and multiple conduit entries. (4) 1/2" / 3/4" [M15 / M20] (1) 3/4" / 1" [M20 / M25]	Only two 1/2" conduit knockouts are located on the bottom of the unit.
Performance	Peak efficiency of 98%. High efficiency is maintained throughout the power output range, and low energy losses in the form of heat. This results in more power to charge the batteries and less heat dissipation which degrades electrical components.	No efficiency information available from Midnite. Morningstar internal testing discovered that efficiencies were typically 2% lower than the PS-MPPT at various power output levels. At higher power levels the controller chassis became too hot to touch.
	Max operating temperature of +60C without de-rate for 24V battery systems. De-rate may occur at +45C for 12V battery systems.	Max operating temperature of +50C. De-rating starts above room temperature (+25C) for 12V and 24 V battery systems.
	Low self-consumption; 0.6W (without meter) and <1W (with meter).	No information available in manual or specs.
	Nominal Maximum Operating Power rating of 1100W for the ProStar MPPT 40 amp version. Array current input greater than the nominal rating will not damage the controller.	Nominal Maximum Operating Power rating of 800W.

	Morningstar ProStar MPPT	Midnite Kid
Features & Capabilities	Complete internal digital calibration, self-verification and diagnostics during production and operation.	Cannot maintain its calibration so initial and periodic calibration using a meter may be required.
	Includes battery voltage sense that connects directly to the battery for accurate, consistent voltage regulation. This prevents over or under-charging of batteries.	No battery voltage sense to account for voltage drops, which can result in inconsistent charging.
	Automatic electronic and reverse current protections and recovery are 100% solid state. No fuses or relays that need to be replaced.	No automatic electronic protections. Uses automotive style fuses for self-protections and a mechanical relay switch. Over-currents can blow fuses, and controller will not operate until fuses are manually replaced.
	Can be used in positive ground systems.	Undetermined whether suitable in positive ground systems.
	Controller comes with all labels affixed. No additional time is needed to apply labels.	At least 10 internal and external labels are required to be applied by the installer of this controller.
	Open MODBUS Specs and free MSView Software are available for data monitoring and programing advanced settings.	Open MODBUS Specs are not available on web site. No Software available for monitoring with a PC locally or remotely.
	PC Connection can easily be established with Morningstar's RS-232 and USB adaptors.	PC connectivity is not available.
	Multi-language feature displays English, Spanish, French, or German text in the meter interface.	Interface displays English only.
	Meter display is 2X larger. Interactive four button controls light up available choices, and on-screen prompts are simple to use for easy navigation.	Small display screen has 9 buttons that make navigation complicated.
	Historic data is stored automatically.	No historic data is stored except today's Ah/kWh.
	Automatic PV based lighting control with multiple fully programmable ON/OFF settings.	Limited programming capability.
	Self-diagnostics are executed continuously and all alarms and faults are indicated on the display.	No self-diagnostics. LED fault indications are difficult to decipher.
	Transient surge protection up to 4500 watts (solar, battery, load).	No transient surge protection is indicated in the manual.
	Automatic or manual equalization can be chosen.	No automatic equalization option. Manual equalization only.

Efficiency Comparison

Power vs. Efficiency: 12V Battery with 31V Input



Power vs. Efficiency: 24V Battery with 62V Input

