

Solar power  
that never sets.



MPPT SOLAR CONTROLLERS

# A new day in solar starts now.

## Designed to Survive.

Alex MeVay, Genasun's founder, was sailing the Yucatan in 2003 when his power went out. An industry leader's PWM solar charge controller had failed somewhere between Guadeloupe and Boston, leaving him stalled in the open ocean to fend for himself. MeVay disassembled the controller to find poorly designed electronics and more cut corners than he could count. And though he had spares available, he was unnerved having bet his life on a shoddy solar component.

After returning to the USA, MeVay joined the MIT solar car team, where he spent the next three years refining leading-edge design of solar charge controllers and lithium batteries, and designing what would later be Genasun's first MPPT controller. And thus, a new day in solar power began.

Founded in 2005 by a group of MIT engineers, Genasun sets the bar for mission-critical solar charge controllers and lithium battery systems. With über high-end, off-grid solar charge components and advanced lithium battery systems, Genasun's robust product line has been deployed—and trusted—by scientific and military communities in all corners of the world, guaranteeing power where and when you need it most.



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# Powering through. And through.

Though our controllers were born at MIT and made in the USA, they usually end up living pretty far from home. Designed and tested to withstand the most intense conditions on earth, Genasun controllers can brave years traversing the roughest seas, endure harsh Antarctic winters, power freezing upper-atmosphere flights on solar planes, and deliver steady, reliable power to the most remote locations on earth. It's all because of our industry-leading technology, created to deliver solar power you can count on.

## **Heat leads to failure. And we tolerate neither.**

Cyclic heating stresses electronics, ultimately leading to system failure. While most companies use large heat sinks to get rid of heat, Genasun designed more efficient controllers that simply create less.

## **Ceramic is one tough S.O.B.**

Genasun's ceramic controllers set a new benchmark for reliability. Traditional controllers have components filled with fluid electrolytes that boil off over time, causing systems to overheat and fail. Using industry first ceramic technology, Genasun offers the first solar charge controller designed to last longer than your panel.

## **No fans. No relays.**

Fans get clogged with dust and dirt, and relays eventually stop switching. Using sophisticated electrical design and software, we've engineered out all moving components so that your Genasun controller won't ever leave you out in the cold.



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Actual Genasun installations

# It's time to put PWMs to bed, and say hello to a new day in solar.

While most solar controller manufacturers are hitting snooze on upgrading their technology, Genasun's been up for hours making big strides in MPPT. Our sophisticated controllers work harder than the competition, giving you more power, more efficiently—actually reducing your cost per watt. It's solar power that never sets.

- **Solar power. Down to a science.**

The truth is, every controller uses power to create power. But at Genasun, we use it wisely. While a typical PWM controller burns 9mA, most Genasun MPPT Controllers burn a scant 0.9mA. That's 10 times less. This slow burn is ideal for waiting out a snow-covered panel, or a few bad weeks of clouds, giving you power when you need it most.

- **Lithium & lead-acid. Our chemistry with your batteries.**

Our 4-stage battery charging algorithm ensures the optimal charge cycle for your batteries, maximizing battery life and capacity no matter the chemical makeup. Drawing from nine years of experience building lithium battery packs for harsh environments, Genasun has optimized the best lithium charge profiles to help you get the most from your pack.

- **Silence is golden.**




Most solar charge controllers are plagued by electromagnetic interference (EMI), wasting energy, interfering with nearby electronics, and broadcasting your location to potential adversaries. But we're in the business of making power, not noise. That's why all Genasun controllers are designed to generate clean, unfiltered power, and are optimized for precision sensors and electronics.

# Catch More Rays. Keep More Coin.

**Fact: A Genasun MPPT controller extracts more power from any given panel than a PWM controller.**

And though PWMs may offer a lower initial controller cost, MPPT Controllers deliver more power, actually lowering the cost per watt and adding reliability. How does that work? Imagine increasing the size of a panel by 10%-50% to make up for the power wasted by a PWM controller and multiply the power gained by Genasun's MPPT controllers by the cost per watt of the solar panel and you've saved some serious pennies for a rainy day.

## Genasun MPPT Value

GENASUN CONTROLLER		PANEL OUTPUT (WATTS)	 <b>+10%</b> additional power in the summer. No panel is too hot to handle. WATTS SAVED*	 <b>+30%</b> more power on those shorter, colder winter days. WATTS SAVED*	 <b>+50%</b> increase in energy harvest from partially shaded panels. WATTS SAVED*
<b>GV-4</b>	4A/12v	50W	5W	15W	25W
<b>GV-5</b>	5A/12v	65W	6.5W	19.5W	32.5W
<b>GV-10</b>	10.5A/12v	140W	14W	42W	70W
<b>GVB-8</b>	8A/24v	210W	21W	63W	105W

\* PV power gained by Genasun's MPPT controllers respect a PWM controller

# GV-4

# 4A @ 12V 50W

**BATTERY CHEMISTRIES AVAILABLE:**

Lead-Acid (AGM / Sealed / Flooded / Gel)

## MPPT for the little guys.

The GV-4 brings reliability and the added power of Maximum Power Point Tracking to the smallest panels yet. Along with tiny self-consumption of 125 micro amps in low light (1/20th to 1/50th as much as comparable controllers), the GV-4 delivers 10% to 30% more power from the solar panel to the battery out of the box—and routinely delivers 50% power gains in partially shaded panels.

### ● **Computer controlled, 4-stage battery charging.**

Precise computer controlled charging ensures the optimal charge cycle for your battery. This increases the battery life, and maximizes battery capacity.

### ● **Ultra high-speed MPPT.**

Not all Maximum Power Point Tracking controllers were created equal. Most employ a sweep-and-sleep method, only scanning the entire voltage range every 30-60 seconds. That'll work on a clear day, but not during changing cloud conditions when power becomes scarce. Genasun controllers adapt to changing light conditions 20 times per second. No matter the weather, they capture every bit of power available, outshining other controllers by a long shot.

## Great For:

- Marine & RV
- Telecom
- Urban Applications
- Small, remote power systems
- Parking meters
- Traffic cameras
- Remote switches

## FEATURES:

- 99.85% peak efficiency
- Ultra-fast true MPPT Tracking
- Electronic-overload protection
- Electronic reverse battery protection
- Over-temperature-protected with current-foldback
- Automatic recovery from fault conditions
- Shade-tolerant tracking
- No radio frequency noise
- Reverse polarity protection of solar panel input

**SPECIFICATIONS:**

Max Panel Power:	50W
Continuous Current Rating:	4A
Nominal Battery Voltage:	12V
Recomm. Max Panel Voc at STC:	22V

**4A @ 12V 50W****GV-4**

Self Consumption(low light):	0.125mA
Peak Efficiency:	99.85%
Tracking Efficiency:	99%
Operating Temperature:	-40°C - 85°C
Environmental Protection:	IP40
Dimensions:	11x5.6x2.5cm
Weight:	80g
Warranty:	5 Years



# GV-5

# 5A @ 12V 65W

## Epic reliability and gigantic power—in a tiny package.

The Genasun GV-5 ushers in a new era of solar charge controllers. Built with Genasun's industry-leading ceramic construction, the GV-5 is designed to outlast your panel—a solar industry first.

With features like Genasun's high speed MPPT, low voltage disconnect, sophisticated battery algorithms and advanced circuit protections, the GV-5 is a must for mission-critical applications. What's more, all Genasun controllers feature electromagnetic interference-free operation, making the GV-5 the perfect controller for remote telecommunications, data collection, and military operations.

- **We beat the heat.** Long after other controllers burn out from heat, Genasun's Ceramic Drive MPPT's are still kicking. GV-5 delivers the industry's first Solid State Ceramic construction, making your controller last longer than your solar panel. Yes, we've made the only weak point in your system stronger than ever.
- **No battery? No biggie.** The GV-5 also has a special built-in circuit allowing start-up with no battery present, ensuring compatibility with most lithium battery protection systems that require a voltage present before a charging source is connected to the battery.

## Great For:

- Marine & RV
- Arctic, Antarctic & Desert conditions
- Telecom
- Urban applications
- Small, remote power systems
- Parking meters
- Traffic cameras
- Anything that needs to work flawlessly

## BATTERY CHEMISTRIES AVAILABLE:

Lead-Acid (AGM / Sealed / Flooded / Gel)

Lithium (LiFePO<sub>4</sub> / LiPo / Li-Ion)

## FEATURES:

- Genasun ceramic drive MPPT
- 99.85% peak efficiency
- Ultra-fast true MPPT Tracking
- Low voltage disconnect
- Electronic-overload protection
- Electronic reverse battery protection
- Over-temperature-protected with current-foldback
- Automatic recovery from fault conditions
- Shade-tolerant tracking
- No radio frequency noise
- Reverse polarity protection of solar panel input

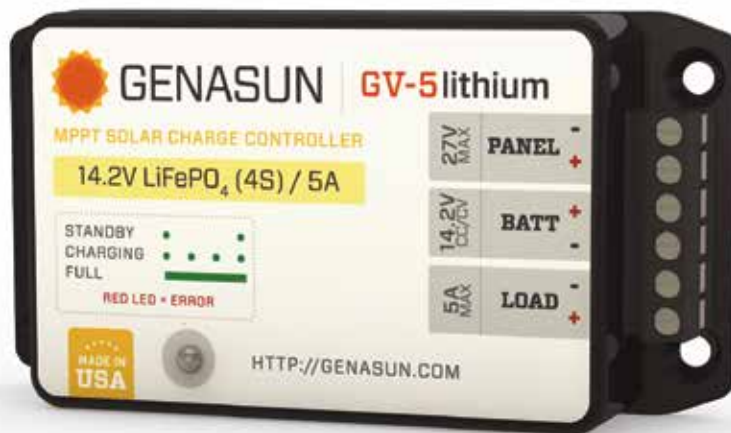


**SPECIFICATIONS:**

Max Panel Power:	65W
Continuous Current Rating:	5A
Nominal Battery Voltage:	12V
Recomm. Max Panel Voc at STC:	22V
Load Output	5A

**5A @ 12V 65W****GV-5**

Self Consumption(low light):	0.150mA
Peak Efficiency:	99.85%
Tracking Efficiency:	99%
Operating Temperature:	-40°C - 85°C
Environmental Protection:	IP40
Dimensions:	11x5.6x2.5cm
Weight:	80g
Warranty:	10 Years



# GV-10

# 10.5A @ 12V 140W

## BATTERY CHEMISTRIES AVAILABLE:

Lead-Acid (AGM / Sealed / Flooded / Gel)

Lithium (LiFePO4 / LiPo / Li-Ion)

### Time tested, panel approved.

With the Genasun GV-10 MPPT controller, continuous power is yours for the taking. The only 10.5A 140W MPPT solar charge controller on the market today, the GV-10 extracts more power from any given panel than a PWM controller. And though PWMs may offer a lower controller cost, a Genasun MPPT controller paired with a Kyocera KD140 series panel actually delivers more power—reducing the cost per watt by 10% and giving you more bang for your buck.

#### ● Computer controlled, 4-stage battery charging.

Precise computer controlled charging ensures the optimal charge cycle for your battery. This increases the battery life, and maximizes battery capacity.

#### ● Ultra high-speed MPPT.

Not all Maximum Power Point Tracking controllers were created equal. Most employ a sweep-and-sleep method, only scanning the entire voltage range every 30-60 seconds. That'll work on a clear day, but not during changing cloud conditions when power becomes scarce. Genasun controllers adapt to changing light conditions 20 times per second. No matter the weather, they capture every bit of power available, outshining other controllers by a long shot.

## Great For:

- Marine & RV
- Telecom
- Small, remote power systems
- Parking meters
- Traffic cameras
- Remote water pumps
- Remote switches
- Urban applications

### FEATURES:

- 98% peak efficiency
- Ultra-fast true MPPT Tracking
- Electronic-overload protection
- Electronic reverse battery protection
- Over-temperature-protected with current-foldback
- Automatic recovery from fault conditions
- Shade-tolerant tracking
- No radio frequency noise
- Reverse polarity protection of solar panel input

**SPECIFICATIONS:**

Max Panel Power:	140W
Continuous Current Rating:	10.5A
Nominal Battery Voltage:	12V
Recomm. Max Panel Voc at STC:	27V



10.5A @ 12V 140W

**GV-10**

Self Consumption(low light):	0.9mA
Peak Efficiency	98%
Tracking Efficiency:	99%
Operating Temperature:	-40°C - 85°C
Environmental Protection:	IP40
Dimensions:	14x6.5x3.5cm
Weight	185g
Warranty:	5 Years



# GVB-8

# 8A @ 12V, 24V, 36V, 48V

## BATTERY CHEMISTRIES AVAILABLE:

Lead-Acid (AGM / Sealed / Flooded / Gel)

Lithium (LiFePO4 / LiPo / Li-Ion)

### Boost your solar panel voltage up to a higher voltage battery bank.

Most solar charge controllers flow energy from a higher voltage panel to a lower voltage battery bank. But the GVB-8 series controllers essentially pump electricity up hill. This series can take a standard 12V panel and boost the voltage to charge a 24V, 36V or 48V battery pack. In fact, the GVBs will boost almost any panel voltage that's below your battery voltage. This makes finding a good panel easy. Just make sure to stay below 8A max. panel current and 63 Volts (open circuit)—and the GVB will take care of the rest.

- **48V battery charging with a 350W grid-tie panel.** Genasun's unique GVB-8 Boost controllers enable 48V battery charging from a single 350W grid-tie panel. This revolutionary controller boosts panel voltage up to the battery voltage - increasing system efficiency while reducing cost per Watt.

- **Maximum power from each panel.** Like micro-inverters, the GVB-8 Boost controller is designed for a single panel. This configuration maximizes the power output from each panel. The total array power can easily scale up by adding panels and controllers in parallel.

## Great For:

- Telecom stations
- Golf carts
- Marine & RV
- Urban applications
- Remote water pumps
- Remote switches

## FEATURES:

- 99% peak efficiency
- Ultra-fast true MPPT Tracking
- Electronic-overload protection
- Electronic reverse battery protection
- Over-temperature-protected with current-foldback
- Automatic recovery from fault conditions
- Shade-tolerant tracking
- No radio frequency noise
- Reverse polarity protection of solar panel input

**SPECIFICATIONS:**

8A @ 12V, 24V, 36V, 48V

**GVB-8**

Max Panel Power:	105W - 350W
Continuous Current Rating:	8A*
Nominal Battery Voltage:	12V, 24V, 36V, 48V
Recomm. Max Panel Voc at STC:	50V

\*Panel ratings have increased since we designed the GVB. Although we don't believe in changing specifications without a corresponding engineering change, based on both our customers' experiences over the years as well as the headroom we designed into the GVB, we feel comfortable recommending the GVB for panels with Imp up to 9A.



Self Consumption(low light):	6mA
Peak Efficiency:	99%
Tracking Efficiency:	99%
Operating Temperature:	-40°C - 85°C
Environmental Protection:	IP40
Dimensions:	14x6.5x3.5cm
Weight:	185g
Warranty:	5 Years



# GVB-8-WP

# 8A @ 12V, 24V, 36V, 48V

## BATTERY CHEMISTRIES AVAILABLE:

Lead-Acid (AGM / Sealed / Flooded / Gel)

Lithium (LiFePO4 / LiPo / Li-Ion)

### The game changer.

All weather charging, in any condition! The waterproof GVB charge controller with MPPT allows a lower- voltage solar panel to charge higher-voltage batteries. Want to charge a 36V battery with a 60-cell solar panel? No problem. A 48V battery from a 12V panel? With 99% peak efficiency, they are the industry's most efficient voltage-boosting controllers. True MPPT delivers consistent performance! The advanced electronics inside the controller are encased in a proprietary potting compound making them ideal for golf-cart, marine, and vehicle applications where they are exposed to the elements.

#### ● **36V battery charging with a 325W grid-tie panel.**

Genasun's unique GVB-8 Boost controllers enable 36V battery charging from a single 325W grid-tie panel. This revolutionary controller boosts panel voltage up to the battery voltage – increasing system efficiency while reducing cost per Watt.

#### ● **Maximum power from each panel.**

Like micro-inverters, the GVB-8 Boost controller is designed for a single panel. This configuration maximizes the power output from each panel. The total array power can easily scale up by adding panels and controllers in parallel.

## Great For:

- Golf carts
- Marine & RV
- Telecom
- Remote water pumps
- Remote switches
- Mobile signage

## FEATURES:

- Waterproof
- 99% peak efficiency
- Ultra-fast true MPPT Tracking
- Electronic-overload protection
- Electronic reverse battery protection
- Over-temperature-protected with current-foldback
- Automatic recovery from fault conditions
- Shade-tolerant tracking
- No radio frequency noise
- Wire leads for easy installation

## SPECIFICATIONS:

Max Panel Power:	105W - 350W
Continuous Current Rating:	8A*
Nominal Battery Voltage:	12V, 24V, 36V, 48V
Recomm. Max Panel Voc at STC:	50V

\*Panel ratings have increased since we designed the GVB. Although we don't believe in changing specifications without a corresponding engineering change, based on both our customers' experiences over the years as well as the headroom we designed into the GVB, we feel comfortable recommending the GVB for panels with Imp up to 8A.



8A @ 36V, 48V

# GVB-8-WP

Self Consumption(low light):	5mA
Peak Efficiency:	99%
Tracking Efficiency:	99%
Operating Temperature:	-40°C - 85°C
Environmental Protection:	IP68, Waterproof
Dimensions:	14x8.1x5.5cm
Weight:	290g
Warranty:	5 Years



# Power + Reliability + Efficiency. Down to a science.

	GV-4	GV-5	GV-10	GVB-8	GVB-8-WP
Max Recommended Panel Power:	50W	65W	140W	105-350W	105W - 350W
Rated Battery (Output) Current:	4A	5A	10.5A	8A*	8A*
Nominal Battery Voltage:	12V	12V	12V	12V, 24V, 36V, 48V	12V, 24V, 36V, 48V
Maximim Input Panel:	27V	27V	34V	60V	60V
Recommended Max Panel Voc at STC:	22V	22V	27V	50V	50V
Peak Efficiency:	99.85%	99.85%	98%	99%	99%
Genasun MPPT Tracker speed:	15Hz	15Hz	15Hz	15Hz	15Hz
Operating Temperature:	-40°C - 85°C	-40°C - 85°C	-40°C - 85°C	-40°C - 85°C	-40°C - 85°C
Low Voltage Disconnect (LVD):	-	Yes	-	-	-
Battery Chemistry Available:	Lead	Lead/Lithium	Lead/Lithium	Lead/Lithium	Lead/Lithium
Dimensions:	11x5.6x2.5 cm	11x5.6x2.5 cm	14x6.5x3.1 cm	14x6.5x3.1 cm	14x8.1x5.5 cm
Environmental Protection:	IP40	IP40	IP40	IP40	IP68
Warranty:	5 years	10 Years	5 years	5 Years	5 Years

SPECIFICATIONS SUBJECT TO CHANGE.

\*Panel ratings have increased since we designed the GVB. Although we don't believe in changing specifications without a corresponding engineering change, based on both our customers' experiences over the years as well as the headroom we designed into the GVB, we feel comfortable recommending the GVB for panels with Imp up to 9A.



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