GENASUN

GV-4 Manual

Solar Charge Controller with Maximum Power Point Tracking

For models:

GV-4-Pb-12V: 12V Lead-Acid/AGM/Gel/Sealed/Flooded

http://genasun.com

GENASUN INC.
1035 CAMBRIDGE ST. • SUITE 16B
CAMBRIDGE, MA 02141 • USA

4A / 50W

GENASUN GV-4(ALL MODELS) MANUAL, REVISION 1.0 | 11.2012

IMPORTANT SAFETY INSTRUCTIONS | SAVE THESE INSTRUCTIONS

Safety Instructions:

This manual contains important instructions for the GV-4-Pb-12V solar charge controller that shall be followed during installation and maintenance.

The GV-4 is intended for charging 12V Lead-Acid, AGM, Gel, Sealed, and Flooded batteries. Consult your battery charging specifications to ensure that the GV-4 is compatible with your chosen batteries.

The GV-4 does not include a fuse. Overcurrent protection suitable for the application must be provided by the user.

CAUTION: **INTERNAL TEMPERATURE COMPENSATION. RISK OF FIRE, USE WITHIN 0.3 m (1 ft) of BATTERIES.** Lead-acid batteries can create explosive gases. Short circuits can draw thousands of amps from a battery. Carefully read and follow all instructions supplied with the battery. Use only 12V lead-acid batteries with the GV-4-Pb-12V.

DO NOT SHORT CIRCUIT the solar array when plugged into the controller. **DO NOT MEASURE SHORT CIRCUIT CURRENT** of the array while connected to the controller. This will DESTROY the controller, and such damage will not be covered under warranty.

Use only 12-30 AWG copper conductors suitable for a minimum of 60 degrees C. If operation at high power or at high ambient temperatures is expected, wire with a higher temperature rating may be necessary.

Grounding is not necessary for operation and is at the user's discretion. If the GV-4 is to be used with a solar array electrically connected to earth ground, please note the following: **WARNING: THIS UNIT IS NOT PROVIDED WITH A GFDI DEVICE.** Consult Article 690 of the National Electrical Code (or the standards in force at the installation location) to determine whether a GFDI is necessary for your installation.

Recommended terminal block tightening torque: 3-5 in-lbs, 0.35-0.55 Nm.

Inspection & Maintenance

No user-serviceable parts inside.

Inspect the controller at least once per year to ensure proper performance.

- Check for animal or insect damage.
- Inspect for corrosion / water damage.
- Inspect the security of all connections.
- Ensure the solar array does not exceed the maximum input voltage.
- Repair and clean as necessary.

Installation & System Connections:

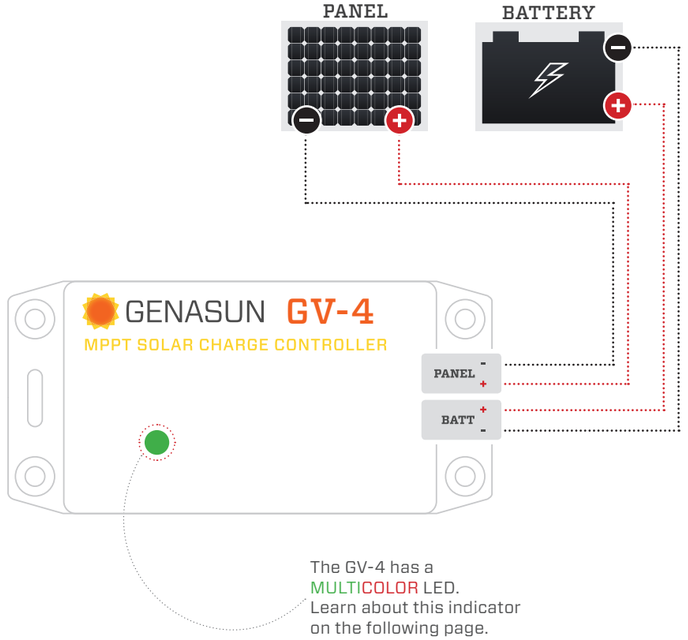
- Connections should be made according to Article 690 of the National Electrical Code (NFPA 70) or the standards in force at the installation location.
- Electrical connections may be made in any order; however the sequence below is recommended.

1 MOUNTING

Mount the controller near your battery securely using the holes provided on the enclosure's flanges or with a means appropriate to the application.

- Mount near battery.
- The GV-4 can be mounted in any orientation.
- Do not expose to water.
- Do not mount in direct sunlight or near a source of heat.
- Allow adequate airflow around the controller to achieve maximum output capability.
- For outdoor use, the controller must be housed in an enclosure providing protection at least equivalent to NEMA Type 3.

Note: Make sure to inspect the controller at least once per year to ensure proper performance. Please see the Inspection & Maintenance section in this guide.



2 CONNECTING THE SOLAR PANEL

Connect the solar panel to the +PANEL and –PANEL terminals.

- In most applications, the panel should be connected only to the GV-4.
- Never connect the panel negative to the battery negative, as your batteries may be damaged. In the GV-4, the positive side of the battery is connected internally to the positive side of the solar panel.
- Do not use blocking diodes for single-panel installations. The GV-4 prevents reverse-current flow.
- If multiple panels are being used in parallel, blocking diodes are recommended in series with each panel, unless the panel manufacturer recommends otherwise.
- Solar panel voltage rises in cold weather. Check that the solar panel open circuit voltage (Voc) will remain below the maximum input voltage of the GV-4 at the coldest possible expected temperature.

3 CONNECTING THE BATTERY

Connect the battery to the +BATT and –BATT terminals.

- A small spark while connecting the battery is ok.
- Any loads should be connected directly to the battery. The GV-4 does not provide protection against over-discharge.

Status Indication:

The GV-4 has a MULTICOLOR LED

LED RUN/CHARGE INDICATION

Standby: The battery is connected properly and ready to charge when solar panel power is available.

8-10 SEC. BETWEEN GREEN BLINKS

Charging (low current, less than 0.15A):

4-5 SEC. BETWEEN GREEN BLINKS

Charging (between 0.15A - 1.5A):

FAST GREEN BLINKS

Charging (high current, more than 1.5A):

LONGER GREEN BLINKS

Charging (current limit): charging at current limit. The GV-4 is overloaded and limiting charging current.

LONG, THEN SHORT GREEN BLINKS

Battery Charged: The battery is in the absorption or float charging stage.

SOLID GREEN LED

LED ERROR INDICATION

Overheat: The controller's internal temperature is too high.

SETS OF 2 RED BLINKS.

Overload: This could be caused by changing the solar panel connections while the controller is operating.

SETS OF 3 RED BLINKS.

Battery voltage too low: The controller cannot begin charging due to low battery voltage. If the nominal battery voltage is correct (12V), charge the battery by some other means before use.

SETS OF 4 RED BLINKS

Battery voltage too high: If the nominal battery voltage is correct (12V), check the functioning of other chargers that may be connected to the system.

SETS OF 5 RED BLINKS.

Panel voltage too high: Only 12V nominal solar panels may be used with this controller.

SETS OF 6 RED BLINKS.

Internal Error: Contact your dealer for assistance.

2 LONG BLINKS, FOLLOWED BY ANY NUMBER OF SHORT BLINKS.

This page is intentionally left blank.

Specifications:

	GV-4-Pb-12V
Maximum Recommended Panel Power:	50W
Rated Battery (Output) Current:	4A
Nominal Battery Voltage:	12V
Max Panel Voltage (Voc):	27V
Recommended Max Voc at STC:	22V
Minimum Battery Voltage for Operation:	7.2V
Input Voltage Range:	0-27V
Recommended Maximum Input Short Circuit Current (for Solar Use):	4A
Maximum Input Current *:	7A
Charge Profile:	Multi-Stage with Temperature Compensation
Absorption Voltage:	14.2V
Absorption Time:	2 Hours
Float Voltage:	13.8V
Charging Output Voltage Range:	7.2-18V
Battery Temperature Compensation:	-28mV/°C
Operating Temperature:	-40°C – 85°C
Maximum Full Power Ambient:	50°C
Electrical Efficiency:	96% - 99.85% typical
Tracking Efficiency:	99% typical
MPPT Tracking Speed:	15Hz
Operating Consumption:	0.125mA (125uA)
Night Consumption:	0.9mA (90uA)
Marine Grade:	Yes
Connection:	4-position terminal block for 12-30AWG wire
Weight:	2.8 oz., 80 g
Dimensions:	4.3 x 2.2 x 0.9", 11 x 5.6 x 2.5 cm
Warranty:	5 years

*Maximum current that the controller could draw from an unlimited source.