



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>

4A / 50W

GENASUN INC.

1035 CAMBRIDGE ST. • SUITE 16B

CAMBRIDGE, MA 02141 • USA

GENASUN GV-4(ALL MODELS) MANUAL, REVISION 1.0 | 10.2012

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:

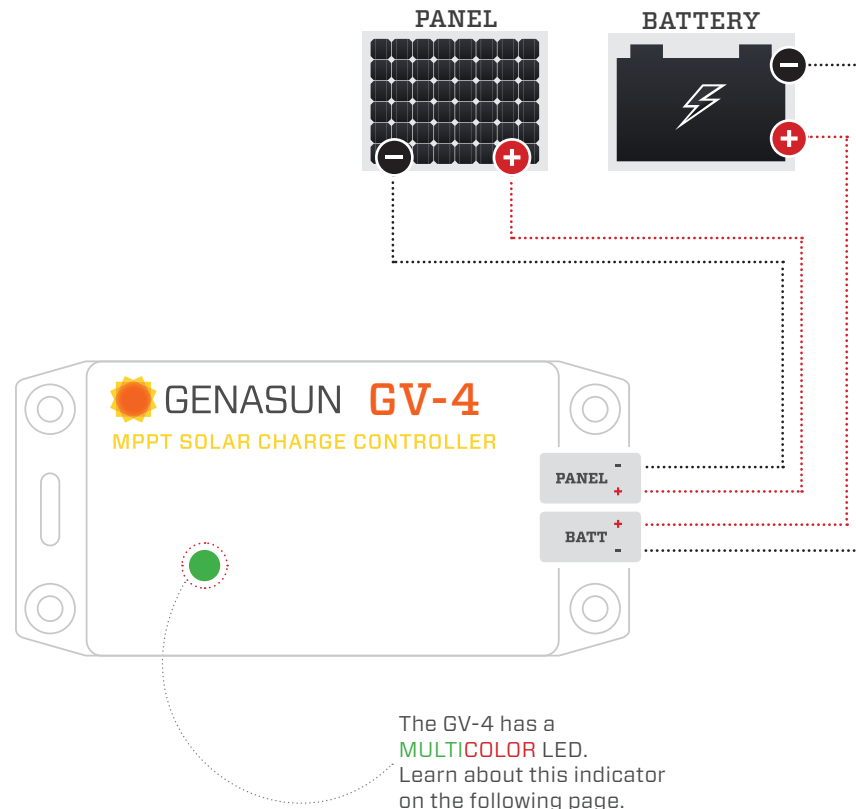
- Connections should be made according to Article 690 of the National Electrical Code (NFPA 70) or the standards in force at the installation location.
- Electrical connections may be made in any order; however the sequence below is recommended.

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. 

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Specifications:

GV-4-Pb-12V

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|--|---|
| 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.