MEVO Manual

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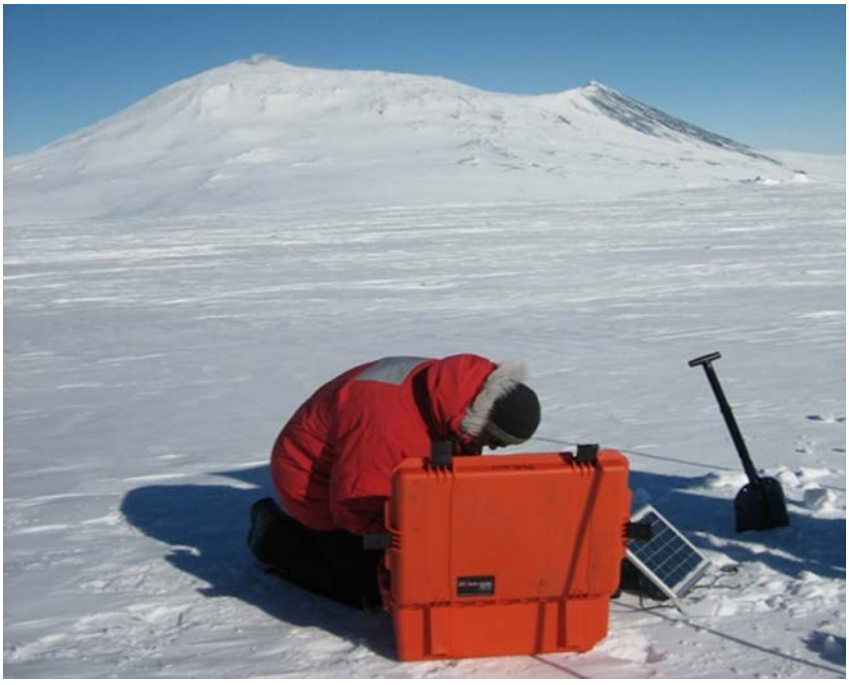


Overview

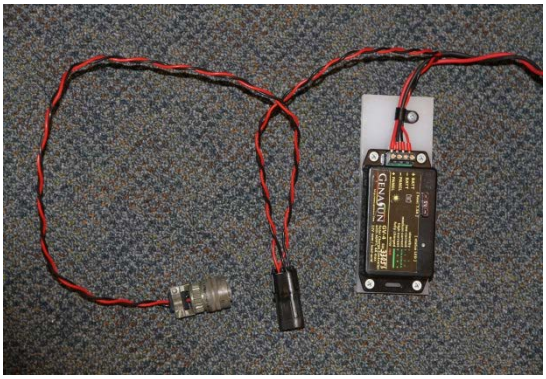
The MEVO box is designed to be a rapidly deployable, short duration seismic station for cold weather environments. It consists of an insulated Hardigg storm case which houses a DAS, battery power storage, charge controller and GPS clock. A through hole with a foam insulation plug provides sensor cable to DAS connectability, and a 4 pin bulkhead connector wired internally to a Genasun GV-4 charge controller provides the solar power connection.

Parts List

Each MEVO system is shipped containing the following:

- 1x Insulated Hardigg storm case
- 1x Genasun GV-4 charge controller, wired internally to 3 pin bulkhead
- 1x 10/20W Suntech solar panel with attached mounting system
- 1x GPS clock and cable
- 1x Battery Pigtail Connector
- 1x DAS (can accommodate RT-130 or Q330)
- 2x Foam sensor cable plug
- 1x Spare Fuse (7.5A). Either taped to battery pigtail or inserted in foam bulkhead.

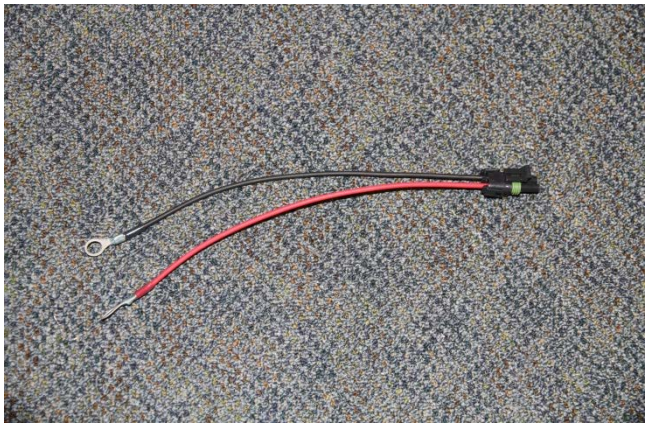
Insulated Hardigg storm case



Genasun GV-4 charge controller, wired internally to 4 pin bulkhead

10/20W Suntech solar panel with attached mounting system

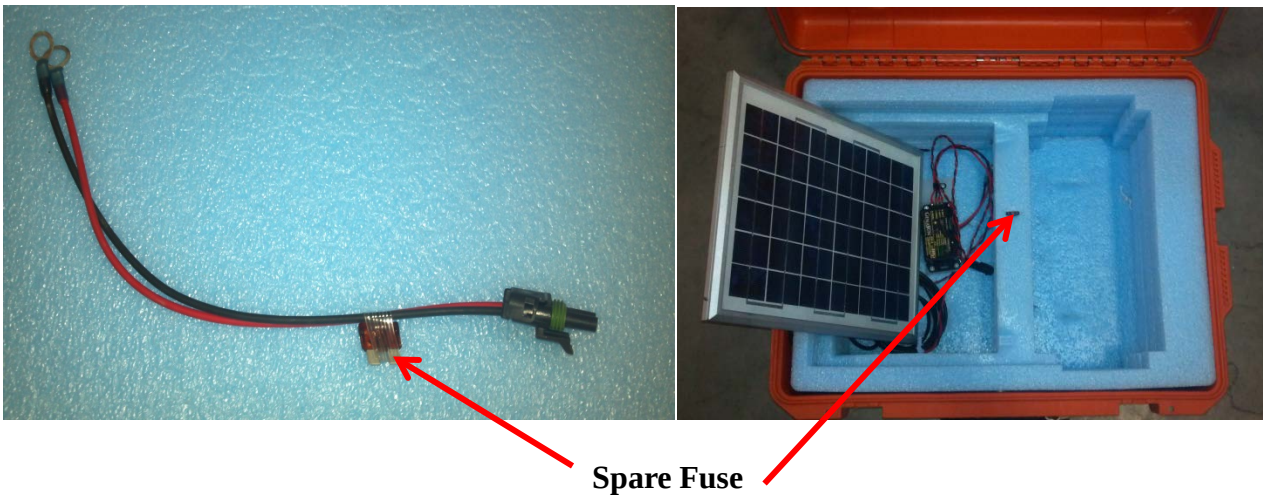
GPS clock and cable



Battery pigtail connector

DAS (can accommodate RT-130 or Q330)

Foam sensor cable plug



Batteries are to be provided by the investigating party and catered to the power requirements and duration of the experiment.

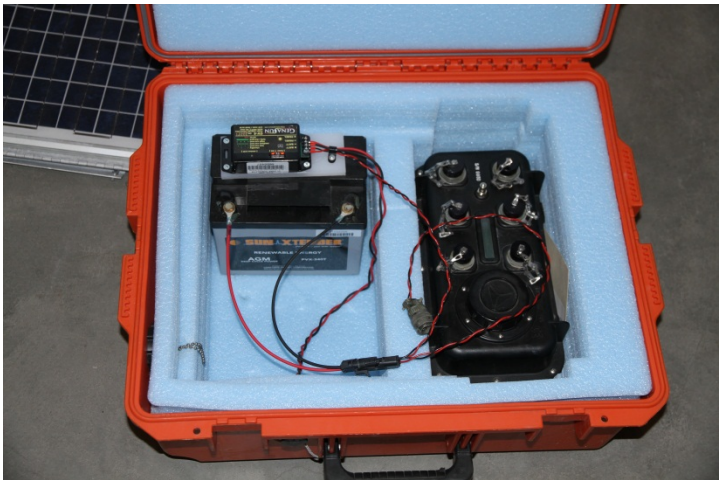
Assembly Instructions

Order of the following steps can be varied.

1. Open box and ensure that all parts listed in the above section are included. This should be done prior to entering the field.

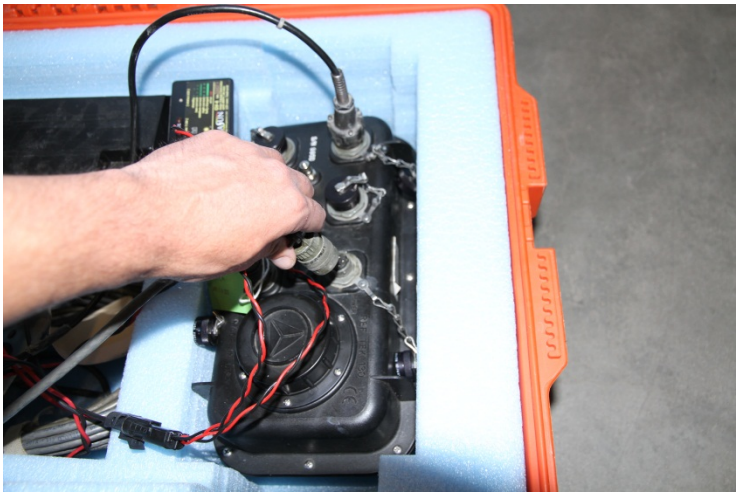
Step 1

2. Remove solar panel, GPS and GPS cable. Arrange DAS, battery(ies) and charge controller.



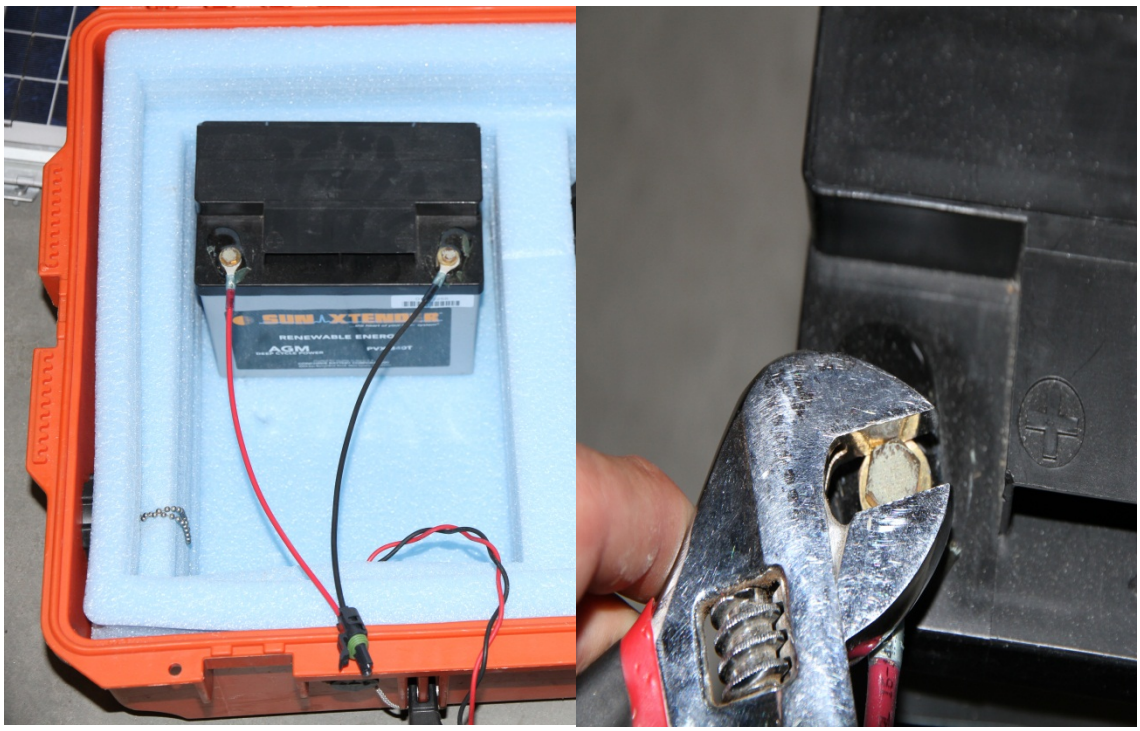
Step 2

3. Connect 4-pin charge controller power plug to DAS power input. It is important that this is done PRIOR to connecting the battery pigtail to avoid shorting a live lead to the DAS power connector housing.



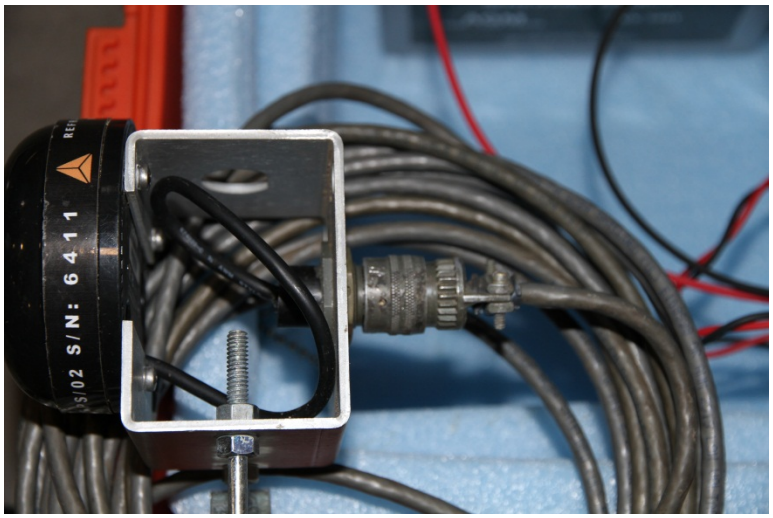
Step 3

4. Connect battery pigtail ring terminals to battery, black to the negative (-) lead and red to the positive (+) lead. Ensure that battery post nuts are tight against the ring terminals or power failure can occur.



Step 4

5. Connect 8-pin GPS cable to the GPS port on the DAS, and the other end to the connector on the bottom of the GPS unit.

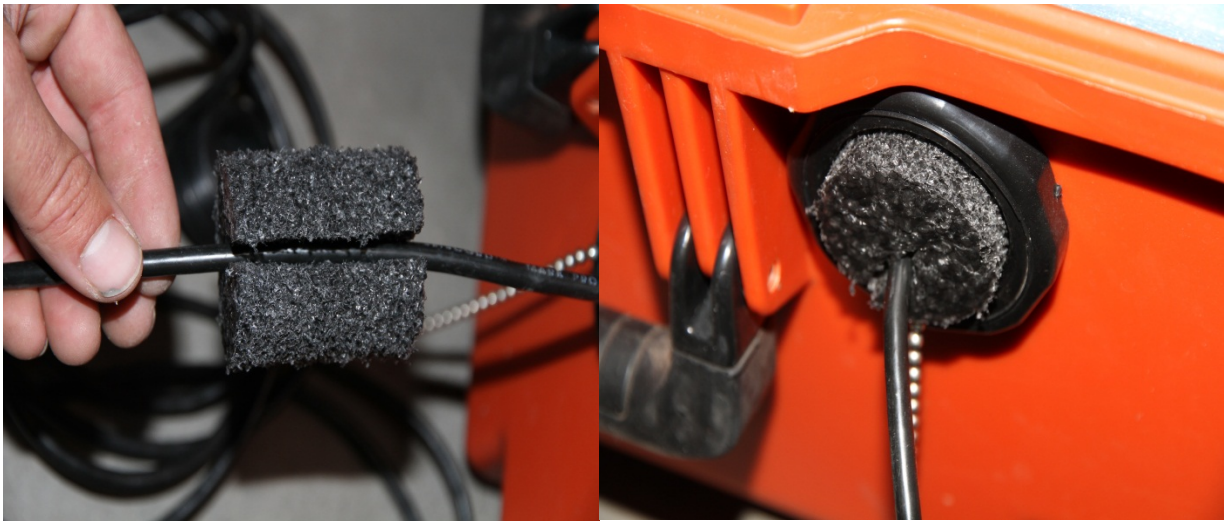


Step 5

6. Arrange GPS unit and cable so that the GPS is facing up and as far left as possible so the signal is not shielded by the solar panel which will be mounted on top of the enclosure.

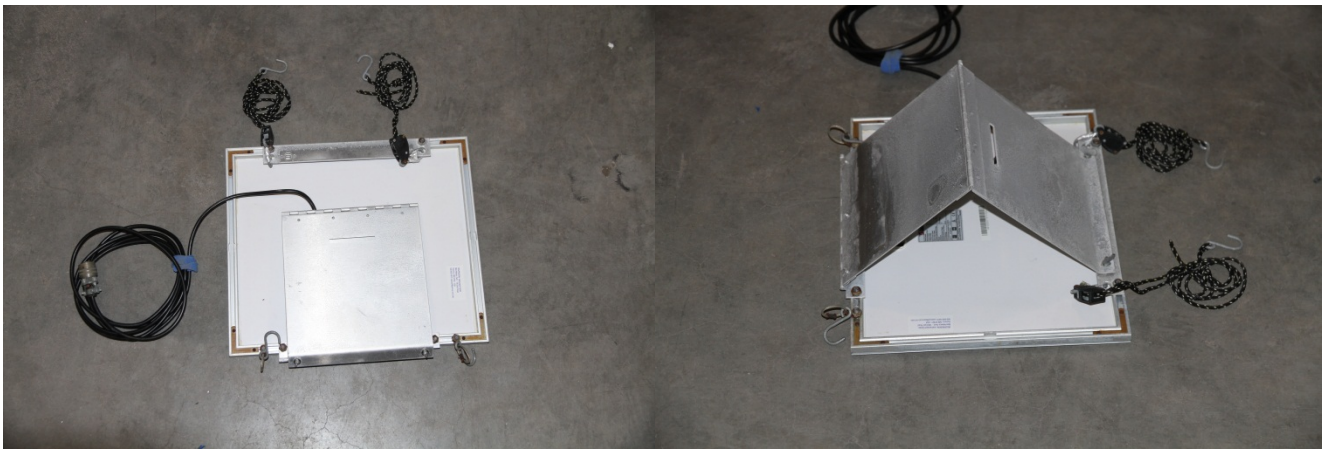
Step 6

7. Unscrew the black cap on the left side of the enclosure and run the senor cable through the hole and connect to the DAS. Fit the black slitted foam plug around the sensor cable near the hole on the outside of the enclosure and press the plug firmly into the hole.



Step 7

8. Arrange the solar panel outside of the enclosure. Fold the trailing end of the hinged mount on the back of the solar panel up to the top of the panel. Align the wing nuts with the holes and screw until securely fastened. Expose panel to sun, if available.



Step 8

9. Plug the solar panel power cord into the bulkhead at the front of the enclosure.

Step 9

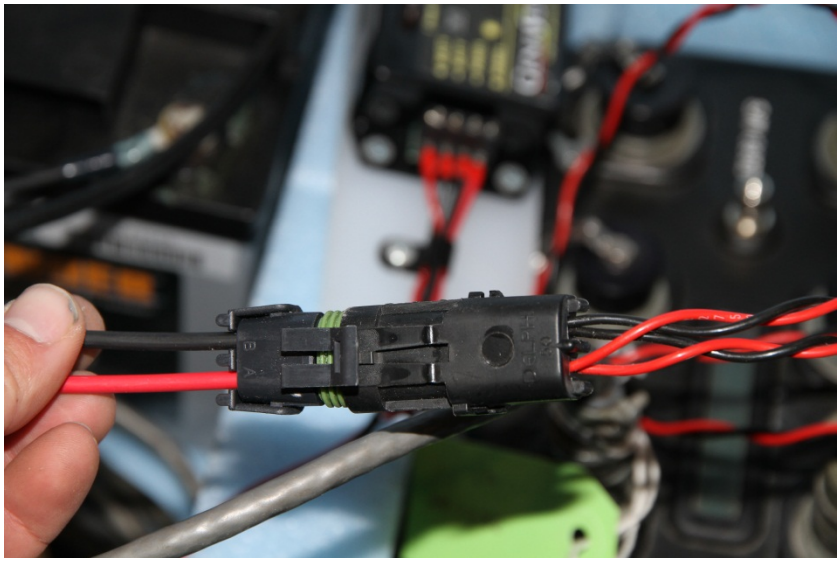
10. Connect battery pigtail to charge controller. Insure system is functioning properly.
Bullet points on testing system

Testing System:

1. Connect multimeter to battery to measure Volts. Verify charge.
2. Connect battery to Charge Controller. Green light should blink.*
3. Connect Load (DAS) to charge controller. **
4. Wait 5-10 seconds
5. Disconnect Load
6. Connect solar panel
7. Aim solar panel at the sun
8. Make sure battery voltage increases

* Blink is slow and difficult to see in high light conditions. May need to shade the LED in order to see. If there is NO LED activity on the charge controller and it's connected to a battery and/or PV, then there is either a problem with the wiring to the charge controller, or the charge controller is defective.

** If DAS fails to power, the fuse on the charge controller could be blown. Try replacing with spare.



Step 10

11. Close and latch enclosure.

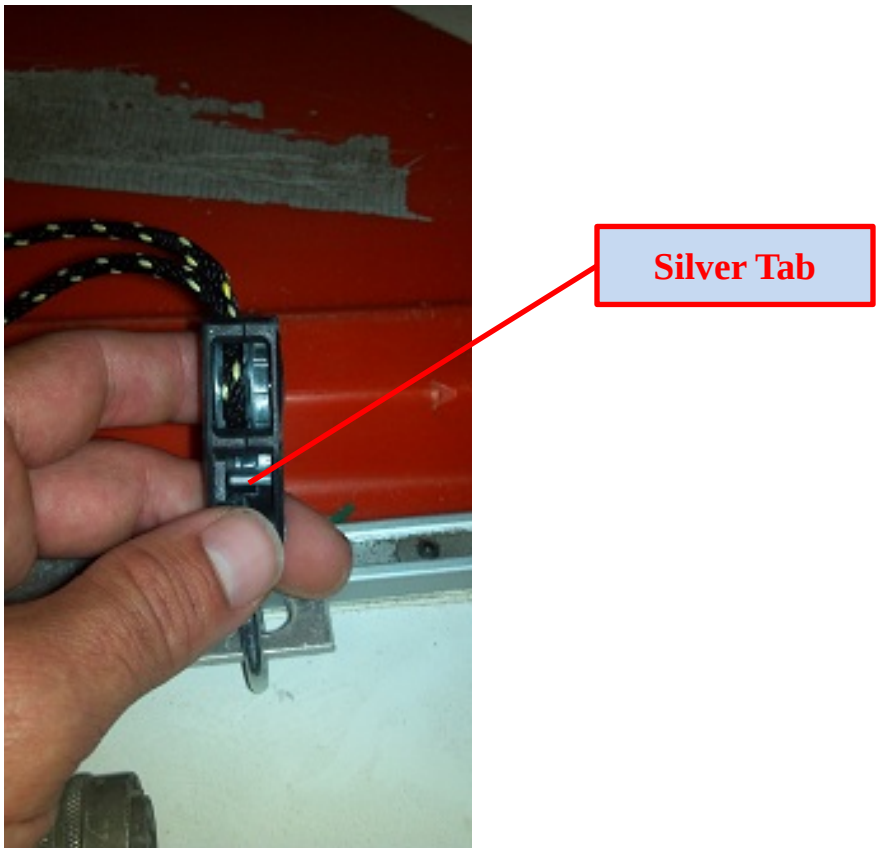
Step 11

12. Attach hooks at the bottom of the solar panel to the lip at the front of the enclosure.

Step 12

13. Attach the ratchet adjusting hooks mounted at the top of the solar panel to the lip at the back of the enclosure. If slack is needed, pull the silver tab at the upper end of the inside of the ratchet mechanism away from the barrel to disengage ratchet while pulling the hook side of the cord out.

Step 13



14. With the hooks secured, pull on the other end of the cord until the system is snug.

Step 14

DONE!

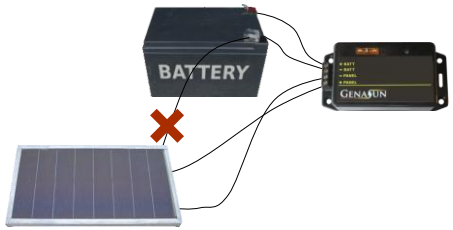
Appendix: Equipment specs/manuals

See also: http://www.passcal.nmt.edu/content/instrumentation

Technical Specs

Maximum Output Current .....4 A
Panel Voc..... 0 – 27 V
Operating Consumption..... 125 µA (0.125 mA)
Night Consumption ..... 90 µA (0.090 mA)
Battery Float Voltage .....13.8 V
Absorption Voltage.....14.2 V
(GV-4-Li: no absorption stage)
Battery Float Voltage, GV-4-Li-12.5V .....12.5 V
Battery Float Voltage, GV-4-Li-14.2V .....14.2 V
Battery Float Voltage, GV-4-Li-15.2V .....15.2 V
Battery Float Voltage, GV-4-Li-16.7V .....16.7 V
Electrical Efficiency (typical).....94% - 98%
Tracking Efficiency (typical).....99%
Operational Temperatures..... -40ºC – 85ºC
Weight .....2.8 oz., 80 g
Size ..... 4.3 x 2.2 x 0.9", 11 x 5.6 x 2.5 cm

Note: In the GV-4, the **positive** side of the battery is connected to the **positive** side of the solar panel.



Do not connect the solar panel to your system ground!

It is best to connect the solar panel only to the GV-4, and to nothing else.

GENASUN
http://www.genasun.com info@genasun.com

The GV line of Solar Charge Controllers with Maximum Power Point Tracking:

GV-4: Available for 12V Lithium or Lead-Acid Batteries. Output current: up to 4A.

GV-5: Available for 12V Lithium or Lead-Acid Batteries. Output current: up to 5A. Low voltage disconnect for continuous loads up to 5A.

GV-10: Available for 12V Lithium or Lead-Acid Batteries. Output current: up to 10.5A.

GV Boost Controllers for systems with battery voltage **higher** than the panel voltage. GV Boost Controllers are available for systems with 12V, 24V, 36V, and 48V battery voltages.

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GENASUN
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GV-4

Genasun Solar Charge Controller with Maximum Power Point Tracking

User's Manual & Operating Instructions:
Genasun GV-4 and GV-4-Li

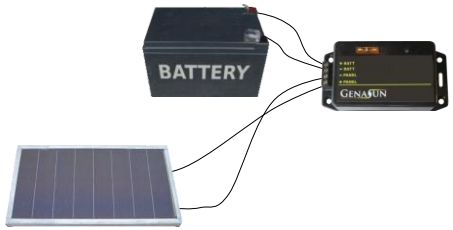
System Connection

1. Connect the Solar Panel.

- Note that if you connect the solar panel to your system ground, your batteries will be damaged

2. Connect the Battery.

- A small spark while connecting the battery is ok.



Mounting

When choosing a location, please observe the following:

- Do not expose directly to water
- Do not mount near a source of heat.

Warning!

Shorting the panel while the GV-4 is operating will permanently damage the controller.

Run/Charge Indication

The GV-4 has one indicator LED, which can blink either red or green.

Standby. The battery is connected properly, and charging will begin when solar panel power is available.
LED: [8–10s between green blinks]

Charging, with less current than about 1.5 A.
LED: [faster green blinking]

Charging, with more current than about 1.5 A.
LED: [longer green blinks]

Current Limit: The GV-4 is charging the battery with 5A, and the panel could probably produce more power. Might work better with a GV-10.
LED: [long green blink, then short green blink]

Battery charged.
LED: [solid green]

Error Indication

Over-temperature: The GV-4 internal temperature is too high.
LED: [sets of 2 red blinks]

Overload: The GV-4 has been overloaded. This could be caused by changing the solar panel connections while the GV-4 is operating.
LED: [sets of 3 red blinks]

Battery voltage too low. The GV-4 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.
LED: [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.
LED: [sets of 5 red blinks]

Panel voltage too high: Only 12V nominal solar panels may be used with the GV-4.
LED: [sets of 6 red blinks]