



<http://www.genasun.com>

[info@genasun.com](mailto:info@genasun.com)

# **Genasun GVX-25**

## **High-Voltage MPPT Solar Charge Controller**

**Firmware Version 1.18, May 2009**

## Specs:

Maximum Output current: 15-25A (15A with 220Vin, 20A with 150Vin, 25A with 60Vin)

Nominal System Voltages: 12, 24, 36, 48, 72, 96, 120, 144 (User-Selectable)

Custom voltages and lithium charge profiles available on request

Maximum Input Voltage (Panel Open Circuit Voltage): 250V

Night Consumption: 13mA typ. @24V, 7mA typ. @120V

Efficiency: 97.5-99.5% typical

Dimensions: 155x290x60mm including pluggable terminal block.

Weight: 1.3 kg

Supplied as bare PCB.

## Features:

- Optional Remote LCD Readout (Vi, Vo, Ao)
- User-Selectable Battery Type
- Protected Against Overload, with automatic temperature derating
- 4-Stage battery Charging with Automatic Equalization and Temperature Compensation
- Will Charge a Fully Discharged (0V) Battery
- Will Match a High-Voltage Array to Lower-Voltage Battery
- Fanless Convection Cooling
- Pluggable Terminal Block for 6-18AWG (0.75-16mm<sup>2</sup>) Wire
- Outputs can be paralleled for large arrays
- Hydro Turbine Version Available (load diversion output and manual input voltage control)

## Benefits:

- Maximum Power Point Tracking delivers power gains of 10-30% or more over conventional and PWM charge controllers
- Use a High Voltage Array with a Lower voltage battery to save on wiring cost and loss
- Robust MPPT Algorithm is compatible with all panel types, including Thin Film, and accounts for wiring resistance
- Fully Automatic Operation for Unattended Operation

# Operation and Connection of the Controller

## External Fuses

The controller is not internally fused, therefore external fuses or circuit breakers are required.

## Cooling

To achieve full output power, please mount unit vertically in a cool, well-ventilated environment away from sources of heat.

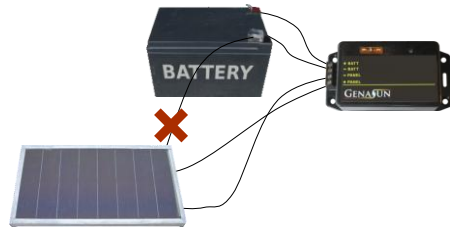
## Solar panel positive and battery positive are internally connected.

Do not connect the solar panel to your system ground --- doing this will effectively connect the battery directly to the solar panel, and result in overcharging the battery.



**Do not connect the solar panel to your system ground!**

It is best to connect the solar panel only to the controller, and to nothing else.



## The GVX-25 does not provide reverse blocking.


To prevent the battery from discharging through the solar array at night, it is recommended to connect a blocking diode in series with each series string of panels in the array. These strings (if more than one) may then be paralleled to the input of the GVX-25.

# Run/Charge Indication

The controller 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 very low current, less than about 1.5A.

LED:  [4 – 5s between green blinks]



**Charging,** with less current than about 5 A.

LED:  [faster green blinks]




**Charging,** with more current than about 5 A.

LED:  [longer green blinks]



**Current Limit:** The controller is charging the battery with its maximum current to avoid overheating. Cooling the controller may allow more charging current.

LED:  [long blink, then short blink]



**Battery charged.**

LED:  [on]

# Error Indication



**Over-temperature:** The controller internal temperature is too high.

LED:  [sets of 2 red blinks]



**Overload:** The controller 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]



**Voltage too low:** Neither the battery nor the panel is providing sufficient voltage to operate the controller. This condition should resolve itself when sufficient power is available from the panel.

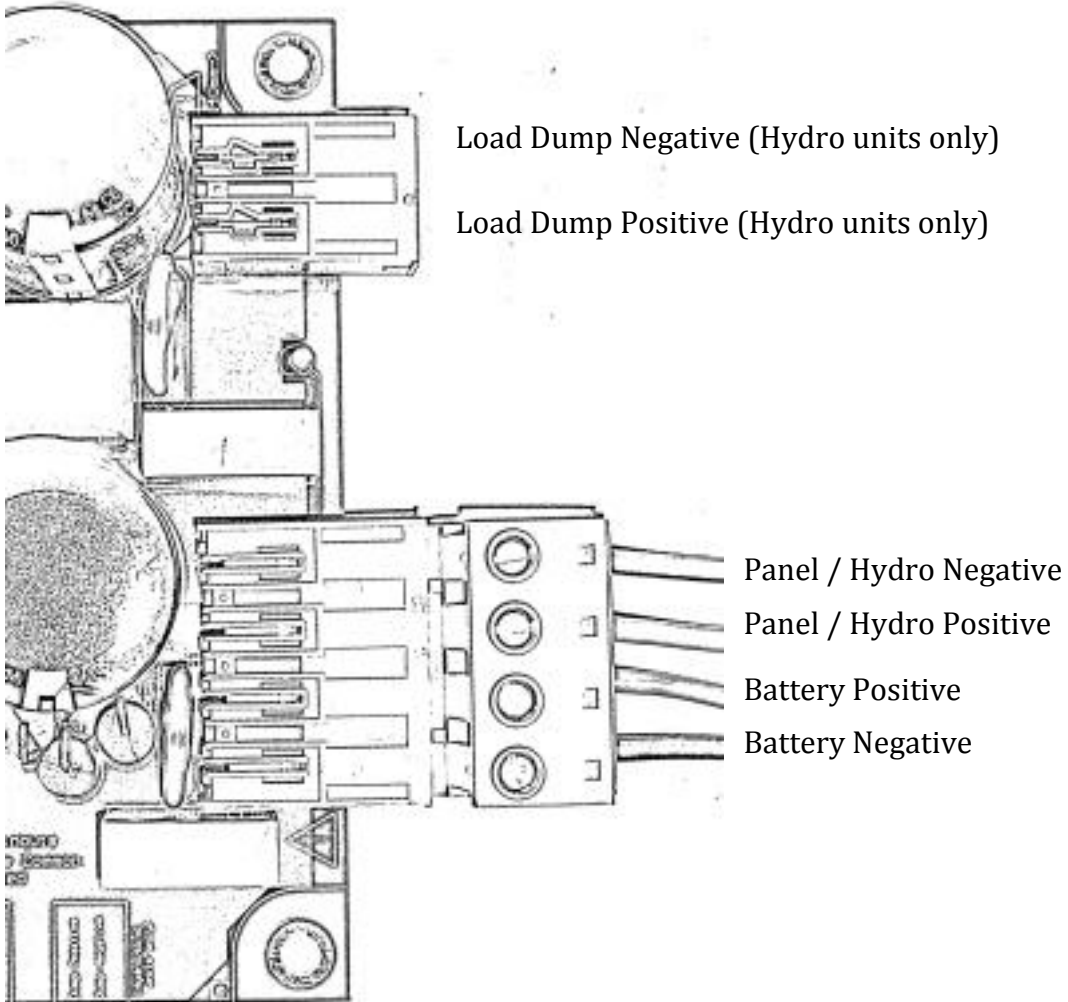
LED:  [sets of 4 red blinks]



**Voltage too high:** Panel voltage and battery voltage must both be below 250 V.

LED:  [sets of 6 red blinks]

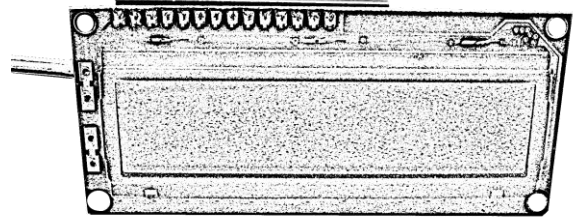
# Controller Connections



# Controller Connections (LCD Screen)

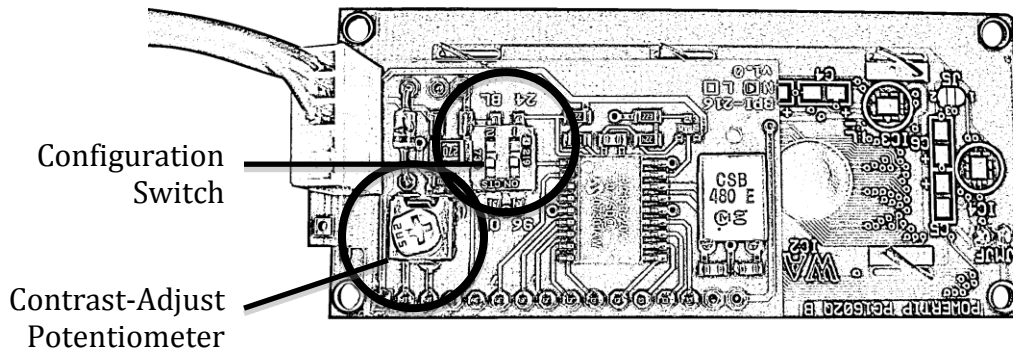
Controllers are shipped with an LCD screen which may be connected to the controller for data monitoring. The LCD is not necessary for operation, but when connected displays the following information:

- Input Voltage
- Output Voltage
- Approximate Output Current



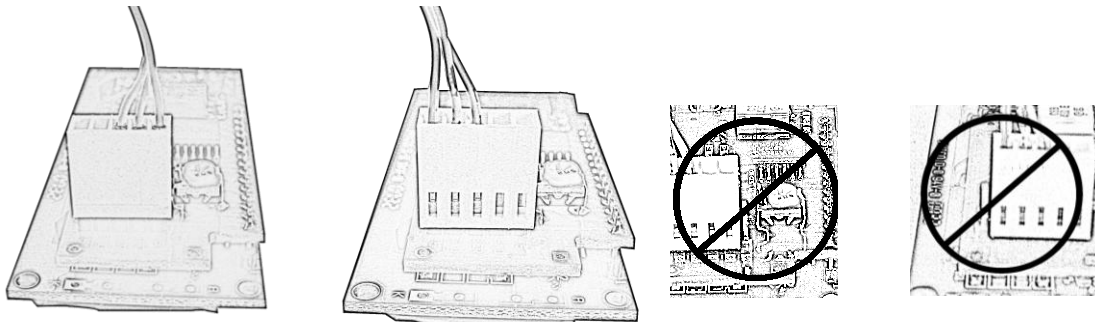
Note that when the controller is in low-power mode (when there is not enough light incident on the solar panel to produce power), the LCD update slows down to about one update every 8 seconds.

On the back of the LCD are a connector, configuration switches, and a knob (potentiometer) to adjust contrast.

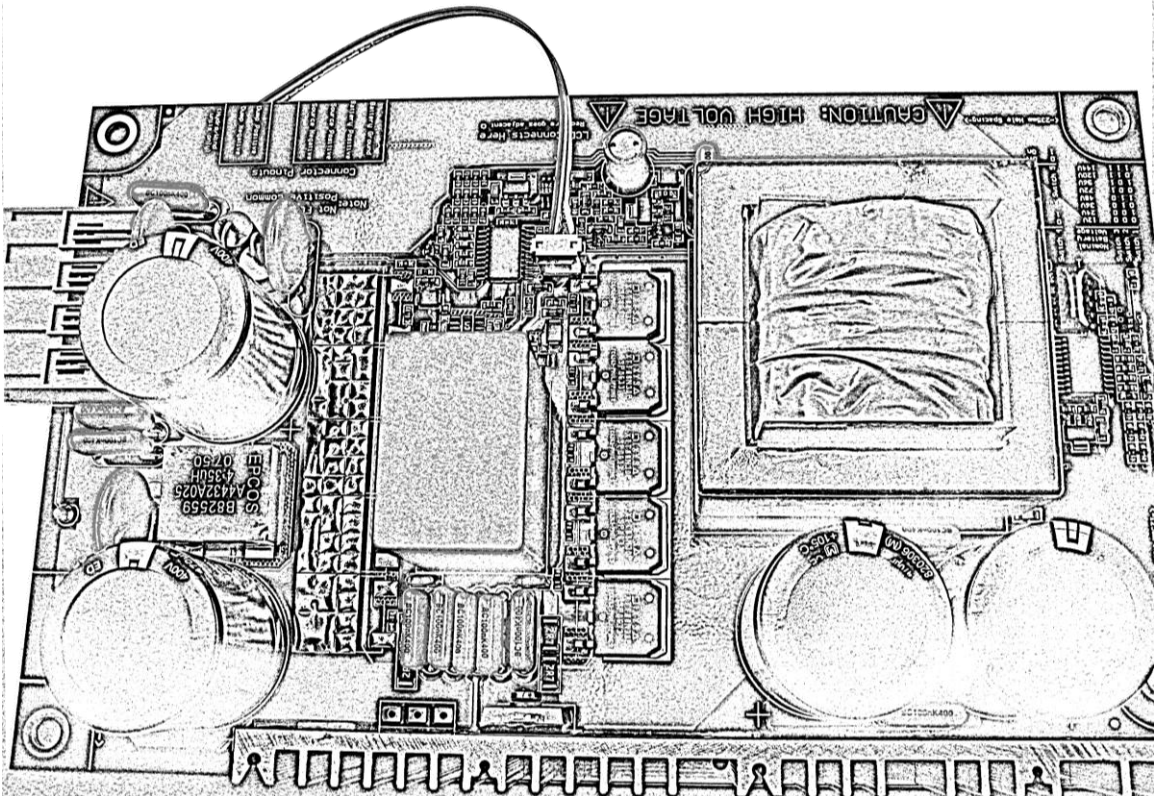


The configuration switches should both be in the “ON” position (as shown above).

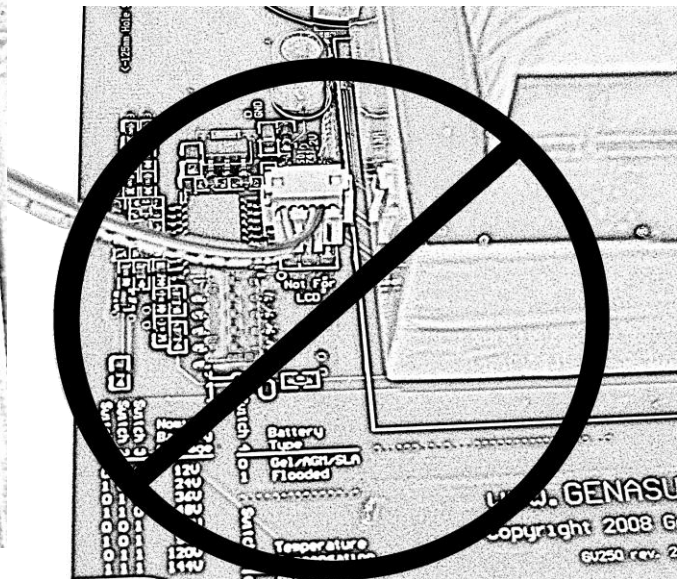
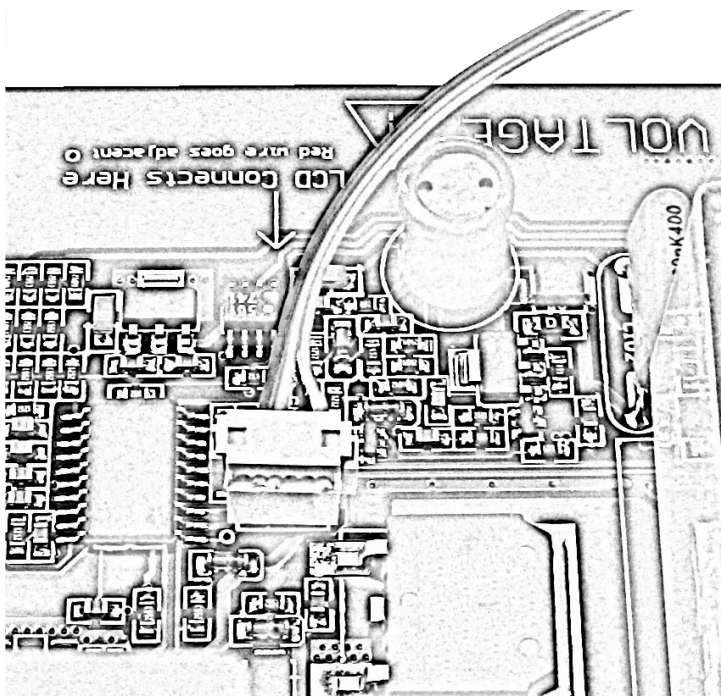
The connector on the back of the LCD may be connected with the pins facing either out or in (with the cords on either the left or right). Be sure that no pins are exposed outside the connector.



High voltages are present at the LCD and on the LCD cable during operation. Isolate the GVX-25 from all sources of power and wait one minute before touching the LCD or cable.



Connect the LCD cable toward the center of the controller as shown above. Connect so that the red wire is near the small dot near the connector on the controller.  
Note: there is another, similar connector labeled "NOT FOR LCD" (shown below, right): do not connect the LCD here.



# System Settings (Controller DIP Switch)

Note: If the DIP switches are not present, it means your charge controller has been factory programmed for a fixed, non-adjustable charging profile. This is generally done for customers using the controller with lithium battery banks.

Note: to avoid risk of electric shock, disconnect the controller from all batteries and power sources and wait one minute before changing DIP switch settings.

S1	S2	S3	Nominal System Voltage
0	0	0	12
1	0	0	24
0	1	0	36
1	1	0	48
0	0	1	72
1	0	1	96
0	1	1	120
1	1	1	144

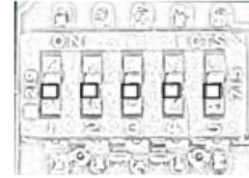


Illustration:  
All switches in off (0) position, pushed away from the word "ON"

S4	Battery Type
1	Flooded
0	SLA, VRLA, Gel, AGM

S5	Temperature Compensation
1	Enabled
0	Disabled

## Charging Voltages

(Values normalized to 12V nominal)

### Flooded Batteries:

Bulk Voltage: 14.7V  
Absorption Voltage: 14.2V  
Absorption Time: 2 hours  
Float Voltage: 13.8V  
Equalization Days: 30  
Equalization Voltage: 15.5V  
Equalization Time: 2 hours

### Sealed Batteries (SLA, VRLA, Gel, AGM):

Bulk Voltage: 14.2V  
Absorption Voltage: 14.0V  
Absorption Time: 2 hours  
Float Voltage: 13.8V  
Equalization Days: (equalization disabled)  
Equalization Voltage: (equalization disabled)  
Equalization Time: (equalization disabled)