

SC1212

Specifications for Solar Charge Regulator

Maximum solar charging current: 12 Amps

Nominal battery voltage: 12V

Night time battery current drain: Approx. 1.5mA

- **Specifications**

- Nominal Battery Voltage: 12V.
- Solar Charging Current: 0 to 12 Amps continuous.
- Recommended Battery Capacity: 0.5 to 250 Amp Hours.
- Photovoltaic Panel Voltage Ratings: 12V Nominal (16-22V Open Circuit Voltage).
- Absolute maximum Solar input voltage: 24VDC
- Photovoltaic Panel Power Ratings: up to 240W (100mA to 13A Short Circuit Current).
- Float Voltage Adjustment Range: three position slide switch
- Temperature Compensation circuits in the Charge Regulator
- Low Night Time Battery Current Drain: approx. 1.5mA.
- Fuse Type: 15 Amp mini automotive blade fuse.
- Box Dimensions: 2.25" wide by 5.09" tall x 1.10" deep.

- **Features**

- Efficient design is suitable for use with solar panels and solar arrays.
- Will work with rechargeable battery types: Lead Acid (SLA, wet or gel).
- Common Negative Ground for Solar Panel and Battery.
- Reliable solid state protected circuitry, Low noise.
- Fuse for short circuit protection, load circuitry requires its own fuse.
- Designed to withstand reverse battery and reverse Solar Panel connection.
- Charging method: full on/PWM combination technique.
- On-board temperature compensated float voltage set point for optimal charging at different temperatures.
- High voltage transient protection on solar panel input for limited lightning protection.
- 4 screw Terminal Block connector for attaching battery and Solar panel.
- Multiple units can be used to connect several solar arrays to single battery.

- **Controls and Indicators**

- Bi-color Red/Green LED for Charge/Float state indication.
- Float voltage adjustment via Switch (Low Normal or High selection).
- LED Red indicates battery is being charged at full rate.
- LED flashing Red/Green indicates battery is approaching float voltage. The more green the LED appears, the closer to float voltage.
- When the battery has become fully charged to the Float voltage, the LED is mostly Green with an occasional red flash.

Operation

When the Solar voltage is greater than the battery voltage, the charger turns on and sends power to the battery. Internal circuits prevent damage if the battery is connected with reverse polarity.

The float voltage circuitry compares the battery voltage to an internal reference voltage. The comparison point is offset by circuits for temperature compensation. The reference is also modified by the switch selection of Low Normal or High. Circuits provide the charge/float signal that controls the battery charging rate. The charge/float signal also drives the charging state indicator LED either red (charging) or green (floating) or somewhere between.

Circuits will prevent the battery from discharging through the solar panel at night.

The 15amp fuse is only for board protection and is not related to charge current or charge limit, always use 15 or 20 Amp fuse. The Fuse prevents excessive battery current from flowing in the event of a short circuit. Load circuitry requires its own fused disconnect. A transzorb absorbs transient voltage spikes that may be caused by lightning.

Setup

Connect the solar panel to the PANEL terminals, and connect the Battery to the BATTERY terminals.

When the solar panel is in the sun, the battery will charge up. Normally the float voltage selection switch should be set to **Normal** position. In systems where the battery is frequently deep-discharged or limited sun, the float voltage switch should be set to **High** position to allow a higher float voltage on the battery. This increases the charge of the battery's weaker cells. In systems where the battery is normally not discharged or there is a lot of daily sun you should select the **Low** float voltage setting. (This may help extend battery life.)

When the connected battery is low and the sun is shining, the LED will be red. As the battery reaches the float voltage, the LED will quickly alternate red/green and will be green when the battery is fully charged. When the sun goes down, the LED will shut off.

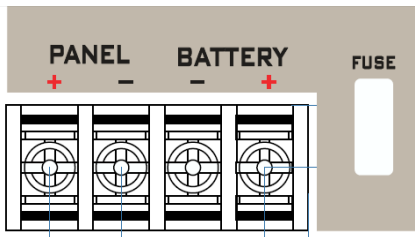
Battery voltage must be above about 6 volts for charger to operate. This is to prevent charging of a bad battery which can cause overheating. Also, the solar panel must be at a higher voltage than the battery in order for the charger to operate.

No LED will be on when there is no solar input or no battery connected.

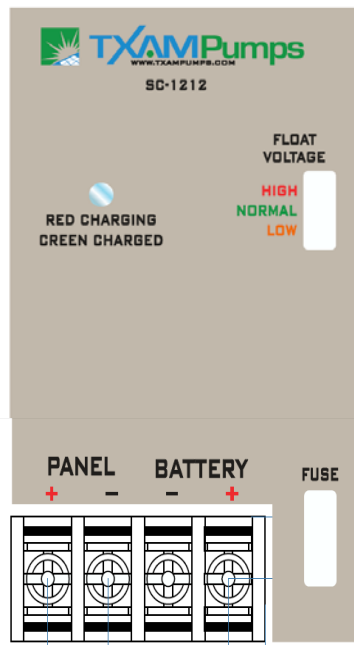
Float Voltage Settings: **Low = 13.2V**, **Normal = 13.8V** and **High = 14.4V**

**Remember it is important to match the solar panel current rating to the battery's amp hour rating.*

CONNECTIONS for SOLAR PANEL and BATTERY



FLOAT VOLTAGE SELECTION



VIEW OF SWITCH

