PV CHARGE CONTROLLER

USER MANUAL

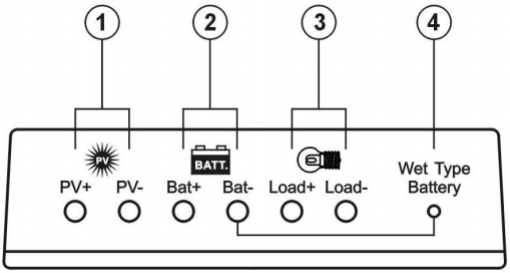
SBL-2108 / 2208

REV.0 2011/09
7673-2108-0560

1. INTRODUCTION

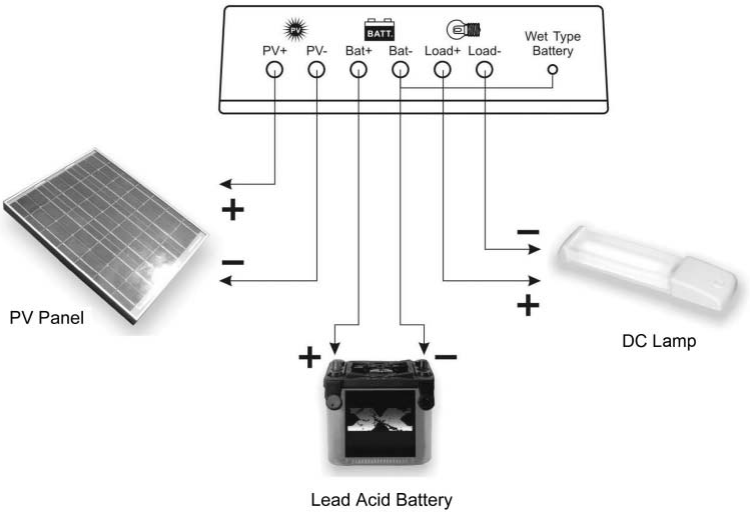
SBL-2108 and SBL-2208 are a weather proof PV Charge Controller which protects your battery from over charged and provides a complete and safe charging up your battery. It is suitable for use with Wet and Sealed types of battery with 3 stage charging. It has extensive protections controlled by the micro-processor.

2. CONTROL



(1) PV Terminal
(2) Battery Terminal
(3) Load Terminal
(4) Sealed/Wet Type Battery Selection Blue Color Wire

3. INSTALLATION



Warning !

The battery connection must be made first to power up the controller and electronic protections.

1. Connect the **Bat- BLACK** wire to the battery's negative terminal.

2. **Wet Type battery:** Connect blue color wire (4) to negative of battery.
   Seal Type battery: Insulated the blue wire (4).

3. Connect the **Bat+ RED** to the battery's positive terminal.

4. Connect the load (DC Lamp) using the Load BLACK negative wire and WHITE positive wire for lighting to turn on at night and off in day time.
   The load should be on before you connect the solar panel.

5. Connect the Solar panel using the PV BLACK wire to negative and the YELLOW PV positive wire to positive terminals.

6. The load should be off when solar panel has been connected. If voltage of PV is higher than 4VDC for SBL-2108 or 7VDC for SBL-2208, the load will be shut down immediately.

7. No need to have blocking diode to prevent current back to solar panel at night time as controller has such function.

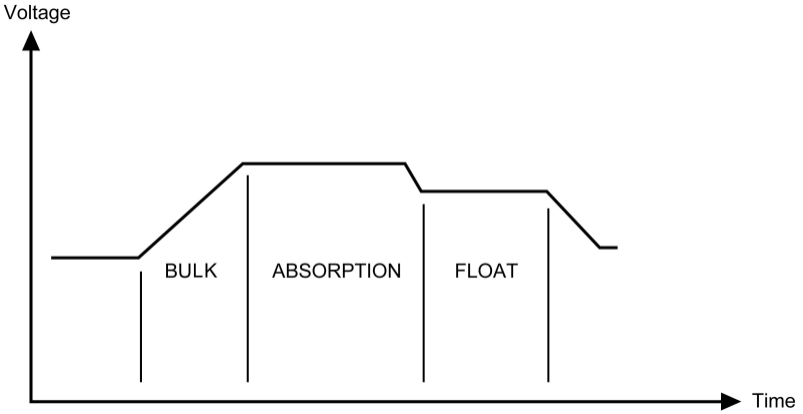
8. A negative earth ground at the battery is recommended for most effective lightning protection.

9. The controller is splash proof, so it can be mounted outdoors in a vertical position. Do not expose to ambient temperature above 60°C.

10. Double check all the positive and negative connections of the system starting with the battery with a multi meter. The controller has self recoverable electronic protection for reverse polarity connection of battery.

4. OPERATIONS AND FUNCTIONS

3 Stage charging with PWM in Absorption Stage.



Bulk:
Full constant current charging from the solar, limited to 8A max. until battery voltage rises to a preset value then charger change to Absorption stage.

Absorption:
Charging voltage is kept constant with pulsing charging current (PWM) as drops with time for about one hour then to Float stage.

Float:
The battery is kept a lower voltage with just enough current to fill up the self discharge loss. In the case the battery voltage drops below 12.5VDC for SBL-2108 or 25VDC for SBL-2208, a new cycle of charge of bulk absorption will start.

The Night Light Mode and load terminal

1. This controller provides Night Light Load function. The Load will be turned on at night and will be turned off in morning.

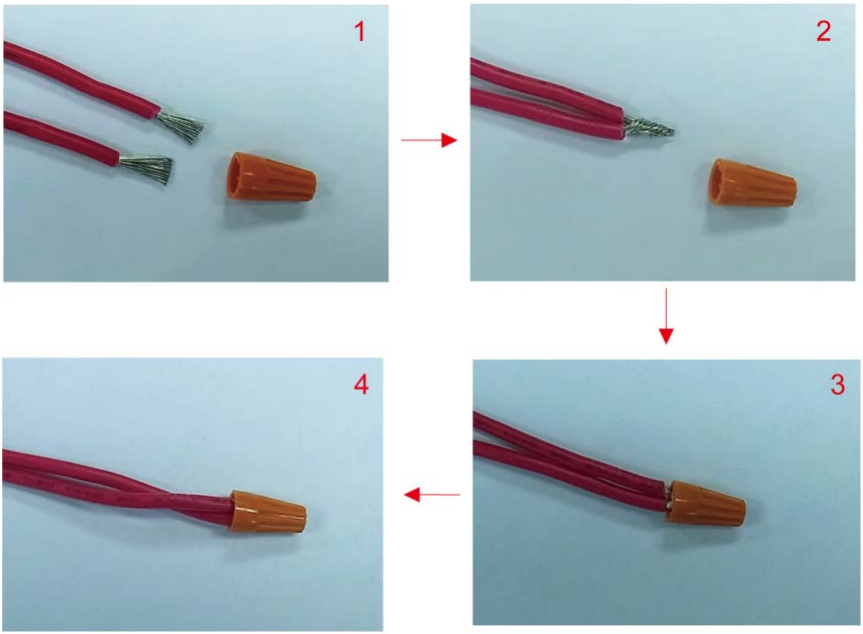
2. During the Night Light Mode operation, the battery is protected from over discharged. When the battery voltage drops to less than 11.5VDC (SBL-2108) for 5 minutes or 23VDC (SBL-2208) for 5 minutes, the load will be cut off. The load is auto recovered if the battery voltage rises to higher than12.4VDC for 5 minutes or 24.8VDC (SBL-2208 for 5 minutes. If the battery voltage is less than 9VDC (SBL-2108) or 20VDC (SBL-2208), the controller is shut down the output immediately.

5. Protections

Electronic protections (self -recoverable) for:
Controller Over Temperature
Over Load & Short Circuit
Over Voltage Protection to battery at 16VDC of SBL-2108 and 32VDC of SBL-2208.
Reverse Polarity for battery connection

6. ACCESSORY

Terminal Connector (6 pieces)
First, insert two wires together into the terminal connector cap, and then turn the cap until the two wires twisted tightly.



7. SPECIFICATION

Model Number	**SBL-2108**	**SBL-2208**
Battery System Voltage	12V	24V
Max. PV Open Circuit Voltage	26V	52V
Max. PV Short Circuit Current	10A	10A
Rated PV Input Current	8A	8A
Max. PV Input Current (5 minutes)	10A	10A
Rated Load Current	8A	8A
Max. Load Current (5 minutes)	10A	10A
Min. Battery Operating Voltage	3V	3V
Min. Operating Charging Voltage (From Battery)	7V	10V
Standby current consumption	9mA	9mA
Voltage Drop across Battery to Load terminals	0.35V at 8A	0.35V at 8A
Voltage Drop across PV to Battery terminals	0.5V at 8A	0.5V at 8A
PV Voltage to turn on the Night Light Mode load	≦3V for 10 min.	≦6V for 10 min.
PV Voltage to turn off the Night Light Mode load	≧4V for 10 min.	≧7V for 10 min.
PROTECTIONS: -		
Over Temperature Protection to shut down unit	Yes and self recoverable	
Over Voltage Protection for Battery	16V self recoverable	32V self recoverable
Battery Low Voltage to disconnect load	≦11.5V ±0.2V	≦23.0V ±0.4V
Battery Low Voltage to auto-reconnect load	≧12.4V ±0.2V	≧24.8V ±0.4V
Over current for Load 12A	User reset required after 2 times recovers	
Battery terminal reverse polarity protection	Yes and self recoverable	
Absorption Voltage	Sealed Type Battery Setting: 14.5V ±0.2V	Sealed Type Battery Setting: 29.0V ±0.4V
	Wet Type Battery Setting: 14.8V ±0.2V	Wet Type Battery Setting: 29.6V ±0.4V
Float Voltage	13.8V ±0.2V	27.6V ±0.4V
Ambient Temperature Range	-40 ~ +60℃	
Relative Humidity	100%	
Approvals	CE EN61000, FCC Part 15 Subpart B Class B	
Over Temperature Protection With MosFet For Battery Charging Or Load	> 95℃	
Dimensions (L x W x H)	97 x 46 x 26 mm	
Weight	125 gram	

SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE