

PV CHARGE CONTROLLER

USER MANUAL

SBL-2402 (48V/2A)

I. INTRODUCTION

The SBL-2402 PV Charge Controller is a sophisticated controller using advanced PWM charging technology. It is designed for use with all types of PV panel/system and Seal or Wet Type Lead Acid Batteries.

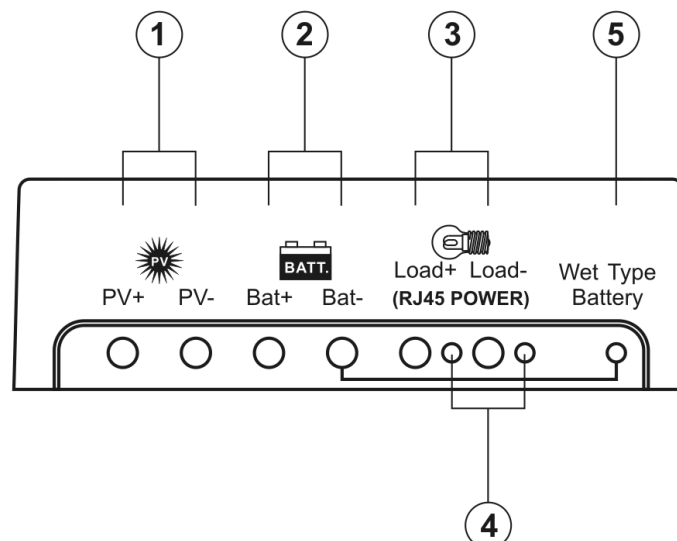
II. SAFETY PRECAUTIONS

1. **DO NOT** exceed the voltage or current ratings of the controller. Use only with a 48-volt battery.
2. **DO NOT SHORT CIRCUIT** the solar array while connected to the controller. This will **DAMAGE** the controller.
3. **DO NOT SHORT CIRCUIT** the load terminal (or WHITE wire to any BLACK wire) when battery or PV panel is connected. This will **DAMAGE** the controller.
4. The negative terminal of the system conductor should be properly grounded for effective lightning protection.
5. **WARNING** - Be very careful when working with batteries. Lead acid batteries can generate explosive gases, and short circuits can draw thousands of amps from the battery. Read all instructions provided with the battery.

III. OPERATION AND FUNCTIONS

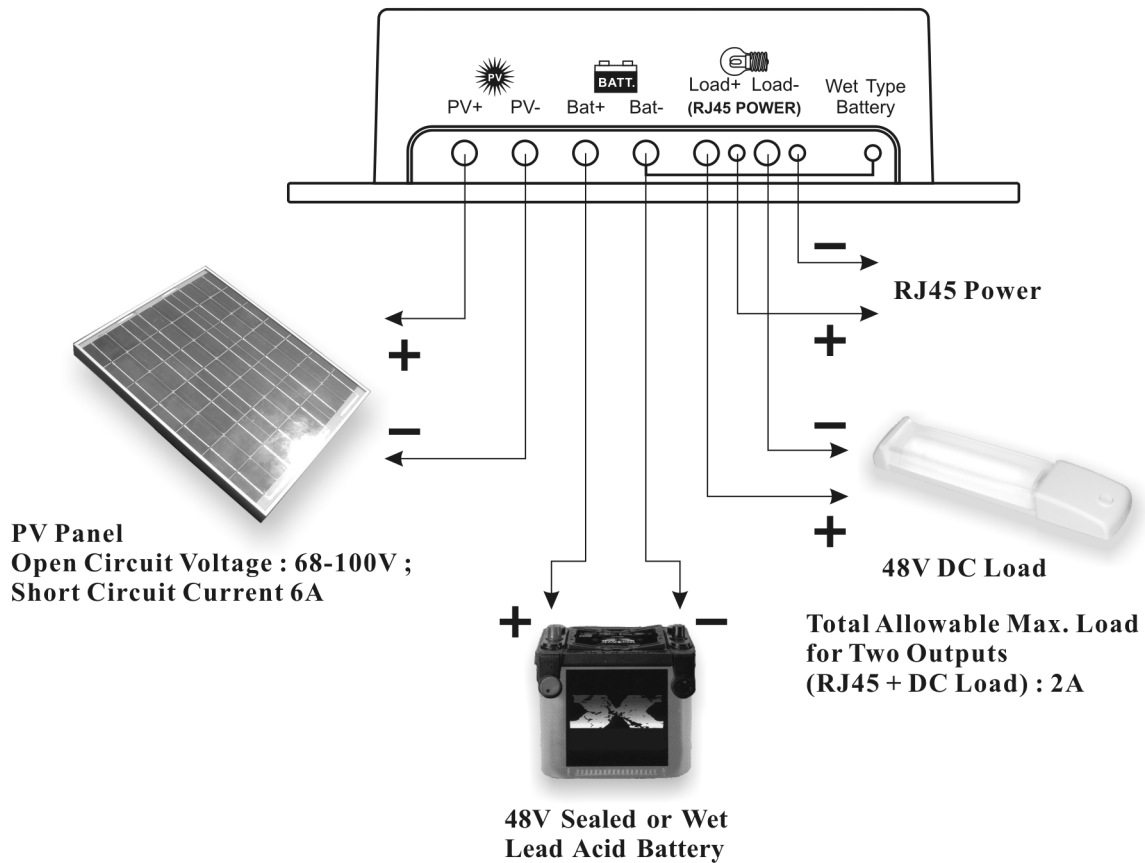
1. **100% SOLID STATE:** All power switching is done with MOSFET. No mechanical relays are used.
2. **BATTERY CHARGE REGULATION:** the controller uses an advanced series PWM charge control for constant voltage charging. A true 0 to 100% PWM duty cycle is very fast and stable for highly efficient charging.
3. The controller can prevent the battery from discharging through the solar array at night. There is no need to install a blocking diode for this purpose.

IV. CONTROL



- (1) PV Terminal
- (2) Battery Terminal
- (3) Load Terminal with dual output cables
- (4) RJ45 Power
- (5) Sealed/Wet Type Battery Selection Wire

IV. INSTALLATION



Warning : shorting the output terminals will damage this PV Controller

1. Connect the **Bat- BLACK** wire to the battery's negative terminal.
2. If you are using Wet-Type Lead Acid Battery, connect the "Wet Type Battery" wire to **Bat- BLACK** wire. Otherwise, leave it disconnected.
(If you are not using wet-type lead acid battery, keep the "Wet type battery " away from other wires.)
3. Connect the **Bat+ RED** to the battery's positive terminal.
4. Connect the Solar array using the PV- BLACK wire and the YELLOW PV+ wire. Be very careful not to short circuit the solar array, or the controller will be damaged.
5. The controller prevents reverse current leakage at night, so a blocking diode is not required in the system.
6. Connect the load (DC Lamp) using the Load BLACK wire and WHITE load positive wire. Be very careful not to short circuit the load terminal, the controller will be damaged.
7. A negative earth ground at the battery is recommended for most effective lightning protection.
8. The controller can be mounted outdoors. Do not expose to ambient temperatures above 60°C. Make sure that water will drain from inside the case.
9. The 22AWG **RED** and **BLACK** wire offers power for RJ45.

V. SPECIFICATIONS

Model Number	SBL-2402
Battery System Voltage	48V
Max. PV Open Circuit Voltage	100V
Max PV Short Circuit Current	6A
PWM Setpoint	Sealed Type Battery Setting: $57.2V \pm 0.6V$ Wet Type Battery Setting: $59.2V \pm 0.6V$
Min. Operating Voltage	40V
Rated Charging Current	2A
Max. Charging Current (5 min.)	4A
Rated Load Current	2A
Low Battery Shutdown for load	$\leq 40V \pm 1.0V$
Low Battery Recover for load	$\geq 44V \pm 1.0V$
Approvals	Designed and Manufactured to meet CE
Ambient Temperature Range	- 40 ~ +60 °C
Relative Humidity	100%