

MANUAL**Model: LS-1**

Solar Converters Inc. - Rev. A

Note: This unit is a dual voltage unit, both 12 and 24 V input and output, with a mixed 24 V input 12 V output option. Please ensure the signal connections are set up for your panel and battery voltages. As well, this unit is multifunctional, please ensure that the proper jumpers and set ups are in place for the desired functional operation of this unit.

Quick Set up:

While it is recommended that this manual be read and understood in full detail, for the experienced technician only, the following is a simplified connection.

To prevent unanticipated operation of the unit, first set up the signal connections. This basically tells the unit what it is anticipated to do. Then connect the power connections.

1) System battery voltage selection

Refer to the Voltage select terminals - BAT

if 12 V battery, do not connect anything in the BAT terminals

if 24 V battery, connect the BAT terminals together

2) Panel Operating Voltage selection,

Refer to the voltage selection terminals - PV

if 12 V panels, do not connect anything in the PV terminals

if 24 V battery, connect the PV terminals together

Light On/Off timing

The logic off the unit is set up such the light is turned on at dusk and any of its functions can turn it off. Set up should be such that unwanted functions operate all night and the required functions turn on/off as required

3) Timer setup:

Refer to the "timer" Terminals

The light on time is set by a resistor connected to the "timer" connection on the terminal block. The resistor value is set by the simple formulae $R = (\text{hrs on} \times 3721 - 2000)$.

4) Temperature Compensation:

Refer to the T-COMP Terminals

Temperature compensation is required; connect the temperature compensation probe to the T-Comp terminals.

5) Motion Sensor

Refer to the Remote Control Terminals

Depending upon the motion sensor manufacturer, connect the motion sensor to the appropriate terminals. Motion Sensor manufacturers spec Hi and Lo signals for light on off. These can be translated as the on/off signal line is connected to Bat+ or BAT - if the light is expected to be on or off. NOTE: IF THE NC OR NO TERMINALS ARE INCORRECTLY CONNECTED, THE LIGHT OPERATION WILL BE OPPOSITE OF THE ANTICIPATED. If Operation is opposite of anticipated, reverse the NO and NC signals.

Connect the sensor to the Bat + and Bat - terminals to ensure power is supplied to the motion sensor. The NC terminals turn the light on if the voltage on the terminal is Bat -, and turn the light off if the battery voltage on the terminal is Bat +

Similarly, The NO terminals turn the light off the voltage on the terminal is Bat -, and turn the light ON if the battery voltage on the terminal is Bat +.

Usually in this mode of operation, a resistor value is chosen for the timer function that exceeds the usual "on" time expected.

IF NOT USED, DO NOT CONNECT TO THESE TERMINALS

6) Remote On/off Operation

Refer to the Remote Control Terminals

If simple remote on/off operation is required, shorting of the NC terminals to the BAT- terminals will turn the light off if it is otherwise intended to be on.

POWER

The power connections are fairly self-explanatory

ENSURE POLARITY IS CORRECT

The PV connects to the PV + and - terminals

The Battery connects to the BAT + and - terminals

The Light connects to the LITE + and - terminals

1.0 Specification

Input Voltage: 0 - 50 DC volts PV Array, approx. 15.5 V / 31 V nominal operating

Current: 0 - 8 DC amps nominal,

Output Voltage: factory set 14.1 V / 28.5 V

Current: 10 amps continuous, (provided sufficient solar power),

Connection: Power: #16 AWG Flying leads

Red: PV+

Black: PV-

White: Bat +

Blue: Bat -

Note: The red and white wires are common internally connected together.

Nominal Maximum power point tracking to optimize output power.

No User load over voltage regulates output voltage to "float" voltage even with no battery connected.

Efficiency: >94% over 20% charging load

No need for external blocking diode

Transient protected - input and output

Temperature range: -40C to +60C

2.0 Power Connections

Warning: This unit operates from multiple **hazardous** energy sources. Ensure that all power sources are inactive before making any connections to this unit. Ensure proper procedures and the appropriate electrical codes are followed. To be serviced and operated only by qualified personnel.

2.1 Input Power Connection

DO THIS CONNECTION FIRST

Input voltage: 0 - 50 V DC

Input current: 6 A DC max. nominal

Using a wire of sufficient amperage for the input power (min. #14 AWG) connect the positive of the solar panel (through a strain relief clamp) to the PV + flying lead (RED) of the solar regulator. Similarly, connect the negative of the solar panel to the PV - terminal of the solar regulator to the PV- lead (BLACK).

2.2 Battery Connection

Output voltage: 14.1 / 28.4 V DC
Output current: 0 - 8 amps nominal

Warning: Ensure the battery is disconnected and/or safe operating procedures are followed when making battery connections. Extreme care must be taken to ensure the battery is not shorted. BE SAFE. Make sure all strands are inside their respective terminals. The battery must be fused. Qualified personnel only to connect and operate this unit.

Using wire of sufficient amperage for the load connection #16 AWG or better (preferred for regulation) connect the positive of the battery (through a strain relief) to the positive battery wire (WHITE) connection of the solar regulator. Similarly connect the negative of the battery to the negative battery wire (BLUE) of the solar regulator.

3.0 Adjustments

The unit has three adjustments that may be done by qualified personnel only.

SET LVD

The Pot on the right side of the unit marked LVD adjust the battery voltage that the unit will turn off the light at to prevent excessive discharge on the battery. The test point scale factor is 1/10. With a meter between battery - and the LVD test point. Adjust the LVD trip point to the desired voltage. For example, if it is required to LVD at 11 V, set the LVD trip voltage to 1.1 V

Set Float Voltage

This POT on the left side of the unit is used to adjust the final float charge voltage of the battery. With the battery disconnected, place a meter across the battery output and adjust the POT to the desired float voltage. The unit is shipped from the factory set at 14.1 V

SET Nominal panel MPPT voltage.

This adjustment may be used to adjust the midrange voltage of the MPPT section. It is not recommended that this adjustment be modified but for odd voltage panels and/or extremes in temperature, modification may increase the charge current. While monitoring the battery current adjust the pot cw or ccw and the current will change. Adjust the POT to achieve the highest battery current.

WARRANTY

The product is warranted to be free from defects in material and workmanship for a period of one (1) year from the date of purchase by a retail customer. The purchase date must be evidenced by a valid and original sales receipt. In lieu of sales receipt, factory will use code date on its label. Removal of the Solar Converters Inc. label or serial number will void the warranty.

Product liability, except where mandated by law, is limited to repair or replacement at the manufacturer's discretion. No specific claim of merchantability or use shall be assumed or implied beyond what is printed on the manufacturers printed literature. No liability shall exist from circumstances arising from the inability to use the product, or its inappropriateness for any specific purpose or actual use, or consequences thereof for any purpose. **It is the user's responsibility to determine the suitability of the product for any particular use.** Solar Converters Inc. shall not be liable for any damages or any kind including without limitation, special, incidental or consequential obligations and liabilities of Solar Converters Inc. and the remedies of Buyer set forth herein shall be Solar Converters Inc. sole and exclusive liability.

Failure to provide a safe and correct installation, safe operation, or care for the product will void the warranty. Personal safety, and compatibility with any other equipment is the ultimate responsibility of the end user. Any returned product that shows significant evidence of abuse may not be covered by this warranty. Installation must be performed by a person with qualification to insure safe and effective operation and the installation thereof certifies that the installer has the technical qualifications to do so.

Solar Converters Inc. cannot guarantee the compatibility of its products with other components used in conjunction with Solar Converters Inc. products, including, but not limited to, solar modules, batteries, and system interconnects, and such loads as inverters, transmitters and other loads which produce "noise" or electromagnetic interference, in excess of the levels to which Solar Converters Inc. products are compatible. Solar Converters Inc. shall not assume responsibility for any damages to any system components used in conjunction with Solar Converters Inc. products nor for claims for personal injury or property damage resulting from the use of Solar Converters Inc. products or the improper operation thereof or consequential damages arising from the products or use of the products.

The warranties set forth herein are Solar Converters Inc. sole and exclusive warranties for or relating to the goods. Seller neither makes nor assumes any warranty or merchantability, any warranty fitness for any particular purpose, or any other warranty of any kind, express, implied or statutory. Solar Converters Inc. neither assumes nor authorizes any person or entity to assume for it any other liability or obligation in connection with the sale or use of the goods, and there are no oral agreements or warranties collateral to or affecting the sale of the goods.

WARRANTY CLAIM PROCEDURE

In the event of product failure, follow this warranty claim procedure.

1. Make sure the problem you are having is actually due to the suspected product and not some other part of the system. You may call technical support for advanced troubleshooting assistance.
2. If you determine that a Solar Converters Inc. product is actually defective, describe on paper, in detail the exact nature of the failure.
3. The product must be accompanied by proof of the date of purchase satisfactory to Solar Converters Inc.
4. Return the product and description to the business office address, along with your address and a daytime phone number. Purchasers must prepay all delivery costs or shipping charges as well as any other charges encountered, in shipping any defective Solar Converters Inc. product under this warranty policy. **No shipment will be accepted Freight Collect.**
5. Any return shipment from Solar Converters Inc. will be via Canada Post. Foreign shipments will ship best way. Special shipping arrangements are available at the customer's expense.