ELVO Solar Light Installation Guide

elvosolar.co.nz

Introduction

The ELVO solar light is an LED light that operates at a safe voltage of nominally 12 volts dc. It is connected directly to the solar panel and is backed up with the ELVO-SolaBatt extra low voltage solar charging battery.

This is an advanced solar light system utilizing battery management technology and a unique LED management approach.

Quality Assurance Program

The advanced technology and strict procedures of the ISO9001 Quality Assurance Program applied during design, development, production and final inspection mean long-term reliability.

Principle of Operation

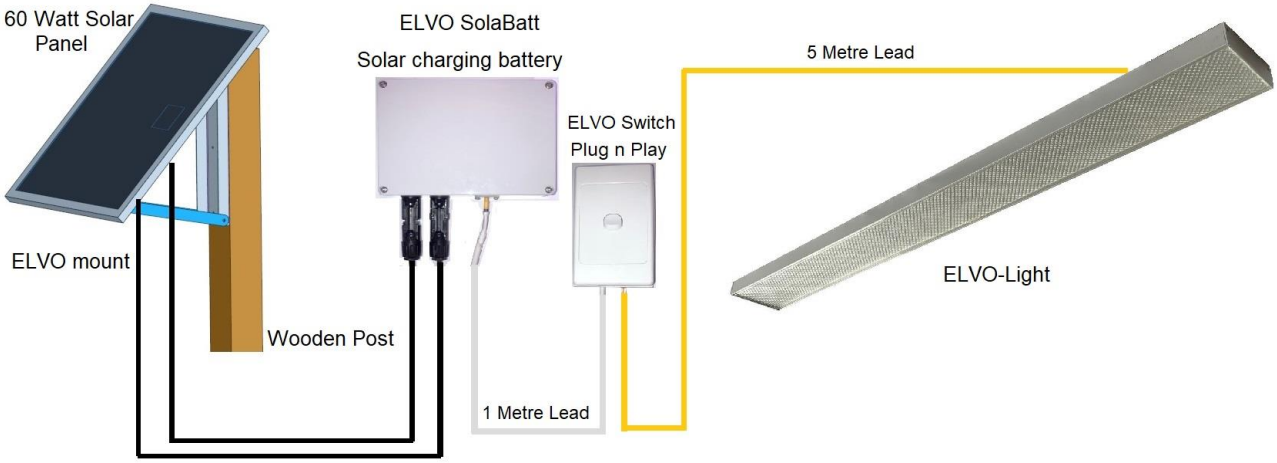
- Operating voltage is safe for DIY at a maximum of 22 volts DC
- All components are plug-in, it is not possible to plug wrong connectors into a wrong socket
- The light operates like a combination of a skylight and a battery backed light. Using the unique principle of matching the light output to the input power available. The light will be much brighter if switched on during the day. This is great compensation for the very bright daytime illumination your eyes are adjusted to and needed to adequately illuminate your area of interest, compared to nighttime. The tradeoff is this diverts some of the available power needed to charge the battery. No problem on a bright day or if the night use of the light is not intended to be for a long time. This will affect how you use your installation.

  Note: The light has 'warm white' colour output, this is much easier on the eyes and avoids 'blue light' stress.
- The ELVO-SolaBatt battery uses a safer form of chemistry called "Lithium Ferric Phosphate" or $LiFePO_4$ (not Lithium Ion). The battery circuitry uses a microcontroller to enhance the battery life to the new 6,000 cycles minimum of our technology. There is an integrated solar charge controller and battery management system (BMS) built into our battery.
- There are two different switch options:
  1. Simple **on / off** switch – this is the standard option.
  2. Optional sensor switch using a passive infrared sensor (PIR)
     a. Configurable in 3 different modes
        i. Light triggered by movement, time selectable:
           1. 1 minute
           2. 15 minutes
           3. 1 hour
           4. 1 second (for sensor testing)
        ii. Light on during the day (regardless of movement) but at night triggered only by movement
        iii. Simple on / off mode

Note: If you turn off the light and the only power source is the battery (night) and you turn it on again quicky, there may be a 4 to 8 second delay before it will turn on again. This is due to it's power matching software.

Components

Overview Diagram



Solar Panel Mount

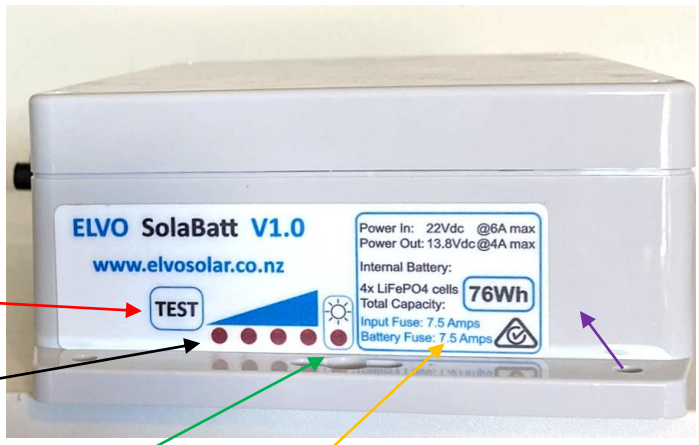
Please read the Solar Panel Mount installation guide if you have purchased this option. The Solar Panel is all 'plug n play'.

Battery

See separate ELVO-SolaBatt operating manual for full battery details

Mount the battery indoors close to the switch (there is a 1 metre lead from the battery to the switch)

The label on the side is also the user interface.
To preserve battery life, the battery fuel gauge will only display when the test button is pressed. It might take a 4 to 6 second press to display the LEDs



Simple 25%, 50%, 75% and 100% state of charge display

Battery charging light comes on when solar charging

There are 2 x 7.5 amp fuses inside the battery. One to protect the solar input and one to protect the battery output.

If some external fault causes one of the fuses to blow, it will be necessary to replace the fuse with a 7.5 amp automotive fuse. The top will need to be unscrewed and removed to change the fuse/s. Unplug all connectors from the battery first. Be very careful not to drop any conductive items into the battery circuitry as this can cause permanent damage. Plug the connectors back in and determine if all is functional.

Mount indoors and close to the light. It is possible to screw to the wall using the 2 mounting holes on the battery flanges.

Plug solar panel in here

Plug 3 way switch cable here

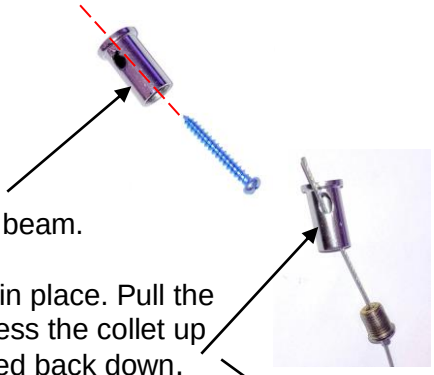
(**Note for reference**: The left solar plug is the +ve input, the right is the- ve)

Note: The battery in nominally rated at 12Vdc @ 6Ah. This is 72 watt hours (Wh), and below the limit of 100Wh some transporters restrict Lithium based batteries to.

Note: The SolaBatt should not be mounted in direct sunlight. This is to stop overheating and to extend the ultimate lifespan of the battery

Light and switches

The light is **not waterproof** and must be installed indoors.

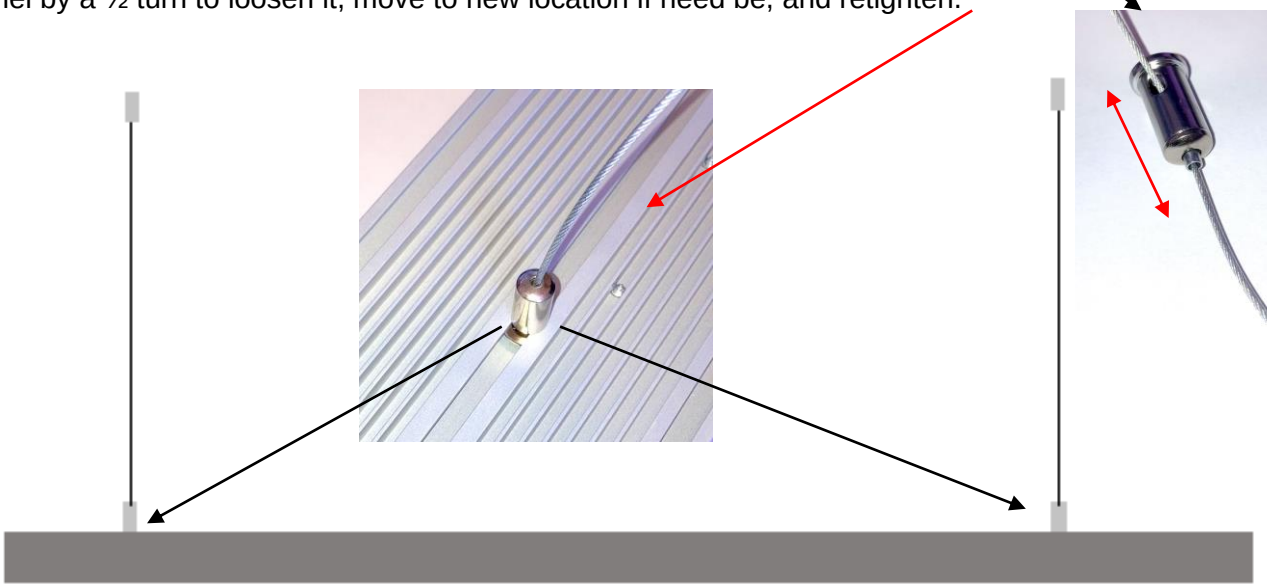


2 mounting wires are supplied for ceiling mounting

The light will be mounted by 2 wires screwed into a load baring beam.

Pull the cable through the side hole and screw the locking plug in place. Pull the wire until the correct height is attained. To release the wires, press the collet up into the locking plug, this will release the wire and it can be pulled back down.

There are 2 locking fittings on the light for the wires to support it. They can be moved along the channel by a ½ turn to loosen it, move to new location if need be, and retighten.



For focused illumination, adjust lamp to around 1 metre above the work space, for more general area lighting, adjust closer to the ceiling.

Mount the switch close to the lamp and the battery as the supplied cable permits.

A basic installation overview example can be seen at this URL:
https://elvosolar.co.nz/how-it-works/

Installation steps in correct sequence

1. Mount solar panel outside, using ELVO mount if you have it. See instruction manual
2. Mount battery inside, either place on flat surface or screw to wall
3. Press the TEST label (firmly as a push button switch is under it) and the battery % should light on the circuit
4. Run solar cable from outside to inside
5. Plug solar cable into the battery. Make sure cables run up to meet the battery so any accidental water ingress doesn't run into the battery.
6. If this is during the day, the Charging LED should come on the side of the battery
7. Plug 1 Metre, 3 way cable into the battery
8. Plug other end into the switch (make sure the switch is off (up)
9. Plug 5 Metre, 2 way cable into the switch
10. Plug other end into the light. Plugs are polarized
11. Mount the light as described above.
12. Mount switch by screwing to the wall, making sure cables pass through holes provided in flange
13. Mount the light as described above
14. Turn on switches to test the light.