

# ELVO – Grow Light v1.0

A Solar Powered LED light for growing plants under cover



## Features:

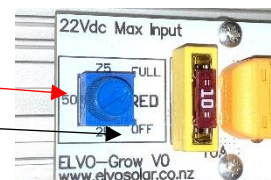
- Designed for simple and safe DIY installation with simple plug-in connections
- Easy height adjustment
- User adjustable combinational red light level, yielding a wide range of tuned colour spectra\* favouring:
  - Seedlings - lower red with high cool white
  - Growth - medium red with high cool white
  - Fruiting - high red with high cool white
- Designed for ultralong lifespan with the LEDs cooled through substantial enclosure heat dissipation (all LED lifespan is directly related to heat rise)
- Maximum heat managed for safety and long operational lifespan
- Uses MPPT (Maximum Power Point Tracking) to efficiently maximise light output for the available solar power
- Light output will vary with available solar power, brighter when the sun is shining on the solar panel to better mimic outdoor sunshine. Bringing the outdoors inside
- Enough light to grow tomatoes in a 4m<sup>2</sup> growing area (160  $\mu\text{mol}/\text{m}^2/\text{s}$ ). Other plants vary in the light level and spectrum required.

## Applications:

- Off-grid indoor gardening such as an off-grid garage or shed
- Discrete Gardening
- Private Growing
- Stable environment control, such as avoiding frost, controlled watering etc

## Operation:

- Adjustable growing spectrum with simple Red level control
- Can turn off the entire light output by turning to minimum
- Full power is available with the red control turned up to 100%. The total illumination power will vary with the full range of red adjustment



## Warning:



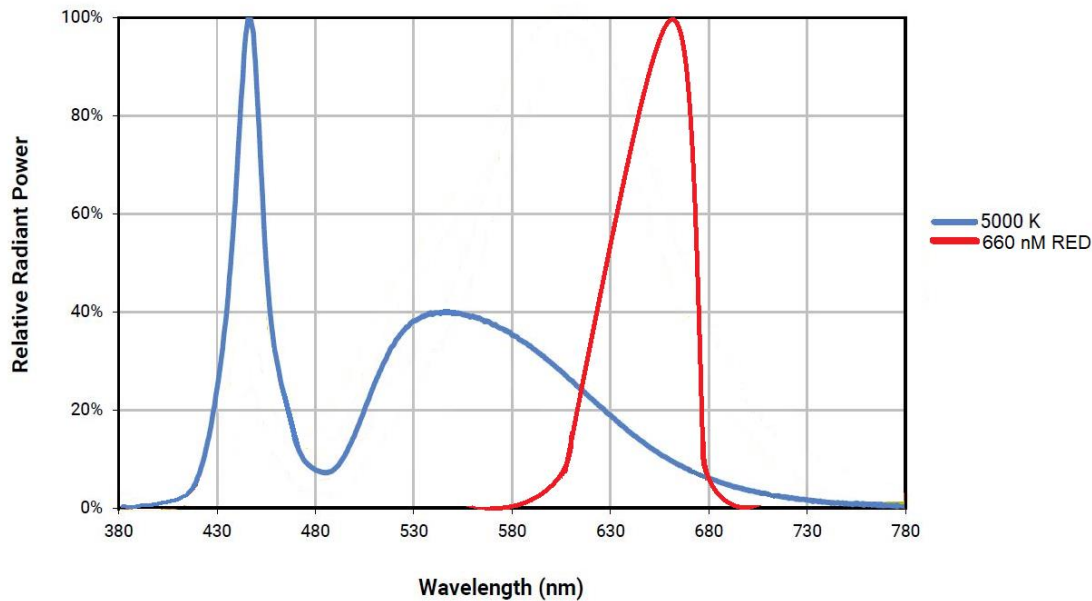
**The light is extremely bright at higher input power levels  
Eye damage can occur if you look directly at the light source  
Avoid looking directly at the light and use eye protection such  
as sunglasses when around the operating grow-light**

### \* Spectra control:

The ELVO-Grow light uses a combination of Cool White and Photo Red LEDs (660nm)

The White LEDs supply a high level of Blue light with some of the other colours as illustrated below. These are 5000K White LEDs (Blue Line on Graph)

These White LEDs emit low Red light levels, the Red light is supplied by the dedicated Red LEDs, the level of which is user adjustable on the top of the light



Lower levels of colours between Blue and Red are emitted to aid in other plant growth functions

### Solar Panel:

The solar panel is critical to fulfil your growing requirements.

In short, the larger the solar panel, the more reliable higher light output will be over varying sunshine conditions

- We recommend a solar panel at least 170 watts, and preferably 200 watts or more
- The solar panel electrical characteristic **MUST** be a nominal 12 volt rating and have a maximum open circuit voltage of no more than 24 volts DC and ideally a MPP of 17 to 18 volts DC. Voltages higher than this will destroy the light
- Do not connect panels in series as this will double the voltage and result in damage. Always add additional panels in parallel (positive to positive, negative to negative)

### Specifications:

- Working Input Voltage: 9 – 22 Volts DC
- Current: 7 Amps max at full power
- Max Power: 122W @ 18V
- Light Output at Max Power: 12200 lumens or (160  $\mu\text{mol}/\text{m}^2/\text{s}$ )
- Weight: 1800 grams
- Dimensions: L 1000mm, W 100mm, H 32mm
- Height adjustment: 30mm to 1000mm from support
- Ambient temperature: 40°C max
- Max enclosure temperature: 55°C around normally untouched areas
- Enclosure: Aluminium

## Installation:

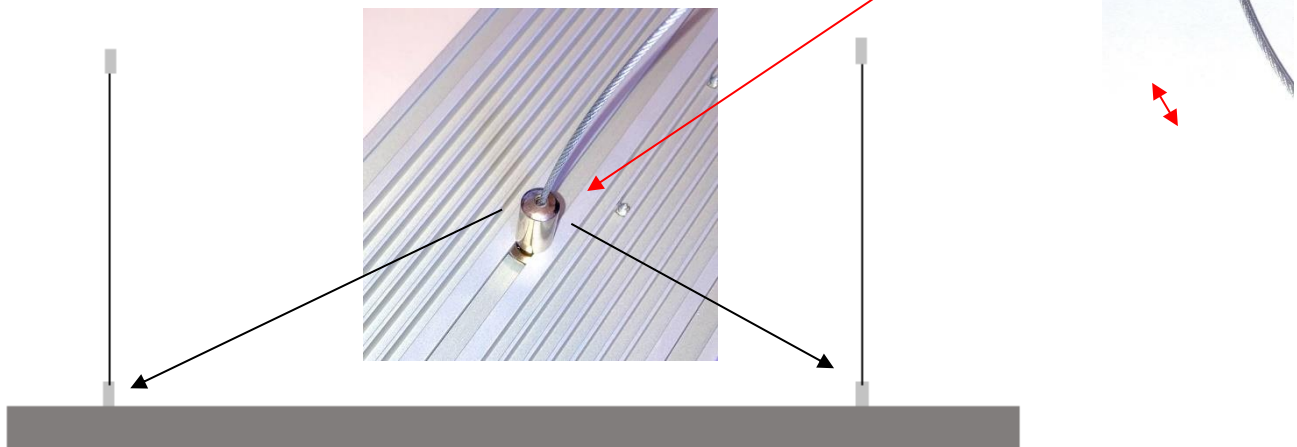
The light is **not waterproof** and must be installed indoors

2 mounting wires are supplied for ceiling or similar mounting

The light will be mounted by 2 wires screwed into a load bearing 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 plant bed, for more general area grow lighting, adjust closer to the ceiling.

Plug in the power cable



## Technical Notes:

- **Dynamic operation:** The light output will vary from dim to full brightness (full solar power) depending on the power available
- **The light starts** at a pre-set illumination level and then checks the power available, from there it will become brighter or dimmer over a matter of seconds (up to 30 seconds)
- **Power disconnect:** Below 9 volts the light will switch itself off. It will try to restart after 4 seconds if the voltage has risen to at least 10 volts and check if there is enough power available to prevent the light flashing on and off
- **Common negative:** The lights' metal enclosure is electrically bonded to negative
- **Fuse replacement:**
  1. Turn the Red control to minimum, this will turn off the light
  2. Isolate the Power (unplug the power connector)
  3. Replace the Automotive 10 Amp fuse (blade fuse)
    - Note use quality fuses only such as those manufactured by Littlefuse or Bussmann. Some poor quality fuses will not break the circuit at the rated Amps
  4. Replace connector and return the Red control to previous setting

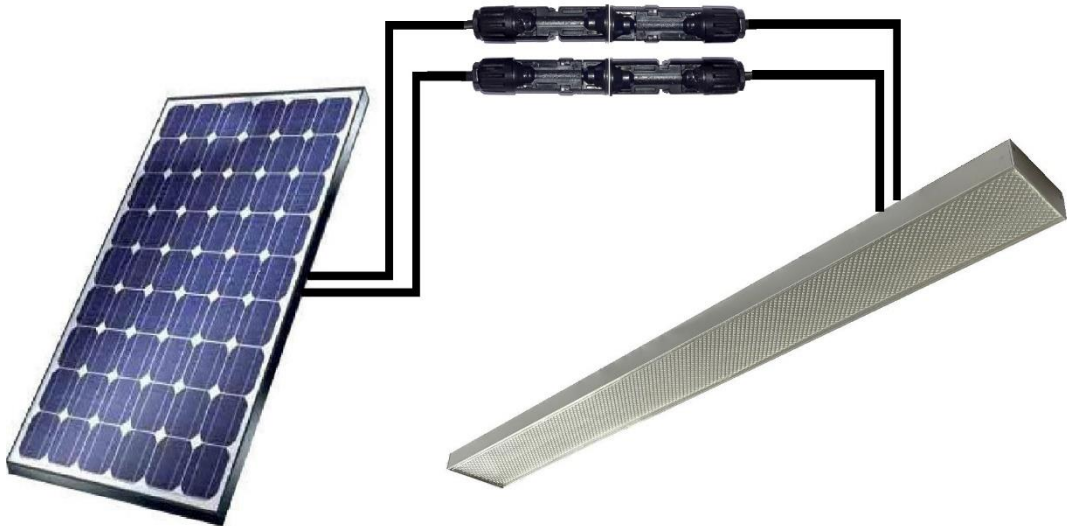
## Cooling

The ELVO Grow-light is very high powered and can need passive air cooling to maintain full power output. If the light's aluminium body approaches the 55°C thermal limit, the microprocessor inside the light will start to quietly reduce the light output to avoid exceeding this limit.

This can happen with high ambient temperatures or if the cooling fin on the back of the light does not have free air dissipation

## Installation variations

1. Standard solar



2. Double Solar Panels

