

ECO-DISTRICT: SOLAR LIGHTING FOR GREEN AREAS AND CYCLE LANES

This didactic solution makes it possible to understand, in a context of sustainable development, the urban lighting of a park located in an eco-district.

Simulates the lighting of a footpath and a bicycle path.

Autonomous and fully low voltage 12Vdc, all run on solar energy.

Indoor (halogen fixed to the frame) or outdoor use.



Controller screen attached to the side of the cabinet

ref. SOL-EQ4

FREE TELEPHONE ASSISTANCE ON 05 56 89 91 07

DELIVERED WIRED AND CONFIGURED

TEACHING RESSOURCES STUDENTS / TEACHER



EDUCATIONAL OBJECTIVES

- Commission a solar system.
- Discover the different solar panel technologies.
- Wire photovoltaic components.
- Perform electrical and mechanical maintenance on the lamppost.
- Identify the different electrical quantities of a solar energy production line.
- Calculate the efficiency of the installation.
- Configure communication on a Bluetooth network.
- Configure a photovoltaic installation from a tablet or smartphone.
- Study solar powered ground lighting
- Study the energy savings generated by the different sensors

PROPOSED PRACTICAL WORK

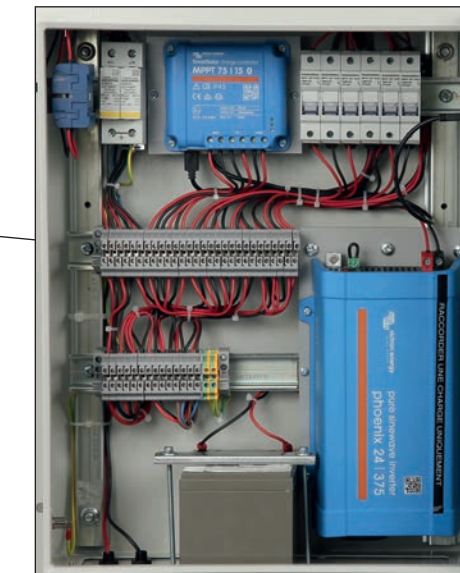
- Course on different solar panel technologies (Monocrystalline, Polycrystalline, Amorphous)
- Study on the positioning of solar panels for maximum efficiency.
- Mechanical fixing of the panel and the lamppost to the frame.
- Study of solar irradiation.
- Reminder on Direct, Diffused and Reflected solar radiation.
- Study and realization of the cabling of the solar energy chain on an isolated site.
- Reading of currents and voltages at different points of the wiring.
- Interpretation of measurements then calculation of yield.
- Calculation of the battery discharge time as a function of the load.
- Configuration of the application from a touchscreen tablet.
- Mechanical and electrical maintenance.



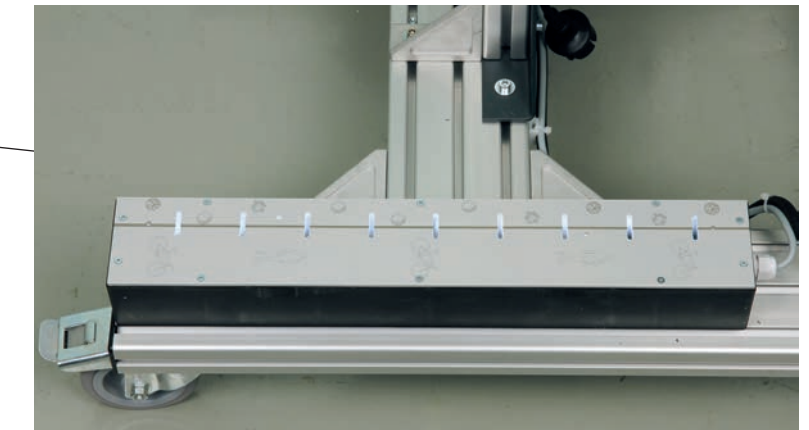
30Wp monocrystalline panel swivel for use interior with the 2 projectors supplied, outdoor with a natural solar source.



Dim. : 710 x 800 x 1600mm. Weight: 50kg.



Battery box + charge regulator.



Simulation box for the lighting of a cycle lane



Requires download from Play store or Apple store of the free Victron Energy app.

Allows reading on tablet or smartphone:
 - Voltage - Panel current / Power (W)
 - Voltage - Battery current / Load current
 - State On-Off charge

COMPOSITION

- 1 frame with wheels, very stable, passes easily between the doorways.
- Outdoor Led lighting in 230Vac.
- A light path simulating a cycle lane.
- 1 monocrystalline photovoltaic panel of 30Wp fixed on an aluminum mast. The panel is adjustable. Allows outdoor use in good weather.
- 2 halogens to be connected to a 2P + T mains socket make it possible to simulate solar radiation for indoor use of the model.
- 1 MPPT (Maximum Power Point Tracking) load regulation system and electronic control of the device with twilight detection and programming by voltage level directly modifiable from a smartphone or touchscreen tablet. A recording of the voltages, currents and powers of the solar panel, battery and LEDs, in the form of data, can be retrieved by an application via a Bluetooth link (display in the form of a bar graph).
- A 12Vdc / 230Vac-50Hz voltage converter communicating via Bluetooth. Setting the output voltage 210-245V, the security level according to the input voltage. Viewing data such as the charge rate or the input and output voltage.
- 1 screen connected to the regulator makes it possible to retrieve information from the MPPT locally.
- 1 solar battery 12V / 14Ah.
- 1 set of photovoltaic fuse holders.
- 1 surge arrester.

Component connection made on industrial terminals to prevent component wear.