

## SOLAR LED STREET LAMP

**MAQ-DEL** allows discovering and studying the operation of a Led solar lamp for communities or individuals for street lighting, a terrace, or any other type of application. Totally autonomous, the whole works with solar energy thanks to a set of photovoltaic components. Totally waterproof, the set can be used outdoors, thanks to large diameter wheels (200mm), to put it in a real context of use day and night.

## COMPRISES

- Wheeled aluminum frame, very stable, passes easily between doorways.
- A monocrystalline photovoltaic panel of 80Wc fixed on an aluminum mat. The panel is adjustable. Allows outdoor use in good weather.
- A MPPT (Maximum Power Point Tracking) load control system and electronic device control with twilight detection and voltage level programming directly modifiable from a smartphone or 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, in multi-languages, via a Bluetooth link (visualization in the form of a bargraph).
- A solar battery 12V / 60
- A 40W lantern equipped with ultra-powerful latest generation LEDs with high light output with a color temperature of 4500K and an IRC of 70.
- An electronic LED power management device integrating a management system for reducing the luminous flux and a detection of people.
- A set of solar circuit breakers.
- A surge arrester.
- A tutorial case containing all the components: inside the case, a silkscreen (insensitive to scratches) allows to visualize through a synoptic the production chain of photovoltaic energy. The connection of the components is ensured by safety terminals 4mm allowing the student to carry out the cabling as well as electrical measurement points in complete safety.

## EDUCATIONAL OBJECTIVES

- Study street lighting with LED street lamp and solar energy.
- Commission a solar system.
- Demonstrate the ecological functioning of LED technology.
- Discover the different technologies of solar panels.
- Wire photovoltaic components, mechanically install a public lighting.
- Perform electrical and mechanical maintenance on the street lamp.
- Use hand tools.
- Identify the different electrical quantities of a solar energy production line.
- Calculate the performance of the installation.
- Set up a Bluetooth network communication.
- Set up a photovoltaic system from a tablet or a smartphone.

## TEACHING RESOURCES STUDENT &amp; TEACHER

## PRACTICAL WORKS

- Lessons on different solar panel technologies (Monocrystalline, Polycrystalline, Amorphous)
- Study on the positioning of solar panels for maximum efficiency.
- Mechanical attachment of the mat, the panel and the street lamp to the aluminum frame.
- Study of solar irradiation.
- Reminder on Direct, Diffused and Reflected Solar Radiation.
- Study and execution of the wiring of the solar energy chain in isolated site.
- Record currents and voltages at different points in the wiring.
- Perform measures and then calculate efficiency.
- Calculation of the discharge time of the battery according to the load.
- Configuring the application from a touch pad.
- Mechanical and electrical maintenance.

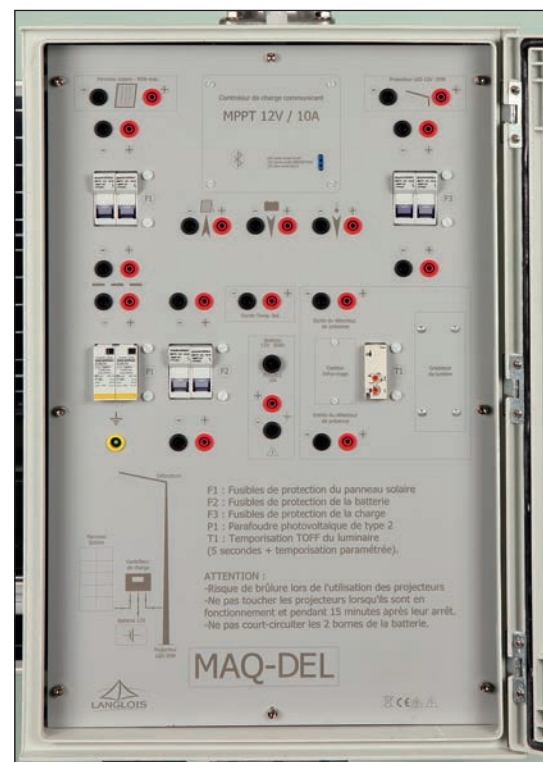
## EDUCATIONAL SUPPORT

- Technical leaflet in English
- All technical "manufacturers" resources of components implemented on the system
- 12 learning scenarios in the form of Practical Works (on cd-rom) of TEACHER / STUDENT type.
- All the elements necessary for the planned practical work.
- Answer sheets for student assessment.



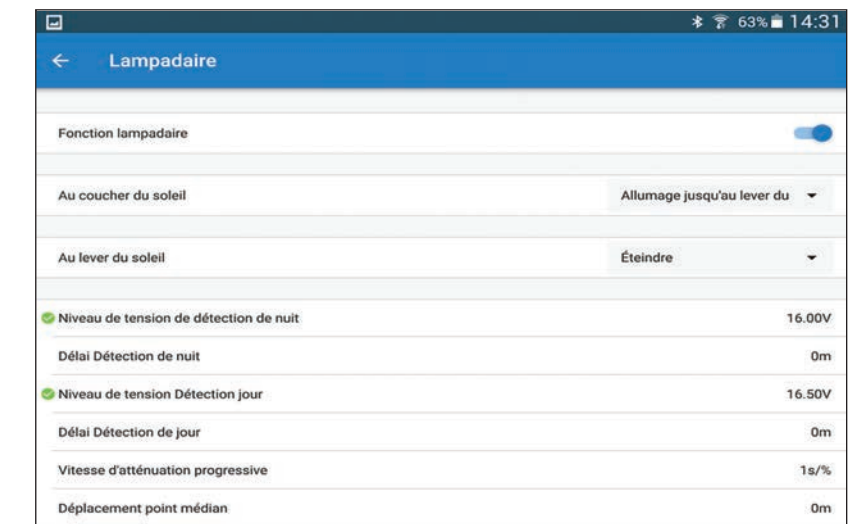
Dimensions : 1110 x 640 x 2150mm. Net Weight : 72kg.

ref. MAQ-DEL



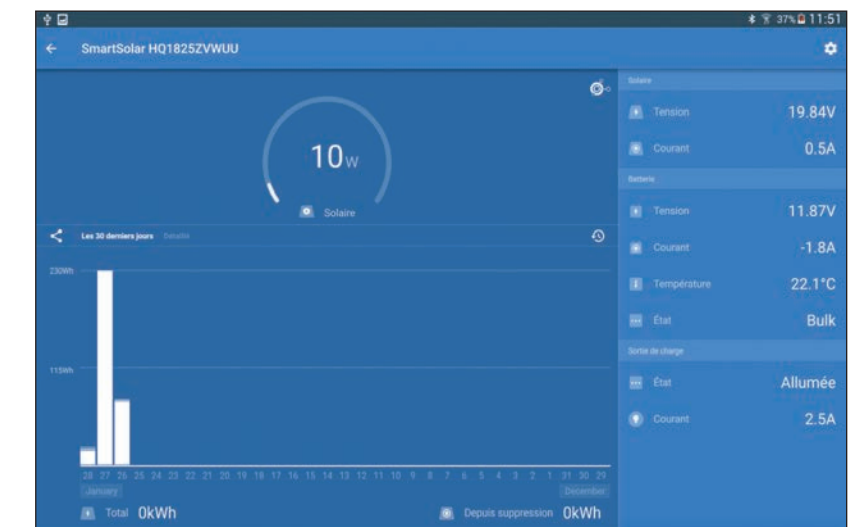
Battery case + charge controller. Bluetooth

## SOLAR LED STREET LAMP (COMPLEMENT)



## Screen on a tablet

Settings of street light features



## Screen on a tablet

Visualization of the electrical quantities of the photovoltaic chain and daily consumptions.

## Adjustable solar panel

Allows indoor use with the 2 spot lights provided.

Allows outdoor use in good weather with a natural solar source.