ECO-DISTRIC: PEDESTRIAN SIGNALS AND SOLAR VIDEO SURVEILLANCE

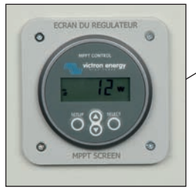
This didactic solution makes it possible to understand, in a context of sustainable development, road signs and autonomous video surveillance in an eco-district.

Simulates a pedestrian sign flashing LED light mounted on a pole with a color CCTV camera.

Autonomous and entirely in low voltage 12Vdc, the whole works on solar energy.

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

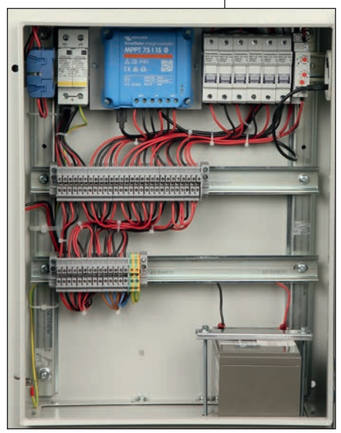
LED panel



Controller screen attached to the side of the cabinet

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

Dimensions: 710 x 800 x 1800mm. Weight: 60kg.



Battery box + charge regulator.

ref. SOL-EQ2
FREE TELEPHONE ASSISTANCE ON 05 56 89 91 07

DELIVERED WIRED AND CONFIGURED | TEACHING RESSOURCES STUDENTS / TEACHER | AUTONOMOUS WIFI NETWORK

PEDAGOGICAL OBJECTIVES

- **Study a flashing solar-powered LED sign.**
- **Commission a solar system.**
- **Demonstrate the ecological functioning of LED technology.**
- **Discover the different solar panel technologies.**
- **Wiring photovoltaic components**
- **Perform electrical and mechanical maintenance on the mast.**
- **Identify the different electrical quantities of a solar energy production chain.**
- **Calculate the efficiency of the installation.**
- **Configure communication on Bluetooth (MPPT) and wifi (camera) networks.**
- **Configure a photovoltaic installation using a tablet or smartphone.**
- **Configure an Ethernet IP network between the camera and the Wifi Switch.**

Bluetooth®

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

PROPOSED PRACTICAL WORK

- Course with theoretical labs on different solar panel technologies (Monocrystalline, Polycrystalline, amorphous), on solar radiation (Direct, Diffused and Reflected), on solar irradiation.
- Study of the positioning of solar panels for maximum efficiency.
- Mechanical fixing of the mast, the panel and the lamppost on the frame.
- 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.
- Configuration of the Ethernet network for the use of the camera in wifi.
- Mechanical and electrical maintenance.

COMPOSITION

- 1 wheeled frame with brakes, very stable. Sized for doorways.
- 1 pedestrian sign fitted with latest generation LEDs. Thanks to a time delay relay, the panel can blink, thus showing the energy benefit of blinking compared to a steady light.
- 1 swiveling color camera connected to RJ45, IP protocol communication.
- 1 monocrystalline photovoltaic panel of 30Wp fixed on an aluminum mast. The panel is adjustable for outdoor use.
- 2 halogens to be connected to a 2P + T mains socket make it possible to simulate solar radiation for use of the model indoors.
- 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).
- 1 screen connected to the regulator to retrieve information from the MPPT locally.
- 1 solar battery 12V / 14Ah
- 1 set of photovoltaic fuse holders and 1 surge arrester.
- 1 wifi switch
- 1 RJ45 Ethernet cable of 3m

Component connection made on industrial terminals to prevent component wear.

Solar energy
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