PORTABLE SOLAR CENTRAL UNIT FOR ISOLATED SITE WITH ARTIFICIAL LIGHT SOURCE

The SOL-PRO solar unit includes:
1 technical briefcase.
2 portable and folding photovoltaic panels.
1 artificial light source (3 spotlights).
2 cables to connect the panels to the case.
1 set of safety leads 4mm.

ref. SOL-PRO	ref. SOL-PRO-N briefcase only

Smartphone not supplied

Bluetooth®

Requires download in Play Store or Apple Store the free application "Victron Energy".
Display on tablet or Smartphone:
- Voltage – Current of the panel / Power (W)
- Voltage – Current of the battery / Charge current
- On-Off state charge

EDUCATIONAL OBJECTIVES

- **Understand a photovoltaic installation of isolated site type.**
- **Understand the security features of the system.**
- **Perform wiring of a photovoltaic system.**
- **Perform electrical measurements of different quantities.**
- **Analyze & interpret the results.**
- **Study the performance and impact of solar panels positioning**
- **Study the energy chain (production, storage, use of a solar charge controller for battery).**

TEACHING RESOURCES STUDENT & TEACHER

A synoptic shows the different components and the interconnections.
Connection in jump wires by safety leads 4mm.
Connection of the panels to the technical case by 2 photovoltaic leads (delivered).
Measures are possible indoor by using the artificial solar source.

Electrical characteristics of the solar unit

- photovoltaic panel (panel features):
  - nominal power Pmpp: 30 Wc
  - max power voltage Vmpp: 18V DC
  - max power current Impp: 1.67 A
  - open circuit voltage Voc: 22.5V DC
  - short-circuit current Isc: 2A
- Power injected, with artificial source: 17 Wc (24V/0.7A)
- Output voltage 230 V - 50 Hz pure sinusoidal. 120 VA max.
- Output voltage 24V DC. 180W max

Composition of the technical case

- Case made of impact-resistant polypropylene. It can be closed without disconnecting the safety cords from the front. Light and easy to carry by its handle.
- 2 photovoltaic sockets for connecting solar panels.
- 1 surge arrester.
- 1 Start/Stop switch to isolate the solar panel circuit from the technical case.
- 4 two-pole fuse holders with gPV cartridge protecting the solar panel circuit, batteries and use.
- 1 24V/20A solar charge controller with display showing:
  - battery charge
  - current supplied by the solar panels
  - battery charge current
  - current consumed by the use circuit
  - battery voltage.
- 1 voltage converter pure sinusoidal 50 Hz - 24/230V AC, 120 VA. Auto-protection by resettable thermal fuse.
- 1 set of 4 mm safety cords.
- 1 output 230V AC - 120 VA on 4 mm safety terminals
- 1 use output 24V DC - 180 VA on 4 mm safety terminals
- Dimensions: 540 x 430 x 215mm

Composition of the photovoltaic panels frame

- Aluminium frame
- 2 poly-crystalline photovoltaic panels, each 30 Wc.
- 2 hinges for folding them together.
- Separate cabling for series or parallel connection.
- Useful surface area of the cells on each panel 0.2 m²
- 2 ball joints for putting the panels at the tilt angle required.
- 1 device for measuring the tilt angle.
- 2 3-metre photovoltaic cords.
- Light and easy to move (Carrying handle).
- Dimensions in unfolded position: 1140 x 470 x 200 mm
- Dimensions in folded position: 570 x 470 x 100 mm

Composition of the artificial light source

- 3 400W spotlights with variable tilt.
- Power supply 230V AC 50/60 Hz by 2-metre mains cord.
- Spotlight dimensions: 300 x 220 x h 360 mm

Supplied with CD containing

- Theoretical summary of the different types of photovoltaic cells and energy.
- The detailed wiring diagram of the solar unit
- 5 theoretical assignments and 3 complete practical assignments as student/instructor book.
- Full instructions for each component