

## SOLAR TRACKER WITH BATTERY

### EDUCATIONAL OBJECTIVES

- Study and commissioning a solar tracker.
- Understand how solar cells work.
- Master the wiring of the components of an installation photovoltaic in isolated site.
- Perform measurements using an oscilloscope and ammeter clamp (not supplied).
- Set up a Bluetooth® connection.

TEACHING RESOURCES STUDENT & TEACHER

### Practical works

- Course on the different technologies of solar panels (Monocrystalline, Polycrystalline, Amorphous)
- Study on the positioning of solar panels for maximum efficiency.
- Study of solar irradiation.
- Reminder on Direct, Diffused and Reflected solar radiation.
- Comparison of the reading powers with fixed panels and tracking panels.
- Study and creation of the wiring of a solar energy system in isolated site.
- Reading the currents and voltage at different points of the wiring.
- Interpret measurements and calculate efficiency.
- Calculation of the battery discharge time according to the load.

### Comprises

- 2 solar panels 30W-12V Monocrystalline.
- 1 azimuth rotation motor of 160° maximum, that is more than 5 hours of tracking in position perpendicular to the sun.
- 1 zenith rotation motor 43° allowing a complete follow-up of the sun elevation.
- 1 set of solar cells.
- 1 cabinet with door.
- 1 Solar load regulator 12V/ 15A Bluetooth®.
- 1 battery 12V-8Ah.
- 1 output 12VDC-60W max available on 4mm terminal.
- Protection with gPV cartridge fuse.
- Emergency stop and switch + 'on' indicator light.
- 1 screen printed side with 4 BNC plugs.
- 1 artificial solar source mounted on a telescopic stand.

### Features

- 3-metre mains lead for the artificial source.
- Dim.: 1100 x 600 x (H) 1600mm. Weight: 64kg.
- The pole and the panels are easy to remove for going through doorways.



ref. TRACSOL

Bluetooth®

Smartphone not supplied



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

The solar tracker is a technical innovation for tracking the sunlight, in order to increase the yield of photovoltaic panels. The productivity gain can reach 40% with a 2-axis tracking system. TRACSOL is a teaching solution for learning this technique. Equipped with 2 axes and 4 cells for automatic sunlight tracking of the sun, it is completely self-contained. No 230V mains connection is required. Only the artificial solar source enabling TRACSOL to be used indoors is powered with 230VAC. The transparent sides of the mechanical box enclosing the two axes provide a full view of the chain drive linkages.

4 BNC fixed on the front of the cabinet allow the oscilloscope reading of the signals generated by the 4 solar cells. The voltage of the solar panels is available on the two safety terminals. The assembly is mobile thanks to 4 heavy-duty wheels attached under the frame.

## LEADS FOR CONNECTING SOLAR PANELS

1 meter cable to connect your solar panels to all security Ø4mm terminals solution up to 20A.

Male solar connector of M type, polarity « + », red cable with safety plug Ø 4mm.



ref. RSR-100

Female solar connector of M type, polarity « - », black cable with safety plug Ø 4mm.



ref. RSN-100