

## STUDY OF THE FEEDING OF PHOTOVOLTAIC ENERGY NATIONAL NETWORK



Set of photovoltaic modules (H-250mm) and solar panels for studying a solar installation with energy feeding to the 230V AC grid.



Sockets on the back of the console for connecting the modules

### EDUCATIONAL OBJECTIVES

- Learn about a photovoltaic installation with energy feeding to the grid.
- Study the types of energy feeding to the grid, e.g. total or partial.
- Learn about and understand the photovoltaic elements present.
- Create the wiring of a photovoltaic installation.
- Take the electrical measurements of the different values.
- Study the efficiency and incidences related to the positioning of the solar panels.
- Study the use of a grid inverter and energy meter.

### TEACHING RESOURCES STUDENT & TEACHER

ref. QUICK-MPLUS

ref. QUICK-M

without frame and console

The set can be supplied without the two solar panels, please ask for details.

### Proposed Practical Works

- Creation of the complete wiring diagram for feeding all the energy produced by the panels.
- Creation of the complete wiring diagram for feeding the non-consumed energy produced by the panels.
- Take the measurements of voltage, current and power of the solar panels.
- Take the measurements of the fed voltage, current and power.
- Calculation of the efficiency of the installation.

### Comprises

- 1 Coupler module of photovoltaic terminals to 4mm terminals.
  - 1 Surge arrester module.
  - 1 Circuit switching module.
  - 1 Double fuse holder module 10x38 gPV.
  - 3 Single-phase energy meters modules 63A. Reset key. Resolution 0.1kW
  - 1 Grid inverter module 500W. Automatic synchronization with the grid 230V. Input voltage from 65 to 125V DC. Thermal protection integral to the box.
  - 1 Module of photovoltaic two-pole circuit-breaker with fault current VDE0126.
  - 1 Grid synchronization switch module.
  - 1 Module with outlet 2P+E, 4mm terminals.
  - 1 Analogue voltmeter/ammeter module.
  - 1 Digital voltmeter module.
  - 1 Digital ammeter module.
  - 2 Solar panels 200Wc on frame that tilts from 5° to 70°.
  - 1 Photovoltaic cable, 30 metres.
  - 1 set of safety leads for carrying out the different practical works.
  - 1 frame with wheels (H x W x D): 1610 x 940 x 500mm equipped with rack for cords (30 fingers)
  - 1 single-phase power console:
    - 1 thermal magnetic circuit breaker (16A)
    - 1 Emergency stop push button with key
    - 1 Push button + LED indicator
    - 1 230V single-phase output on 4mm safety terminals
    - 2 230Vac sockets (2P + E) + 12 230Vac sockets (2P + E), at the back
- Mains power supply 230V - 50/60Hz. 3-metre lead with plug 2P+E.