PHOTOVOLTAIC SYSTEM SIMULATOR
Mod. SIM-PM/EV

INTRODUCTION

Educational simulator mod. SIM-PM/EV is designed to study the operation of a stand-alone photovoltaic system (insulated from the mains). Thanks to a photovoltaic panel, this type of equipment collects and transforms the incident solar radiation, so that it is available as electric energy to all users. The perfect system operation is ensured by a battery charge controller and by an inverter. The simulator enables to analyze the system behavior depending on the battery charge level, the power requested by users and the panel position; it also enables to analyze the consequences of a disturbance on the system, such as clouds or the breaking of a cell.
The simulator should necessarily be connected with a PC (not included).

TRAINING PROGRAM:

- Study of solar energy: photovoltaic effect
- Calculation of the average power developed by the sun on a specific place
- Monocrystalline and polycrystalline silicon cells
- Energy balance of the panel, efficiency
- Devices for storing energy
- Batteries charge control

TECHNICAL SPECIFICATIONS:

- Colour panel reproducing the photovoltaic system
- Board for data acquisition and control of output signals to the actuators
- PC connection via USB cable
- 6 potentiometers to simulate the following analog inputs:
  - solar radiation
  - storage battery charge
  - power requested by users
  - panel inclination angle (referred to the horizontal surface)
  - panel azimuth angle (referred to south direction)
  - time of day
- 8 bar LEDs to simulate the following analog outputs:
  - photovoltaic panel voltage
  - panel output current
  - battery voltage
  - current supplied/absorbed by the battery
  - current absorbed by the inverter
  - solar power incident on the photovoltaic panel
  - power absorbed by users
  - system efficiency
- 4 switches to simulate the following digital inputs:
  - enabling system operation
  - season (summer/winter)
  - clouded sky
  - breaking of a photovoltaic cell
- 3 LEDs to simulate the following digital outputs:
  - alarm for low charge level of the storage battery
  - alarm for inverter overload
  - battery in charging or discharging phase
- Simulation program of photovoltaic system operation

Power supply: 230 Vac 50 Hz single-phase - 200 VA
(Other voltage and frequency on request)
Dimensions: 42 x 12 x 40 cm
Weight: 16 kg

REQUIRED

PERSONAL COMPUTER
- NOT INCLUDED -

SUPPLIED WITH

THEORETICAL-EXPERIMENTAL HANDBOOK

RENEWABLE ENERGIES

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