

SOLAR ENERGY MINI LABORATORY

Mod. SMK/EV

INTRODUCTION

This is a set of electrical and optical instruments and components which enable a group of 4-6 students to carry out a wide range of measurements. The aim is to implement a complete program of experiences which enable students to learn the main characteristics of solar radiation and of photovoltaic conversion process.

The whole set is packed in a suitcase and is supplied with a theoretical-experimental handbook. This system is expressly fitted for a complete and organic study of local insolation characteristics.

TRAINING PROGRAM:

- Study of radiation intensity with different inclinations of the solarimeter
- Calibrating the solarimeter with the solar radiation
- Plotting charts of daily diurnal insolation, for total, diffuse and direct radiation, on horizontal surface and on surface perpendicular to the sun rays
- Graphical and statistical results interpretations
- Assessing the current output of a solar cell by changing its orientation to the light source
- Experimental assessment of voltage-current curves of a silicon cell for different lighting values
- Assessing the maximum electric power output by a silicon cell for different lighting or insolation values
- Calculating the efficiency of a photovoltaic cell
- Parallel and series connection of solar cells
- Calculation of the average power supplied by a silicon cell panel
- Battery recharge



TECHNICAL SPECIFICATIONS:

The system for solar energy study consists of:

- 1 solarimeter with bar for shadow projection
- 1 milliammeter with 2 ranges: 1 mA f.s. (x1, x2)
- 1 voltammeter with 2 ranges:
 - 1 V f.s. (x1, x4)
 - 0,5 A f.s. (x1, x4)
- 1 load rheostat
- 2 silicon solar cells of standard dimensions
- 2 silicon solar cells of different dimensions
- 1 portable compass
- 1 solar tracking system
- 1 solar panel made of silicon cells
- 1 lead accumulator
- 1 d.c. motor
- 1 solar ruler
- 1 adjustable stand

Power supply: 230 Vac 50 Hz single-phase - 100 VA
(Other voltage and frequency on request)

Box dimension: 60 x 48 x 20 cm

Net weight: 11 kg

SUPPLIED WITH
THEORETICAL-EXPERIMENTAL
HANDBOOK

