didactic technology

SOLAR 51 | SOLAR ENERGY TRAINER

Technical specifications :

The solar energy trainer is a simulator of the operation of the modern photovoltaic systems. This trainer provides to the student the ability to study and to draw results regarding the factors that affect the photovoltaic systems. It has the quality and the safety provisions that make it ideal for training.

The solar energy trainer consists of :

1. A photovoltaic plate (array) with distinctive elements with the following specifications : Voltage 8 V / Power 0,6 W minimum, Voltage 7 V / Power 0,7 W minimum, Voltage 6 V / Power 0,8 W minimum Voltage 4,5 V / Power 0,7 W minimum, Maximum current higher than 140 mA. The photovoltaic plate is electronically controlled and automatically orientated with the use of a servomechanism towards the light source following its orbit (180^o). There is also the ability to control motion through the appropriate switches. At the track's limits there are stops for the system's protection.

2. A 300W light source, of adjustable luminance, with the ability to move in a semicircular track of 180^0 by a servomechanism.

3. Measuring instruments : Digital light meter, digital voltage and current panel meters

4. A 2Ah capacity electrical power accumulator (rechargeable battery) including the suitable charger.

5. It also has as a demonstration of the solar energy applications, the following accessories: A watch and a fan.

6. Adjustable resistive loads for making the necessary measurements in order to draw the systems characteristic curves.

All the above are permanently fitted in a metal bench top case painted with an electrostatic method that has a layout of the necessary elements (orbit, inputs – outputs etc) and safety sockets for the necessary circuit connections. The solar system (light source - plate) has a transparent plastic cover 5mm thick with ventilation slits and two fans for the system's protection from overheating. It also has an emergency switch for power cut off if necessary.

The solar trainer has also an operation manual that also includes general instructions for :

Solar energy production devices – Photovoltaic cell, principles of operation and applications – Factors affecting the solar cell's performance – Measurement of the produced voltage in accordance to the intensity of the light source and the angle of the transmittance – Measurement of the photovoltaic cell performance – characteristic curves.