PHOTOVOLTAIC TRAINER
RE540

Year 1
study

Features

- Demonstrates the Practical Application of a Solar Power Generation System
- Expandable 80W Panels and Deep Cycle Batteries, Allow Substantial Loads to be Applied
- Optional Solar Simulator Available
- Optional Computerised Data Acquisition
- Safe for Student Operation

Description

A practical sized solar panel with nominal 80W output is connected to a control panel containing relevant instrumentation and a battery charge control system. This in turn connects to a substantial deep cycle sealed lead acid battery. This allows the application of locally sourced loads, or, loads available as optional extras.

The solar panel is supplied with an adjustable stand that allows inclination to be varied together with an accurate panel mounted solarimeter. This allows the radiation incident on the panel (kW/m2) to be measured and compared with the electrical power generated, along with system efficiency.
The instrumentation provided allows the isolated panel characteristics and the overall system performance to be measured under load. A monitoring point is provided to allow detailed investigation of the charge controller operation by advanced students (Oscilloscope required, not provided as standard).

In order to expand the capacity of the unit additional panels and batteries are available as optional extras.
To allow long term monitoring of system performance an optional data acquisition system is available that can be supplied as a factory fitted option or alternatively for addition as a user fitted accessory.

In order to demonstrate the use of solar power for AC power generation an optional inverter is available.

For environments where abundant solar radiation cannot be relied upon an optional solar simulator (See RE540E) is available that requires connection to a local electrical power supply.

The RE540 unit is complimentary to the Hilton RE550 Flat Plate Solar Energy Collector which allows students to examine water heating directly from solar energy.

Related laws

- Environmental Engineering
- Energy Conservation
- Mechanical Engineering
- Architecture
- Building Services
- Electronics
- Electrical and Electronic Engineering
- Automotive Engineering
- Plant & Process Engineering.

Learning capabilities

- Investigation of electrical conversion efficiency relative to solar radiation.
- Investigation of the effect of panel inclination and angle of latitude.
- Measurement of solar panel output characteristics under load and the effect of panel temperature.
- Examination of battery charge management system.
- Measurement of overall system performance under load.

Technical Specification

- Solar Panel: High quality nominal 80W, 12v solar panel (Area 0.6m2).
- Instrumentation panel containing:
- - Battery charge controller
- - Panel loading system
- - Power and panel temperature measurement
- - Power outlet and integral safety cut outs.
- Battery: Deep cycle, sealed lead acid 110Amp hour.

Recommended Ancillaries

- RE540A
- RE540B
- RE540C
- RE540D
- RE540E

What's in the Box?

- 1 x RE540
- 1 x Set of rheostat cables
- 1 x Set of battery cables
- 1 x Rheostat
- 1 x Inclinometer
- 1 x Magnetic compass
- 1 x 12V Battery
- 3 x Spare fuse
- Instruction manual
- Packing list
- Test sheet

You might also like

- RE510

Weights & Dimensions

- Weight: 42 kg
- Length: 527mm
- Width: 750mm
- Height: 1200mm

Essential Services

- If operated in ambient sunlight the unit is self powered and requires no mains services

Ordering information

To order this product, please call PA Hilton quoting the following codes:
RE540
RE540/230/RC
RE540/115/RC