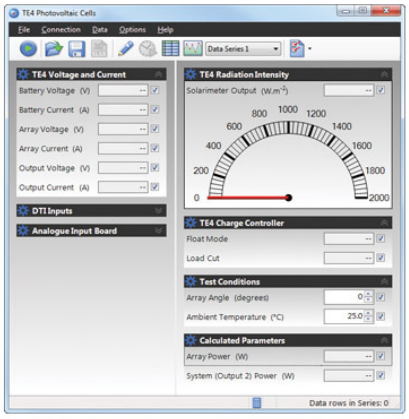
VDAS® TE4

PHOTOVOLTAIC CELLS

Shows students the performance and use of photovoltaic cells to capture solar energy.



SCREENSHOT OF THE OPTIONAL VDAS® SOFTWARE

KEY FEATURES

- Demonstrates the performance of a high efficiency photovoltaic cell array and battery storage system.
- Includes solarimeter, charge controller and control module with digital displays and DC outputs.
- One of several TecQuipment products that show the use of renewable, environment-friendly solar energy.
- Supplied with both high and low rated batteries to allow students to investigate the charge and discharge cycle of the system in a typical laboratory session as well as longer cycles.
- Includes three different types of electrical load.
- Works with TecQuipment's Versatile Data Acquisition System (VDAS®) to enable accurate real-time data capture, monitoring, and display of on a computer.

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TECQUIPMENT

VDAS® TE4

PHOTOVOLTAIC CELLS

DESCRIPTION

Shows students the working principles and performance of a photovoltaic cell array and battery storage system.

It uses a commercially available solar panel made from high efficiency cells. The solar panel is on a wheeled, lightweight frame that allows adjustment of panel angle, relative to the sun. A solarimeter on the frame measures incident radiation.

The panel recharges a choice of two batteries through a charge controller. The charge controller recharges the battery at the correct rate of charge without damage to the battery. The frame holds a high performance deep cycling battery in a storage box.

The equipment also includes a second lower rated battery. This allows students to examine the charge and discharge cycle of the system in a typical laboratory session.

A control module contains the charge controller. The control module has digital displays and shows the panel and battery storage performance. It has indicators to show when the charge controller is in float mode and load cut mode. It also has two power outputs. Output 1 allows direct connection of external loads to the solar array, for direct load experiments. Output 2 allows connection through the charge controller to show how it works with a load and a battery.

A separate loading unit includes:

- A variable resistive load to show battery performance.
- An inverter to show practical conversion to AC voltages.
- Four switchable lamps to show a practical application.

The equipment works with TecQuipment's Versatile Data Acquisition System (VDAS®, not included). VDAS® allows accurate real-time data capture, monitoring, display, calculation and charting of all the important readings on a computer (computer not supplied).

STANDARD FEATURES

- Supplied with a comprehensive User Guide
- Five-year warranty
- Manufactured in accordance with the latest European Union directives
- ISO9001 certified manufacturer

RECOMMENDED ANCILLARIES

- Versatile Data Acquisition System (VDAS-B) – bench-mounted version of TecQuipment's Versatile Data Acquisition System

LEARNING OUTCOMES

- Performance of the solar panel
- Demonstration of float mode
- Demonstration of load cut

OPERATING CONDITIONS

OPERATING ENVIRONMENT:

Solar panel - dry, outdoor area

Control module and loading unit - laboratory

STORAGE TEMPERATURE RANGE:

–25°C to +55°C (when packed for transport).

–15°C to +55°C (batteries).

OPERATING TEMPERATURE RANGE:

+5°C to +40°C

OPERATING RELATIVE HUMIDITY RANGE:

80% at temperatures < 31°C decreasing linearly to 50% at 40°C.

SPECIFICATION

TecQuipment is committed to a programme of continuous improvement; hence we reserve the right to alter the design and product specification without prior notice.

NETT DIMENSIONS AND WEIGHTS:

Control module: 600 mm wide x 350 mm high x 180 mm depth and 11 kg

Loading module: 600 mm wide x 350 mm high x 180 mm depth and 13 kg

Main unit: height (when elevated) 950 mm (when folded down for transport) 400 mm length 1300 mm x width 730 mm and 60 kg

TOTAL PACKED DIMENSIONS AND WEIGHT:

1.1 m^3 and 130 kg

SOLAR PANEL POWER RATING:

Nominal peak power 40 W

BATTERIES:

- 12 V, 70 Ah (nominal)
- 12 V, 1.2 Ah (nominal)

LOADING MODULE:

Four 12 V lamps, 3 to 50 W variable resistor, 100 W inverter (RCD protected)

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