SCIENTICO INDIA
Manufacturer & Exporter · Ambala, Haryana, India

PRODUCT DATA SHEET
Catalogue reference for product evaluation

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Solar Cell Measurements | RVX 133

Category: Renewable Energy · **Order Code:** RVX 133 · **Country of Origin:** India

Product Overview

The Solar Cell Measurements RVX 133 investigates photovoltaic cell behavior under varying illumination and temperature. This solar cell measurements trainer features four monocrystalline cells (125x125mm, 3W max), four adjustable 100W lamps, Peltier temperature control (20°C to 60°C), patch panel with bypass diodes, and integrated measurement unit. Optional LABVIEW software enables automated characteristic curve recording via USB data acquisition.

View this product online: https://scienticoindia.com/product/solar-cell-measurements-rvx-133/



Request a model-specific quotation
Include quantity and delivery country.

Technical Specifications

Solar Cell Measurements RVX 133 — Technical Specifications

Parameter	Value
Cell Type	Monocrystalline silicon
Number of Cells	4 units
Cell Size	125 x 125mm approximately
Maximum Output Power	3W per cell
Fill Factor	More than 70%
Current at Maximum Output	Approximately 4.8A
Voltage at Maximum Output	Approximately 0.6V
Short-Circuit Current	Approximately 5.4A
Open-Circuit Voltage	Approximately 0.6V
Peltier Module Temperature Range	20°C to 60°C
Lighting Unit	4 x 100W lamps
Adjustable Illuminance	Variable control
Patch Panel Connections	Series and parallel configurations
Bypass Diodes	Integrated for shading analysis

Parameter	Value
Load Resistance	Adjustable rheostat
Measuring Unit	Voltage and current detection
Reference Cell	Illuminance sensor
Temperature Control Accuracy	Peltier-regulated 20°C to 60°C
Data Acquisition	USB interface (optional software)

Technical Data

Solar Cells:

- Type: monocrystalline silicon
- Quantity: 4 units
- Size: 125 x 125mm approximately
- Maximum output: 3W per cell
- Fill factor: more than 70%
- Current at maximum output: approximately 4.8A
- Voltage at maximum output: approximately 0.6V
- Short-circuit current: approximately 5.4A
- Open-circuit voltage: approximately 0.6V

Lighting System:

- Lighting unit: 4 x 100W lamps
- Adjustable illuminance control
- Reference cell as illuminance sensor

Temperature Control:

- Peltier module backing for solar cells
- Temperature range: 20°C to 60°C
- Precise temperature regulation

Interconnection and Load:

- Patch panel with bypass diodes
- Series and parallel connection capability
- Adjustable load resistance via rheostat
- Cable set for flexible configurations

Instrumentation:

- Built-in measuring unit
- Voltage detection across cells
- Current detection and measurement
- Temperature sensors
- Illuminance sensor (reference cell)
- Automated characteristic curve measurement function

Data Acquisition:

- USB interface connection
- Optional LABVIEW software compatibility
- Windows operating system support
- Data logging and visualization

Key Features

Key Features

- Four Monocrystalline Cells: Solar cell measurements trainer features 125x125mm cells with 3W maximum output and 70% fill factor for comprehensive study
- Variable Illumination: Four 100W adjustable lamps enable investigation of illuminance effects on solar cell performance and power output
- Precise Temperature Control: Peltier module maintains cell temperature from 20°C to 60°C for thermal effect analysis
- Flexible Interconnection: Patch panel enables series and parallel cell connection with integrated bypass diodes for shading loss examination
- Bypass Diode Analysis: Built-in bypass diodes enable study of power degradation due to cell shading and partial blockage effects
- Adjustable Load Resistance: Integrated rheostat enables manual current-voltage characteristic curve recording and load variation
- Automated Measurement: Optional software-controlled load pattern enables automated characteristic curve capture at multiple conditions
- Comprehensive Sensing: Temperature, voltage, current, and illuminance sensors provide multi-parameter analysis capability
- Data Logging: Optional USB data acquisition with LABVIEW software enables complete performance monitoring and visualization

Experiments

- Physical behavior of solar cells under varying illuminance
- Physical behavior of solar cells under varying temperature
- Recording of current-voltage characteristic curves
- Current strength calculation using single diode model
- Power output calculation using single diode model
- Bypass diode effect on shaded cell performance
- Power degradation due to partial shading
- Series connection effects on voltage and current
- Parallel connection effects on voltage and current
- Illuminance variation effects on cell output
- Temperature variation effects on cell efficiency
- Fill factor measurement and analysis
- Open-circuit voltage determination
- Short-circuit current determination
- Maximum power point tracking analysis

Construction and Design

The Solar Cell Measurements RVX 133 integrates four monocrystalline silicon solar cells (125x125mm each) mounted on backing with Peltier module for temperature regulation from 20°C to 60°C. Four 100W adjustable lamps provide variable illuminance control directly above cells. Reference cell functions as illuminance sensor. Patch panel provides flexible interconnection capability with integrated bypass diodes for series and parallel configurations. Adjustable rheostat enables manual load variation and current-voltage characteristic curve recording. Built-in measuring unit detects voltage and current across full operating range. Integrated temperature sensors monitor cell temperature during testing. Cable set enables various connection configurations for multi-cell experiments. Compact design accommodates all four cells and measurement equipment on single apparatus. Optional USB interface connects to computer for automated software-controlled measurement sequences and data logging via LABVIEW.

Software

DAQ software in National Instruments LABVIEW environment (optional). Measures and calculates apparatus results. USB data acquisition support. Compatible with Windows operating system. Enables automated characteristic curve measurement and data logging.

Scope of Delivery

- 1 Trainer (four monocrystalline silicon cells with lighting unit, Peltier module, and patch panel)
- 1 Set of cables
- 1 Instructional manual

Ordering & Delivery

- Send the product name, quantity, delivery country and destination with your enquiry.
- Production schedule, freight, payment terms and export documents are confirmed in the written quotation.

Frequently Asked Questions

Q: What type of solar cells are used in the Solar Cell Measurements RVX 133?
A: Four monocrystalline silicon solar cells (125x125mm each) with 3W maximum output per cell and 70% fill factor are included. Short-circuit current approximately 5.4A and open-circuit voltage approximately 0.6V.

Q: How does the Solar Cell Measurements RVX 133 control temperature?
A: Peltier module backing provides precise temperature regulation from 20°C to 60°C, enabling investigation of temperature effects on solar cell performance and power output characteristics.

Q: How can solar cells be interconnected in the Solar Cell Measurements RVX 133?
A: Patch panel enables flexible series and parallel cell connections via included cable set. Integrated bypass diodes allow investigation of shading effects and power degradation in partially blocked configurations.

Q: What illumination control does the Solar Cell Measurements RVX 133 provide?
A: Four adjustable 100W lamps enable variable illuminance control. Reference cell functions as illuminance sensor to measure light intensity effects on cell performance.

Q: Can the Solar Cell Measurements RVX 133 automatically record characteristic curves?
A: Yes. Optional LABVIEW DAQ software enables automated measurement function via USB with software-controlled load pattern definition for unattended characteristic curve capture at multiple conditions.

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