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Manufacturer & Exporter · Ambala, Haryana, India

PRODUCT DATA SHEET
Catalogue reference for product evaluation

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Solar Thermal Energy Training System | RVX-009

Category: Renewable Energy · **Order Code:** RVX-009 · **Country of Origin:** India

Product Overview

The Solar Thermal Energy Training System RVX-009 is a laboratory-based solar thermal training platform demonstrating the conversion of solar energy into thermal energy for domestic water heating. It supports seven experiments covering solar thermal system design and operation, net power determination, collector energy balance, efficiency curves, absorber surface comparison, and the influence of illuminance, angle of incidence, and flow rate. The system includes a tilt-adjustable flat collector with two replaceable absorbers, a 12-lamp lighting unit with 6-stage intensity control, a variable flow pump, a hot water tank with tube coil heat exchanger and 350 W auxiliary heater, four temperature sensors, flow and illuminance measurement, and a solar panel for simultaneous electrical energy generation. DAQ software designed in National Instruments LabVIEW is optional and runs on any Windows system.

View this product online: https://scienticoindia.com/product/solar-thermal-energy-training-system-rvx-009/



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

Technical Specifications

Solar Thermal Energy Training System RVX-009, Technical Specifications
Flat Collector
ParameterValueAbsorber typesSelective coating; blackened coatingAbsorbing surface580 x 375 mmInclination angle0 to 60 degrees
Pump
ParameterValueFlow rateAdjustable, 0 to 30 L/h
Auxiliary Heater
ParameterValuePower350 W
Lighting Unit
ParameterValueLamp quantity12 lampsLight intensity controlON/OFF type, selectable in 6 stagesPower per lamp120 WTotal powerApproximately 1400 W
Measuring Ranges
ParameterRangeTemperature-100 to 400 degrees C, 4 sensorsFlow0 to 46 L/hIlluminance0 to 2000 W/m2

Key Features

Key Features

Solar Thermal Training Platform: demonstrates solar thermal heating of domestic water in laboratory conditions
Lighting Unit: 12 lamps, 120 W each, total power approximately 1400 W, simulates natural solar radiation
Light Intensity Control: ON/OFF type, selectable in 6 stages
Flat Collector: distance and tilt adjustable, inclination angle 0 to 60 degrees
Absorbing Surface: 580 x 375 mm
Replaceable Absorbers: selective coating absorber and blackened coating absorber, both included
Pump: variable flow, adjustable 0 to 30 L/h
Hot Water Tank: tube coil heat exchanger integrated, electrical auxiliary heater 350 W included
External Heat Consumer Connection: two connectors on tank for external loads

Solar Panel: included for light-to-electrical energy conversion and battery charging
Temperature Sensors: 4 sensors, range -100 to 400 degrees C, detecting collector inlet, collector outlet, ambient air, and tank temperatures
Flow Measurement: range 0 to 46 L/h
Illuminance Measurement: range 0 to 2000 W/m2
Data Transfer: USB and Ethernet to PC when DAQ option is selected
DAQ Software: National Instruments LabVIEW based (optional), Windows compatible

Experiments

Design and operation of a simple solar thermal system
Determining the net power
Energy balance on the solar collector
Influence of illuminance, angle of incidence, and flow rate
Determining efficiency curves
Influence of various absorbing surfaces
Functional demonstration model of a solar thermal system

Construction and Design
The Solar Thermal Energy Training System RVX-009 is a self-contained solar thermal training platform built around a distance and tilt-adjustable flat collector with an absorbing surface of 580 x 375 mm and an inclination angle range of 0 to 60 degrees. Two replaceable absorbers are included: one with selective coating and one with blackened coating, enabling comparative collector loss measurements. A lighting unit comprising 12 lamps of 120 W each provides approximately 1400 W total power with ON/OFF intensity control selectable in 6 stages. A pump with adjustable flow from 0 to 30 L/h circulates heat transfer fluid through the solar circuit. A hot water tank with an integrated tube coil heat exchanger receives the transferred heat. An electrical auxiliary heater of 350 W is built into the tank. External heat consumers connect via two tank-side connectors. A solar panel is fitted for simultaneous electrical energy generation and battery charging. Four temperature sensors cover collector inlet, collector outlet, ambient air, and tank, with a range of -100 to 400 degrees C. Flow measurement covers 0 to 46 L/h and illuminance measurement covers 0 to 2000 W/m2. Data transfers to PC via USB or Ethernet with the optional DAQ system.

Software
DAQ software specially designed in the National Instruments LabVIEW environment to measure and calculate experimental results. A set of electronic sensors is included for use with the software. Compatible with any Windows operating system. Data can be transferred via USB or Ethernet. Software is optional.

Scope of Delivery

Experimental unit (x1)
Solar plate panel (x1)
Light source (x1)
Absorber unit (x1)
Set of cables (x1)
Instruction manual (x1)

Optional Accessories

DAQ Software, LabVIEW-based, with electronic sensors

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

Q1. What does the Solar Thermal Energy Training System RVX-009 demonstrate?
The system demonstrates solar thermal heating of domestic water, covering collector energy balance, net power determination, efficiency curves, and the influence of illuminance, angle of incidence, flow rate, and absorber surface type.
Q2. Can the RVX-009 be used in a laboratory without natural sunlight?
Yes. A lighting unit with 12 lamps providing approximately 1400 W total power simulates natural solar radiation for fully controlled indoor experiments.
Q3. What is the purpose of the two replaceable absorbers?
The selective coating absorber and the blackened coating absorber can be swapped to obtain comparative measurements of collector

losses under identical conditions, enabling direct performance comparison.

Q4. Does the RVX-009 also generate electrical energy?

Yes. A solar panel is included to convert light energy into electrical energy and charge a battery simultaneously with thermal operation.

Q5. How are measured values recorded and transferred?

Sensor values for temperature, flow, and illuminance are displayed on the device. With the optional DAQ system, data transfers to a PC via USB or Ethernet for display and further analysis in the LabVIEW-based software.

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