



### SALIENT FEATURES:

- i) Basic model consisting of SPV stands (2 nos) with EMT8, EMT9 & Optimised rack with Rheostat, DC voltmeter/ammeter, DC application panel, MPPT controller with battery.
- ii) NISE/DGET compliant consisting of basic model + AC voltmeter/ammeter, Inverter, Lamp load, PWM charge controller (Optional).
- iii) Advanced model consisting of NISE/DGET compliant + ST1+ ST2 with EMT8 & EMT9.

Table top aluminum profile modular flat demo panel rack with tiltable lockable frame 0-90° in steps to mount various types of SPV modules. Employs 1000W halogen lamps as variable intensity sun simulator.

NISE/DGET curriculum based laboratory experiments supported. Useful for laboratory experimental learning by students in renewable energy basics, energy conservation, charge controller, storage system etc.

Optional single phase (Stand alone or Grid tied) inverter to demonstrate power export using bidirectional multifunction meter.

Closed loop temperature control using peltier module to study temperature effect on solar cell characteristics.

Panels ST1 and ST2 facilitates understanding of underlying physics by measuring carrier life time & spectral response of a solar cell & calibration.

*Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.*



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Removes dependence on costly pyranometer through use of calibration. Certificate from NISE delhi for solar cell supplied. (optional)

Optionally table top electro-scope and hand held solar power meter are supplied.

Set of Instructor Guide & Student Workbook.

### **TECHNICAL SPECIFICATIONS:**

A) Solar cell experiment setup, needs three panels

Consists of table top aluminium profile rack (30x30) size:- 970(H) x 700(W) x 300(D) holding various panels

Solar cell experiment panel (ST1)- 1 No.

Mounted on horizontal member.

50 x 50 mm x 2 nos. crystalline silicon solar cells mounted in aluminium tray with heatsink and fan.

Loading pots (500E and 5K).

Series & parallel combination arrangement.

Cell temp controlled by Peltier module (92W).

PT100 sensor to measure temperature.

12Vdc cooling Fan to maintain heatsink temp (Range 150C - 750C).

Mechanical : 90(H) x 200(W) x 150(D) mm

Net Wt.:- 8Kg

Instrumentation power supply cum multichannel DPM panel (EMT8)- 1 No.

+12V, -12V, @500 mA. & +5V@300 mA.

Multi channel DPM for temperature display.

20 pin FRC power bus to supply power to neighboring

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SCR actuator cum sensor signal conditioning panel (EMT 9)- 1 No.

SCR based AC controller to set intensity of halogen lamp.

Supports signal conditioning circuit for temperature to give output 0-2.5Vdc.  
To control the temperature by controlling IR lamp by P/PI controller & signal conditioning of sensor.

List of experiments

- 1) Study of I-V Characteristics of Solar cell.
  - 2) Study of series combination of solar cells.
  - 3) Study of parallel combination of solar cells.
  - 4) Study of dependency of solar cell I-V characteristics on light intensity.
  - 5) Study of dependency of solar cell I-V characteristics on temperature.
  - 6) Study of shading effect on solar cell parameters.
  - 7) Study of Photovoltaic effect in ubiquitous semiconductor PN junction (diode).
- B) Spectral Response & Carrier Lifetime Measurement setup enables you to study physics of solar cell (ST2)

Stand alone table top kit with built in +/- 12V power supply.

50 x 50 mm x 2 nos. crystalline silicon solar cells mounted in aluminium tray.

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