

Solar Generating and Training System



Features

- * Real-time educational training system.
- * Designed to enable the user to understand the principal of solar generation, solar cell, power converter, and solar generation system and to make experiment of solar generating structure and operation.
- * Designed to enable the user to use easily as system diagram is attached with voltmeter and ammeter on every measurement area.

Specifications:

1. Experimental contents

- a. The characteristics of solar cell modules
- b. The characteristics of power converter
- c. The principle of solar generation
- d. The system of solar generation
- e. The experiment of load devices

2. Solar modules

- Solar plate was designed with high-tech structure in harmony with the surroundings and generated power is used for the power of experimental load equipments, experimental lamps, and generating equipments.
- Solar cell plate was manufactured with the products made of crystalline silicone cell.
- Peak power (Wp): 110W
- Max. power voltage (Vmp): 16.7V
- Max. power current (Imp): 6.60A
- Open circuit voltage (Voc): 21.2V
- Short circuit current (Isc): 7.4A

a. The characteristics of solar cell modules

- Module capacity: Keeping up normal conditions at -40 85°C with 85% of humidity
- Solar cells are single crystal or multi-crystal silicon solar cells for high efficiency and module cells are laminate between high-transmittal strengthen glasses.

b. Solar cell module supporter

- Designed to able to adjust angle with lock devices for the user's convenience.
- Manufactured with aluminum profile (100W solar cell module supporter).
- Installed 8 halogen lamps (12V 50W) with solar cell module transmission structure.
- Applied anti-noise 4 wheels for easy carry.

3. Solar Pyranometer

- ISO classification: second class
- Spectral range: 300 to 3000 nm
- Response time (95%) < 18s
- Irradiance level: 2000 W/m²
- Typical Sensitivity: 10 μ V/W/m²
- Output: 4-20mA (0 to 1600 W/m²)

4. Data Logger

- Memory: 43,000 measurements
- Sample rate: 1 second to 18 hours, user-selectable
- 4 channels
- Support external sensors for temperature, AC current, AC voltage, CO₂, 4-20 mA, 0-2.5 VDC
- Accuracy: ± 2 mV, $\pm 2.5\%$ of absolute reading
- Resolution (12-bit): 0.6 mV
- Output power: 2.5 VDC at 2mA, active only during measurements
- USB connecting port

5. Power converter equipment

- Rating continuous output: 600W
- Max. surge output: 1200W
- Overload protection range: 600 ± 50 W
- AVR (Automatic voltage control)
- Rating fluctuation: ± 5 %
- Frequency: 60 Hz ± 3 %
- Effective rate: 85 %
- Low-voltage input alarm function: DC 10.5V ± 0.5 V
- Low-voltage input interception function: DC 10.0V ± 0.5 V
- High-voltage input interception function: DC 15.0V ± 0.5 V

6. Display panel contents

- DC voltmeter: Solar module voltage, Inverter input voltage
- AC voltmeter: Solar module current, Inverter input current
- AC ammeter: Inverter output voltage
- AC ammeter: Inverter output current (with load)
- Wattmeter: Load power measurement
- Frequency meter: Inverter output frequency
- Scope BNC measurement terminal: 3ea
(Solar sell output voltage, battery output voltage, Inverter output voltage)

7. Load panel

- Lamp (220V): 1ea
- Φ 1 motor (220V 6W): 1 ea (Inc. rotational part)
- Buzzer: 1ea
- Inverter NFB and output : 1ea
- Main NFB: 1ea
- Halogen lamp out (220V socket): 1ea
- 220V socket: 1ea
- Input terminal: 4 Φ 4ea

8. System case

- This system was designed to fit the size of system and storage battery and is used for the safety operation of system and storage battery equipments.
- Structure: Designed with strong structure to protect System and storage cells.
- Easy to carry and good withstand load.
- Has ventilation hole and installed cooling fan
- Waterproof and anti-corrosion
- Consist of 2 battery unit, battery charger, inverter, load panel and display panel
- Size: more than 570(W) \times 1540(H) \times 590(D)

9. Storage battery

- Nominal voltage: 12V	- Load capacity: 100Ah
- Quantity: 2ea	- Temperature: -40~70°C
- Capacity: 100W more	- Storage voltage: 14.5V~14.8V
- Type: Long-life enclosed storage battery	- Storage current; MAX 0.25CA

10. Experiment Worksheets

- Complete experiments covering:
 - Practice of the configuration of Solar Generating System
 - Practice of Characteristic Curve of the Solar Module Photocurrent as a Function of Distance and Angle of Incidence of the Light Source
 - Practice of Battery Charging and DC Loading
 - Practice of Inverter and DL Loading Characteristics
- More than 50 pages of experiment sheets

11. Software

- Window based software for retrieving of data from logger
- Features:
 - o Built in analysis tools
 - o Graph trending
 - o Online status view
 - o Data summary: Max, Min, Avg and Mean radiant value
 - o Export to MS Excel
- Compatible with Windows Vista/XP/2000
- USB 2.0 connection

12. Accessories

- Connection cable: 1 set
- User manual: 1 set

Product comes with 1 year warranty against manufacturer defects and training (local only).

This Solar training system is most suitable for training purpose. With the step by step guide, users will be able to quickly understand the basics of a typical Solar installation, its principal and technology.

For enquiries, please feel free to contact us.

Distributed By:

PRECICON D&C PTE LTD

27 Gul Avenue

Singapore 629667

Tel: (065) 6897 7008

Fax: (065) 6897 8890

Email: sales@precicon.com.sg

Website: www.precicon.com.sg



Precicon D&C Pte Ltd

A Tai Sin Electric Company