

# SOLAR PHOTOVOLTAIC PANEL SYSTEM COMPLETE SET

Model Number : DDC-SPS-1504M



## Description

This unit is specially developed for use in electrical teaching laboratory for the purpose of introducing the student to the The Green Energy Photovoltaic basics of converting sunlight into electrical energy. Experimental set-Up has been designed specifically to study the following experiments topics.

| TECHNICAL SPECIFICATION :   |   |
|---|---|
| <p>1. Solar Panel Module</p> <p>a) Mono crystalline silicon solar module :</p> <ul style="list-style-type: none"> <li>• Power: 100W X 4</li> <li>• Open circuit voltage: 21.7V</li> <li>• Short circuit voltage: 5.6A</li> <li>• Max. power voltage: 17.6V</li> <li>• Max. power current: 5.11A</li> </ul> <p>b) Series and parallel connection of modules.</p> <p>c) Adjust angle 0~45°</p> <p>2. Lighting Device:</p> <p>a) 200W halogen lamp</p> <p>b) Power 240V, 50/60Hz</p> <p>3. Solar Inverter:</p> <ul style="list-style-type: none"> <li>• Rated power: 450 W.</li> <li>• Output voltage: 240V.</li> <li>• Frequency: 50Hz</li> <li>• Waveform: true sine wave (THD&lt; 3%).</li> <li>• Bat. Input Voltage: 21~30vdc.</li> <li>• AC Charge : 29v, 2.7a ±0.4a</li> <li>• Solar Charge : 45vmax, 30mamax</li> <li>• Protection: AC Short, Overload</li> </ul> | <p>4. Battery:</p> <ul style="list-style-type: none"> <li>• Nominal Voltage: 12V.</li> <li>• Capacity: 12AH.</li> </ul> <p>5. Battery Charger:</p> <ul style="list-style-type: none"> <li>• Nominal Voltage: 12V.</li> <li>• Capacity: 12AH.</li> </ul> <p>6. Instruments:</p> <ul style="list-style-type: none"> <li>• Solar module voltage: 0 ~ 500VDC</li> <li>• Solar module current: 0 ~ 10ADC</li> <li>• Battery voltage: 0 ~ 500VDC</li> <li>• Battery current: 0 ~ 10ADC</li> <li>• Single Phase Power Analysis Meter                             <ul style="list-style-type: none"> <li>o Measurement of voltage, current, frequency, active power, reactive power, apparent power, power factor and energy.</li> <li>o High-brightness LED Display.</li> <li>o Accuracy : up to 0.2%</li> <li>o Input voltage: 0 ~ 500V</li> <li>o Input current: 0 ~ 5A</li> </ul> </li> </ul> <p>7. Loading Units:</p> <ul style="list-style-type: none"> <li>• Resistive Load Unit: 0 ~ 100W</li> <li>• Inductive Load Unit: 0 ~ 100W</li> <li>• Capacitive Load Unit: 0 ~ 100W</li> </ul> |
|   | <ul style="list-style-type: none"> <li>❖ VS2024BN 20A rated battery current</li> <li>❖ DC/AC MICRO INVERTER</li> <li>❖ BDG-256</li> <li>❖ LAPTOP - Intel® Core™ i5-5200U Processor</li> <li>❖ PYRANOMETER - Irradiance Range: 0 to 1100 watts/m2 (in full sun)</li> <li>❖ SURFACE TEMPERATURE SENSOR - Temperature range: -25 to 125°C (-13 to 257°F)</li> <li>❖ LOGGER PRO SOFTWARE</li> <li>❖ LABQUEST2</li> <li>❖ SURGE PROTECTION DEVICE</li> <li>❖ DC SWITCH DISCONNECTOR</li> <li>❖ FUSE CARRIER &amp; FUSE LINKS</li> <li>❖ SOLAR BATTERY</li> <li>❖ SOLAR TRAINER WORKSTATION</li> </ul>  |

### **Experiments**

- The characteristics of solar modules.
- The characteristics of series connection of solar modules.
- The characteristics of parallel connection of solar modules.
- Calculation of Voltage and Current of solar modules in series
- Calculation of Voltage and Current of solar modules in parallel
- Calculation of efficiency of solar cells
- Study of V–I curve and power curve of solar cells to find maximum power point
- The characteristics of solar module related to variation in light intensity.
- The characteristics of solar modules in relation to angular from a light device.
- The characteristic of battery.
- The characteristics of inverter.
- The experimental of solar generation system.
- The experimental of solar loading system.
- Applications of Solar cells in domestic purposes

### **Manuals :**

- (1) All manuals are written in English
- (2) Programming Manual (CD Format)
- (3) Teaching Manuals (CD Format)
- (4) Training manual

### **General Terms :**

- (1) Accessories will be provided where applicable
- (2) Manuals & Training will be provided where applicable
- (3) Designs & Specifications are subject to change without notice
- (4) We reserve the right to discontinue the manufacturing of any product.

### **Warranty :**

2 Years

\* Proposed design only, subject to changes without any notice.