PV MASTER INTERNATIONAL LTD.

Clean Energy

Portable Solar Module
Solar PowerCenter
Cooler & Warmer Box
Rechargeable Lead Acid Battery
Solar Charge Controller

CLEAN WORLD
Several solar cells are connected together to provide the specified output voltage of 14 Volts and are laminated in flexible weather-resistant polymers. Portable Solar Module can be used on its own or stuck to the side of a bag (like backpack) for easy carrying.

The Portable Solar Module utilizes the unique Triple-Junction thin-film silicon solar cells. They have excellent high temperature performance (low temperature co-efficient for power loss and voltage loss) and have relatively higher power outputs under diffuse (cloudy) and low light conditions. Each cell is composed of three semi-conductor junctions stacked on top of each other, forming three different sub-cells. The bottom sub-cell absorbs the red light; the middle cell absorbs the yellow/green light and the top cell absorbs the blue light.

Several solar cells are connected together to provide the specified output voltage of 14 Volts and are laminated in flexible weather-resistant polymers. Portable Solar Module can be used on its own or stuck to the side of a bag (like backpack) for easy carrying.

Charging the portable electronic equipment (like, laptop, portable DVD player, portable media player, mobile phone, PDA, iPod, digital camera and etc) is handy by using the Portable Solar Module.

### Specification

<table>
<thead>
<tr>
<th>Electrical Characteristics</th>
<th>Symbol</th>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Power</td>
<td>Pmax</td>
<td>Watt</td>
<td>5</td>
</tr>
<tr>
<td>Voltage at maximum power</td>
<td>Vmp</td>
<td>Volt</td>
<td>14</td>
</tr>
<tr>
<td>Current at maximum power</td>
<td>Imp</td>
<td>Ampere</td>
<td>0.36</td>
</tr>
<tr>
<td>Open Circuit Voltage</td>
<td>Voc</td>
<td>Volt</td>
<td>20</td>
</tr>
<tr>
<td>Short Circuit Current</td>
<td>Isc</td>
<td>Ampere</td>
<td>0.48</td>
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</tbody>
</table>

Note: Electrical characteristics are based on standard test conditions (STC) of 1000 Watt per square meter irradiance, air mass 1.5 and cell temperature 25 degree Centigrade (per ASTM E892)
**Solar PowerCenter**

- Solar Panel of power ratings from 50W-120W
- Waterproof protection
- Virtually unbreakable (No glass)
- Easy to install (No steel structure)
- Easy to operate
- Shadow & high heat tolerant

The Solar PowerCenter consists of a foldable solar panel and charge controller. The thin film solar modules, which are laminated in weather resistant polymers, are fastened onto a PVC coated canvas. The solar charge controller has the advanced control features (like Pulse Width Modulation; protection of over charging and discharging) to maximize the charging performance of the solar panel on a lead acid battery.

Together with a 12 Volt deep cycle lead acid battery and a DC/AC inverter, the Solar PowerCenter can supply power of 110/220 Volt continuously for a period of time to television set, refrigerator, and other electrical appliances. This is particularly useful in rural areas without electrical supply.

The Solar PowerCenter can be used on its own to directly drive a 12 Volt Cooler & Warmer Box for camping and outdoor applications.

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<th><strong>Symbol</strong></th>
<th><strong>Unit</strong></th>
<th><strong>Value</strong></th>
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</thead>
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<tr>
<td>Voltage at maximum power</td>
<td>Vmp</td>
<td>Volt</td>
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<tr>
<td>Current at maximum power</td>
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<td>Ampere</td>
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<tr>
<td>Open Circuit Voltage</td>
<td>Voc</td>
<td>Volt</td>
<td>20 24 24</td>
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<tr>
<td>Short Circuit Current</td>
<td>Isc</td>
<td>Ampere</td>
<td>4.8 4.8 9.6</td>
</tr>
</tbody>
</table>

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Cooler & Warmer Box

- Power rating is 48W
- Voltage: 12V DC
- Capacity: 6L
- Cooling: $20 \pm 2^\circ C$ cooler than surrounding temperature
- Warming: up to $65^\circ C$
- Size: $320\text{mm} \times 175\text{mm} \times 300\text{mm}$

Rechargeable Lead Acid Battery

- Deep cycle
- Voltage: 4V, 6V and 12V
- Capacity at 20-hour rate: 0.5 to 200Ah
- UL-recognized components
- Usable in any position
- Absorbent Glass Mat technology
- Sealed and valve regulated
- Maintenance free

Solar Charge Controller

- Protection of over charge, over discharge, reverse polarity, overload and short circuit
- Identify 12V or 24V voltage automatically
- PWM (Pulse Width Modulation) control

<table>
<thead>
<tr>
<th>Specification</th>
<th>5A</th>
<th>10A</th>
<th>20A</th>
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<tr>
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<td>Self consuming current</td>
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<tr>
<td>Temperature correction</td>
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<tr>
<td>Operating temperature</td>
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<tr>
<td>Weight</td>
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<td>150g</td>
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<tr>
<td>Size</td>
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<td>$145\text{mm} \times 92\text{mm} \times 29\text{mm}$</td>
<td></td>
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</tbody>
</table>

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