

▶ **HIGH PERFORMANCE SOLAR MODULE**

Solar Power Mart produces the best products with the highest quality, manufactured according to German and US quality standards in fully automated ISO 9001 and I4001 certified factories.

With over many years of experience in off grid solar applications, Solar Power Mart delivers top products and technical experience at the highest levels. Solar Power Mart modules are installed in over many industrial systems worldwide.

High quality, high performance, and high reliability – the Solar Power Mart module is designed and built for long-term yield stability and ease of use.

Solar Power Mart solar panels are designed for applications from telecommunications, water pumping, and instrumentation to solar lighting in remote and rural areas. These solar panels are used to supply electricity to areas where there are no electrical grid transmission lines. Thousands of Solar Power Mart stand alone home systems are used in many developing countries, bringing electricity and light to people living in remote villages. The excellent performance of these off grid solar panels serve as an independent power supply solution in high-quality industrial applications.

Solar Power Mart off-grid solar modules come with a 25-year power output warranty and a 5-year materials and workmanship warranty.



# Mono-crystalline 20Wp Solar Module SPM020-M

▶ **EFFICIENCY**

- Low voltage-temperature coefficient ensures high -temperature operation
- Exceptional low-light performance combined with high sensitivity to light enables excellent energy delivery
- Up to 17.00% solar cell efficiency
- Up to 12.50% module efficiency

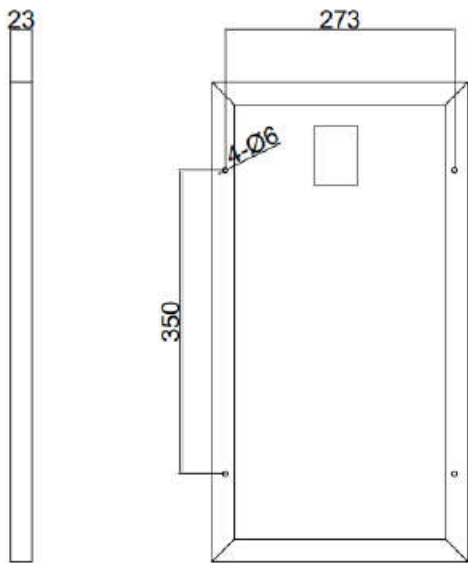
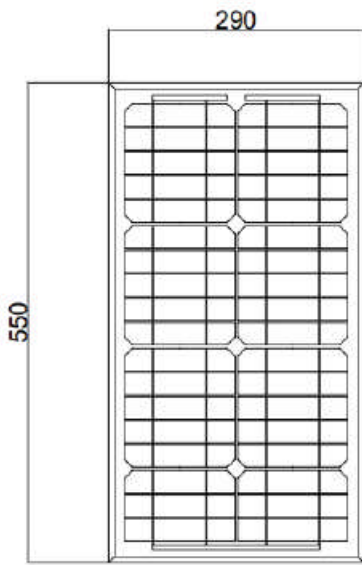
▶ **MATERIALS**

- Highest quality, high-transmission tempered glass provides enhanced stiffness and impact resistance
- Advanced EVA encapsulation system with triple-layer back sheet meets the most stringent safety requirements for high-voltage operation
- A sturdy, anodized aluminum frame allows modules to be easily roof-mounted with a variety of standard mounting systems
- Ultra reliable bypass diodes prevent damage through overheating due to shaded or defective cells
- Innovative, environmentally friendly packaging method using pile of boxes ensures modules arrive in perfect condition

▶ **BENEFITS**

- Manufactured in an ISO 9001:2000 certified plant
- High efficiency, high safety, high reliability
- Output power tolerance of +/-5%
- 25-year limited warranty on power output, 5-year limited warranty on materials and workmanship
- Generate more energy per square meter
- Equipped with weatherproof junction box, flawless operation in wet weather and marine applications
- Resilient to harsh weather conditions
- Optimal panel performance
- Long term product performance

**25 Years Power Output Warranty**



### SPECIFICATIONS

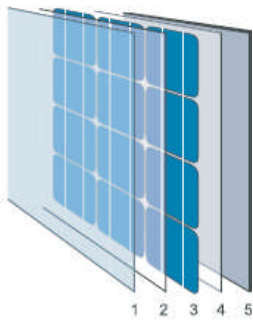
<b>Cells</b>	Mono-crystalline Silicon Solar Cells 125mm x 125mm
<b>Number of cells</b>	36 (18 x 2)
<b>Dimensions</b>	550mm x 290mm x 23mm
<b>Weight</b>	2.5 kg

### ELECTRICAL CHARACTERISTICS

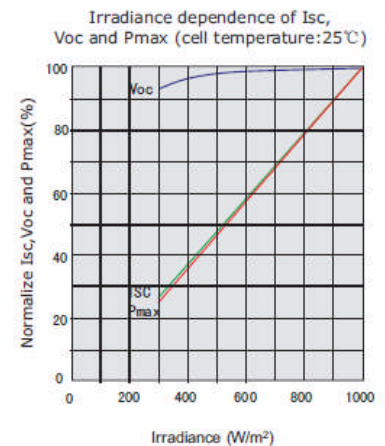
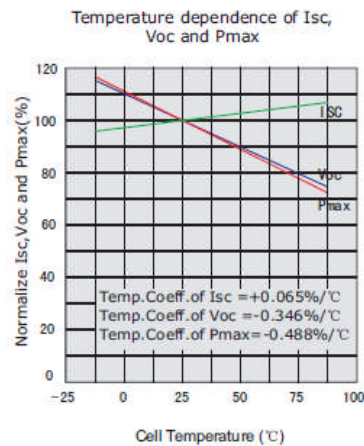
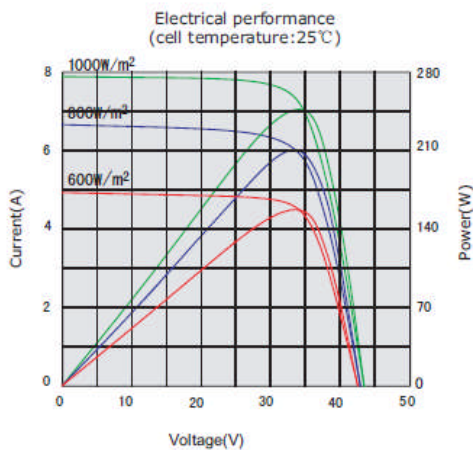
Values at Standard Test Conditions STC (AM1.5, 1,000W/M<sup>2</sup>, 25°C)

<b>Max Power Pmax</b>	20Wp
<b>Max Power Voltage Vmp</b>	18.00V
<b>Max Power Current Imp</b>	1.12A
<b>Open-Circuit Voltage Voc</b>	22.10V
<b>Short-Circuit Current ISC</b>	1.19A
<b>Cell Efficiency</b>	17%
<b>Module Efficiency</b>	12.50%
<b>Maximum System Voltage</b>	DC 1,000V (TUV) / DC 600V (UL)
<b>Power Tolerance</b>	3%
<b>Series Fuse Rating</b>	10A
<b>Temperature Coefficients of Pmax</b>	-0.45%/°C
<b>Temperature Coefficients of Voc</b>	-0.35%/°C
<b>Temperature Coefficients of ISC</b>	0.05%/°C
<b>NOTC</b>	47°C

### ELECTRICAL CHARACTERISTICS



- 1 Tempered glass
- 2 EVA
- 3 Cells
- 4 EVA
- 5 Triple-layer back sheet



**SC ORIGIN (M) SDN BHD LIMITED PRODUCT WARRANTY**

SC Origin warrants its Modules supplied under this Contract to be free from defects in materials and workmanship under normal application, installation, use and service conditions. If the Modules fail to conform to this warranty, then for a period ending sixty (60) months from the delivery date, SC Origin will, at its option, either repair or replace the Modules or refund the purchase price as paid by the BUYER. The remedy set forth in this paragraph shall be the sole and exclusive remedy provided under the Limited Product Warranty ("Limited Warranty") and shall not extend beyond sixty (60) months period set forth herein. Your use of this product constitutes agreement with all provisions of this Limited Warranty.

**PEAK POWER WARRANTY**

**A: 10 years**

SC Origin warrants:

If, within ten (10) years from the delivery date, any PV modules exhibit a power output less than 90% of the minimum Peak Power at STC as specified at the date of delivery in the Product Information Sheet, provided that such loss in power is determined by SC Origin (at its sole and absolute discretion) to be due to defects in material or workmanship, SC Origin will replace such loss in power by either providing to the BUYER additional PV modules to make up such loss in power, or by repairing or replacing the defective PV modules, or by refunding the Purchase Price taking into account a yearly depreciation of ten (10) % of the Purchase Price, at the option of SC Origin.

**B: 25 years**

SC Origin additionally warrants:

If, within (a) the first ten (10) years from the delivery date, any PV modules exhibit a power output less than 90% of the minimum Peak Power at STC as specified at the date of delivery in SC Origin's Product Information Sheet, or (b), within a period of twenty-five (25) years from the delivery date to the BUYER, any PV modules exhibit a power output less than 80% of the minimum Peak Power at STC, provided that such loss in power is determined by SC Origin (at its sole and absolute discretion) to be due to defects in material or workmanship, SC Origin will replace such loss in power by either providing to the BUYER additional PV modules to make up such loss in power, or by repairing or replacing the defective PV modules, or by refunding the Purchase Price taking into account a yearly depreciation of four (4) % of the Purchase Price, at the option of SC Origin. The remedy set forth in this clause shall be the sole and exclusive remedies provided under the Peak Power Warranty.

**EXCLUSIONS AND LIMITATIONS**

A. Warranty claims in any event must be filed within the applicable warranty period.

B. Warranty does not apply to any Modules which in SC Origin absolute judgment have been subjected to:

- Misuse, abuse, neglect or accident;
- Alteration, improper installation or application;
- Non-observance of SC Origin's installation-, users-, and maintenance instructions;
- Repair or modifications by someone other than an approved service technician of SC Origin;
- Power failure surges, lighting, flood, fire, accidental breakage or other events outside SC Origin's control.

C. Warranty does not cover any transportation costs for return of the Modules, or for re-shipment of any repaired or replaced Modules, or cost associated with installation, removal or reinstallation of the Modules.

D. Warranty does not apply under the following conditions:

- War, theft, vandalism, or an act of nature such as fire, floods, rain, wind, lightning, extreme weather, earthquake
- Damage during shipment
- Damages exceeding the total cost of the product

## LIMITED LIABILITY

The Limited Warranty set forth herein are expressly in lieu of and exclude all other expressed or implied warranties, including but not limited to warranties of merchantability and of fitness for particular purpose, use, or application, and all other obligations or liabilities on the part of SC Origin, unless such other warranties, obligations or liabilities are expressly agreed to in writing signed and approved by SC Origin. SC Origin shall have no responsibility or liability whatsoever for damage or injury to persons or property, or for other loss or injury resulting from any cause whatsoever arising out of or related to misuse or installation of the Modules. Under no circumstances shall SC Origin be liable for incidental, consequential or special damages, howsoever caused. Loss of use, loss of profits, loss of production and loss of revenues are therefore specifically excluded.

**Peak Power** is the power in watt peak that a PV module generates in its maximum power point. **STC** is as follows (a) light spectrum of AM 1.5, (b) an irradiation of 1,000W per m<sup>2</sup> and (c) a cell temperature of 25 degrees Centigrade. The measurements are carried out in accordance with IEC60904 as tested at the junction box terminals per the calibration and testing standards of SC Origin valid at the date of manufacture of the PV modules. SC Origin's calibration standards shall be in compliance with the standards applied by international institutions accredited for the purpose.

\*The Limited Warranty defined herein applies only to the Modules which (a) are sold directly by SC Origin or through its authorized local distributor and (b) have SC Origin's logo and product serial number.

