

Polycrystalline Solar Module

Product Overview

USP Module delivers the performance and efficiency required for large power output applications.

Featuring a smooth, all-blue surface and a tight $\pm 3\%$ power tolerance.

Provides an aesthetically attractive and efficient option for residential, commercial, and utility installations.

Technical Features

- 5 year product warranty, 25 year performance warranty*
- Module certified to withstand high snow loads, up to 5.4kN/m²**
- Tight power tolerance: $\pm 3\%$, anti-reflective coating
- Free module recycling through membership in PV Cycle

Warranty

5-year limited product warranty

Limited performance warranty: 10 years at 90% of the minimal rated power output, 25 years at 80% of the minimal rated power out

About USP

USP is a vertically integrated manufacturer of photovoltaic modules designed to meet the demands of the global energy consumer. From high-grade crystalline silicon, to module production, to project development and financing, USP is setting the new standard in innovation and value.

- High reliability, guaranteed quality, and excellent cost-efficiency due to vertically integrated production and control of the supply chain;
- Optimization of product performance and manufacturing processes through a strong commitment to research and development;
- Global presence throughout Europe, North America, and Asia, offering regional technical and sales support.



Electrical Characterist

Electrical Characteristics At Standard Test Conditions (STC)

Maximum Power (P_{max})	220W	225W	230W	235W	240W	245W
Open Circuit Voltage (V_{oc})	36.83V	37.00V	37.17V	37.34V	37.51V	37.68V
Short Circuit Current (I_{sc})	8.14A	8.23A	8.31A	8.40A	8.48A	8.57A
Voltage At Maximum Power (V_{mp})	28.92V	29.12V	29.32V	29.52V	29.72V	29.92V
Current At Maximum Power (I_{mp})	7.61A	7.73A	7.84A	7.96A	8.08A	8.19A
Module Efficiency (%)	13.55	13.86	14.16	14.47	14.78	15.09

P_{max} , V_{oc} , I_{sc} , V_{mp} , and I_{mp} tested at STC defined as irradiance of 1000W/m² at AM 1.5G solar spectrum and temperature 25 ±2°C.
Power tolerance of ±3% refers to measured performance.

Electrical Characteristics At Normal Operating Cell Temperature (NOCT)

Maximum Power (P_{max})	160W	163W	167W	170W	174W	178W
Open Circuit Voltage (V_{oc})	33.02V	33.20V	33.40V	33.60V	33.80V	34.10V
Short Circuit Current (I_{sc})	6.63A	6.68A	6.75A	6.82A	6.90A	6.99A
Voltage At Maximum Power (V_{mp})	26.90V	27.10V	27.20V	27.30V	27.40V	27.60V
Current At Maximum Power (I_{mp})	5.96A	6.04A	6.14A	6.23A	6.35A	6.46A
Module Efficiency (%)	9.85	10.04	10.29	10.47	10.71	10.96

P_{max} , V_{oc} , I_{sc} , V_{mp} , and I_{mp} tested at NOCT defined as irradiance of 800W/m²; wind speed 1m/s.
Power tolerance of ±3% refers to measured performance.

Temperature Characteristics

Normal Operating Cell Temperature (NOCT)	45 ±3°C
Temperature Coefficients OFP	-0.45%/°C
Temperature Coefficients OFV	-0.32%/°C
Temperature Coefficients OFI	-0.04%/°C

Maximum Ratings

Maximum System Voltage	1000V (IEC); 600V (UL)
Series Fuse Rating	10A
Maximum Reverse Current	Series Fuse Rating Multiplied By 1.35

Mechanical Characteristics

Dimensions	1640mm x 990mm x 40mm
Weight	20kg
Frame	Aluminum alloy
Front	Tempered glass
Encapsulant	EVA
Back Cover	Composite sheet
Cell Technology	Polycrystalline
Cell Size	156mm x 156mm
Number of Cells (Pieces)	60(6 x 10)
Junction Box	Protection class IP65 with bypass-diode
Output Cables	Solar cable: 4mm ² ; length 900mm

Packaging and Storage

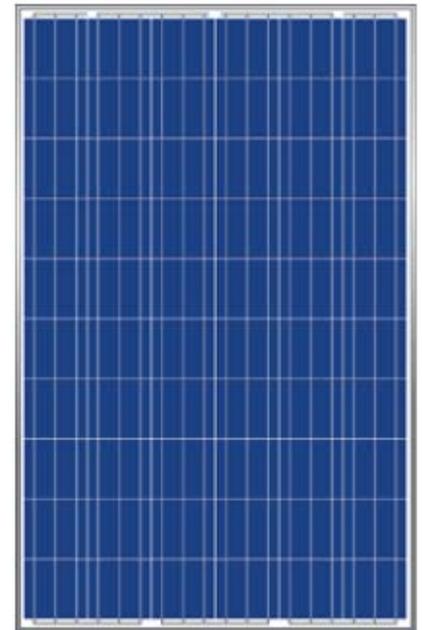
System Design

Operating Temperature	-40°C to 85°C	Storage Temperature	-40°C to 85°C
Hail safety Impact Velocity	25mm at 23m/s	Packaging Configuration	25 pcs per pallet
Fire Safety Classification	Class C	Loading Capacity	
Static Load Wind/snow	5.4kN/m ²	(40 FT. Container)	700 pieces

Performance At Low Irradiance:

The typical relative change in module efficiency at an irradiance of 200W/m² in relation to 1000W/m² (both at 25°C and AM 1.5G spectrum) is less than 5%.

Various Irradiance Levels



Basic Design

