

HSL 60S

4BB 60 Cell Poly Module

Hanwha Solar



Key Features

Anti-PID

Qualified to Withstand PID (Potential Induced Degradation) *

Guaranteed Quality

12 Year Workmanship, 25 Year Linear Performance Warranty **

Predictable Output

Positive Power Sorting, 0 to +5 Watt

Innovative Technology

4BB Cell, Improved Module Efficiency and Power

Harsh Environment Resistance

Verified against Salt Mist and Ammonia Corrosion

Better Performance

Improved Low Light Irradiance Performance and TCOE

Efficient Logistics

Compact Design, Efficient Shipping, Easy Handling

* PID test conditions : module charged -1000V with Al-foil covered surface, 25°C, 168h

** Please refer to Hanwha Solar Product Warranty for details

Quality and Environmental Certificates

- ISO 9001 quality standards and ISO 14001 environmental standards
- OHSAS 18001 occupational health and safety standards
- IEC 61215 & IEC 61730 Application Class A certifications
- Conformity to CE



About Hanwha Solar

Hanwha Solar is a vertically integrated manufacturer of photovoltaic modules designed to meet the needs of the global energy consumer.

- 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

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Electrical Characteristics

Electrical Characteristics at Standard Test Conditions (STC)

Power Class	245 W	250 W	255 W	260 W	265 W	270 W
Maximum Power (P _{max})	245 W	250 W	255 W	260 W	265 W	270 W
Open Circuit Voltage (V _{oc})	37.4 V	37.6 V	37.8 V	38.1 V	38.3 V	38.5 V
Short Circuit Current (I _{sc})	8.62 A	8.72 A	8.86 A	8.98 A	9.12 A	9.22 A
Voltage at Maximum Power (V _{mpp})	30.2 V	30.5 V	30.7 V	30.9 V	31.1 V	31.2 V
Current at Maximum Power (I _{mp})	8.12 A	8.20 A	8.31 A	8.42 A	8.53 A	8.66 A
Module Efficiency (%)	14.7 %	15.0 %	15.3 %	15.6 %	15.9 %	16.2 %

P_{max}, V_{oc}, I_{sc}, V_{mpp} and I_{mp} tested at Standard Testing Conditions (STC) defined as irradiance of 1000W/m² at AM 1.5 solar spectrum and a temperature of 25±2°C. Module power class have positive power sorting: 0 to +5W. Measurement tolerance: +/- 3% (P_{max})

Electrical Characteristics at Nominal Operating Cell Temperature (NOCT)

Power Class	245 W	250 W	255 W	260 W	265 W	270 W
Maximum Power (P _{max})	180 W	184 W	187 W	191 W	196 W	199 W
Open Circuit Voltage (V _{oc})	35.0 V	35.1 V	35.4 V	35.7 V	35.9 V	36.1 V
Short Circuit Current (I _{sc})	6.97 A	7.05 A	7.16 A	7.26 A	7.37 A	7.45 A
Voltage at Maximum Power (V _{mpp})	27.8 V	28.0 V	28.2 V	28.4 V	28.6 V	28.7 V
Current at Maximum Power (I _{mp})	6.48 A	6.54 A	6.64 A	6.73 A	6.84 A	6.92 A
Module Efficiency (%)	13.5 %	13.7 %	14.0 %	14.3 %	14.7 %	14.9 %

P_{max}, V_{oc}, I_{sc}, V_{mpp} and I_{mp} tested at Nominal Operating Cell Temperature (NOCT) defined as irradiance of 800W/m²; 20°C; Wind speed 1m/s. Measurement tolerance: +/- 3% (P_{max})

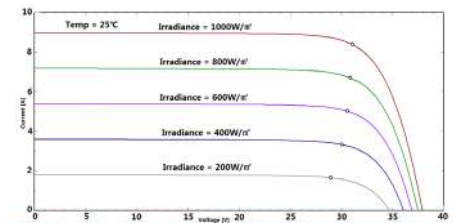
Nomenclature:

HSL 60 Poly: HSL60P6-PC-1-xxx
xxx represents the power class

Performance at Low Irradiance:

The typical efficiency at 200 W/m² in relation to 1000 W/m², (25°C, AM 1.5) is at least 97 % of STC efficiency.

Various Irradiance Levels



Temperature Characteristics

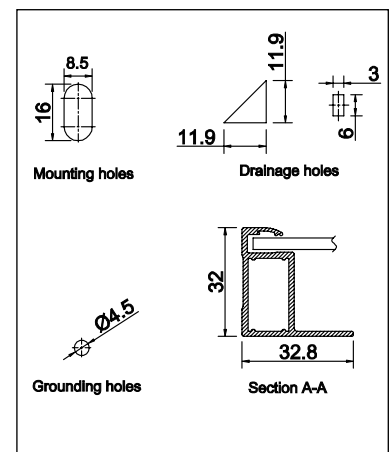
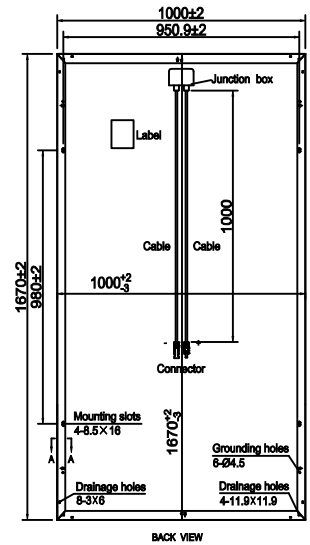
Nominal Operating Cell Temperature (NOCT)	45°C + / - 3°C
Temperature Coefficients of P _{max}	-0.41 % / °C
Temperature Coefficients of V _{oc}	-0.31 % / °C
Temperature Coefficients of I _{sc}	+0.055% / °C

Maximum Ratings

Maximum System Voltage	1000 V (IEC)
Series Fuse Rating	15 A
Maximum Reverse Current	Series fuse rating multiplied by 1.35

Mechanical Characteristics

Dimensions	1670mm × 1000mm × 32 mm
Weight	18.5±0.5kg
Frame	Aluminum-alloy
Front	3.2mm tempered glass with anti reflective coating
Encapsulant	EVA
Back Cover	Composite sheet
Cell Technology	4 busbar Polycrystalline
Cell Size	156 mm × 156 mm (6 in × 6 in)
Number of Cells (Pieces)	60 (6 × 10)
Junction Box	Protection class IP 67
Output Cables	Solar cable: 4 mm ² ; length: 1000 mm
Connector	H4 Compatible



System Design

Operating Temperature	- 40 °C to 85 °C
Hail Safety Impact Velocity	25 mm at 23 m/s
Fire Safety Classification (IEC 61730)	Class C
Static Load Wind / Snow	4000Pa/5400Pa

Packaging and Storage

Storage Temperature	- 40 °C to 85 °C
Packaging Configuration	32 pieces per pallet
Loading Capacity (40 ft. HQ Container)	832 pieces