Hanwha SolarOne

Five Key Features

1. Guaranteed quality: 5 year product warranty, 25 year performance warranty *
2. Predictable output: Tight power tolerance of ± 3%
3. Innovative solutions: Anti-reflecting coating for high sunlight absorption
4. Robust design: Module certified to withstand high snow loads, up to 5.4 kN/m^2 **
5. Long term responsibility: Free module recycling in PV Cycle member countries

*Please refer to Hanwha SolarOne Product Warranty for details.
**Please refer to Hanwha SolarOne module Installation Guide.

Quality and Environmental Certificates

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

About Hanwha SolarOne

Hanwha SolarOne 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.

Electrical Characteristics

Electrical Characteristics at Standard Test Conditions (STC)

Power Class	225W	230W	235W	240W	245W	250W
Maximum Power (P_{max})	225W	230W	235W	240W	245W	250W
Open Circuit Voltage (V_{oc})	36.7V	36.8V	36.8V	37.0V	37.1V	37.2V
Short Circuit Current (I_{sc})	8.18A	8.34A	8.44A	8.54A	8.64A	8.74A
Voltage at Maximum Power (V_{mpp})	29.9V	30.0V	30.1V	30.2V	30.3V	30.4V
Current at Maximum Power (I_{mpp})	7.53A	7.67A	7.81A	7.95A	8.08A	8.22A
Module Efficiency	13.6%	13.9%	14.2%	14.5%	14.8%	15.1%

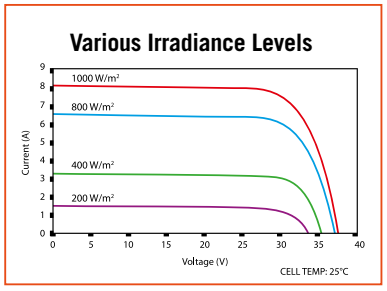
P_{max}, V_{oc}, I_{sc}, V_{mpp}, and I_{mpp} tested at STC defined as irradiance of 1000W/m² at AM 1.5 solar spectrum and temperature 25 ±2°C.
Power tolerance of ±3% refers to measured performance.

Electrical Characteristics at Normal Operating Cell Temperature (NOCT)

Power Class	225W	230W	235W	240W	245W	250W
Maximum Power (P_{max})	163W	167W	170W	174W	178W	182W
Open Circuit Voltage (V_{oc})	33.1V	33.3V	33.5V	33.7V	34.1V	34.2V
Short Circuit Current (I_{sc})	6.50A	6.66A	6.74A	6.84A	6.99A	7.07A
Voltage at Maximum Power (V_{mpp})	27.1V	27.2V	27.3V	27.4V	27.6V	27.7V
Current at Maximum Power (I_{mpp})	6.02A	6.14A	6.23A	6.35A	6.46A	6.58A
Module Efficiency	12.3%	12.6%	12.9%	13.2%	13.5%	13.8%

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

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 1.5 spectrum) is less than 5%.



Temperature Characteristics

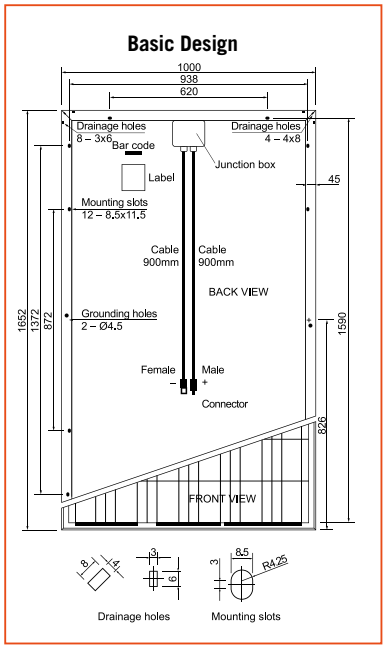
Normal Oparating Cell Temperature (NOCT)	45°C ±3°C
Temperature Coefficients of P	-0.45%/°C
Temperature Coefficients of V	-0.32%/°C
Temperature Coefficients of I	+0.04%/°C

Maximum Ratings

Maximum System Voltage	1000V (IEC); 600V (UL)
Series Fuse Rating	15A
Maximum Reverse Current	Series fuse rating multiplied by 1.35

Mechanical Characteristics

Dimensions	1652mm x 1000mm x 45mm (65.04 in x 39.37 in x 1.77 in)
Weight	21kg (46.2 lbs)
Frame	Aluminum alloy
Front	Tempered glass
Encapsulant	EVA
Back cover	Composite sheet
Cell Technology	Polycrystalline
Cell Size	156mm x 156mm (6.14 in x 6.14 in)
Number of Cells (Pieces)	60 (6 x 10)
Junction Box	Protection class IP65 with bypass-diode
Output Cables	Solar cable: 4mm²; length 900mm (35.4 in)
Connector	Linyang LY0706-2



System Design

Operating Temperature	-40°C to 85°C
Hail Safety Impact Velocity	25mm at 23m/s
Fire Safety Classification (IEC 61730)	Class C
Static Load Wind/Snow	2400Pa /5400Pa

Packaging and Storage

Storage Temperature	-40°C to 85°C
Packaging Configuration	22 pieces per pallet
Loading Capacity (40 ft. HQ Container)	572 pieces