



Five Key Features

- 1** Guaranteed quality: 5 year product warranty, 25 year performance warranty *
- 2** Predictable output: Tight power tolerance of $\pm 3\%$
- 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

SF160 Mono x-tra
Black Diamond

Electrical Characteristics at Standard Test Conditions (STC)

Power Class	170W	175W	180W	185W	190W	195W
Maximum Power (P_{max})	170W	175W	180W	185W	190W	195W
Open Circuit Voltage (V_{oc})	43.8V	44.0V	44.3V	44.6V	44.8V	45.0V
Short Circuit Current (I_{sc})	5.36A	5.48A	5.59A	5.68A	5.78A	5.85A
Voltage at Maximum Power (V_{mpp})	35.0V	35.2V	35.4V	35.6V	35.8V	36.0V
Current at Maximum Power (I_{mpp})	4.86A	4.98A	5.11A	5.21A	5.33A	5.42A
Module Efficiency	13.3%	13.7%	14.1%	14.5%	14.9%	15.3%

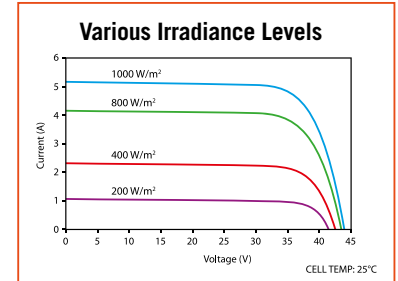
P_{max} , V_{oc} , I_{sc} , V_{mpp} , and I_{mpp} tested at STC defined as irradiance of 1000W/m² at AM 1.5 solar spectrum and temperature 25 ±2°C. Power tolerance of ±3% refers to measured performance.

Electrical Characteristics at Normal Operating Cell Temperature (NOCT)

Power Class	170W	175W	180W	185W	190W	195W
Maximum Power (P_{max})	122W	126W	130W	133W	137W	140W
Open Circuit Voltage (V_{oc})	40.3V	40.5V	40.8V	41.0V	41.2V	41.4V
Short Circuit Current (I_{sc})	4.34A	4.44A	4.53A	4.60A	4.68A	4.74A
Voltage at Maximum Power (V_{mpp})	31.5V	31.7V	31.9V	32.0V	32.2V	32.4V
Current at Maximum Power (I_{mpp})	3.89A	3.98A	4.09A	4.17A	4.26A	4.34A
Module Efficiency	11.9%	12.3%	12.7%	13.0%	13.4%	13.7%

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

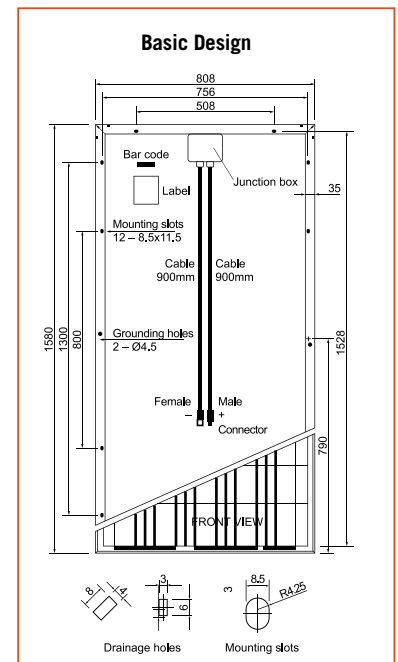
Normal Operating Cell Temperature (NOCT)	45°C ±3°C
Temperature Coefficients of P	-0.44%/°C
Temperature Coefficients of V	-0.33%/°C
Temperature Coefficients of I	+0.03%/°C

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	1580mm x 808mm x 35mm (62.2 in x 31.8 in x 1.38 in)
Weight	13kg (28.6 lbs)
Frame	Aluminum alloy
Front	Tempered glass
Encapsulant	EVA
Back cover	Composite sheet
Cell Technology	Monocrystalline
Cell Size	125mm x 125mm (4.92 in x 4.92 in); small chamfer angle
Number of Cells (Pieces)	72 (6 x 12)
Junction Box	Protection class IP65 with bypass-diode
Output Cables	Solar cable: 4mm ² ; 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	28 pieces per pallet
Loading Capacity (40 ft. HQ Container)	784 pieces