



Five Key Features

- 1 Guaranteed quality: 5 year product warranty, 25 year performance warranty *
- 2 Predictable output: Positive power sorting of 0 to + 5 W
- 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/m² **
- 5 Long term responsibility: Free module recycling in PV Cycle member countries

* Please refer to Hanwha SolarOne Co., Ltd. Product Warranty for details.

** Please refer to Hanwha SolarOne Co., Ltd. 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 Co., Ltd.

Hanwha SolarOne Co., Ltd. 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.

SF160 | Mono x-tra Black Diamond

Electrical Characteristics

Electrical Characteristics at Standard Test Conditions (STC)

| Power Class | 170 W | 175 W | 180 W | 185 W | 190 W | 195 W |
|-------------------------------------|--------|--------|--------|--------|--------|--------|
| Maximum Power (P_{max}) | 170 W | 175 W | 180 W | 185 W | 190 W | 195 W |
| Open Circuit Voltage (V_{oc}) | 44.2 V | 44.4 V | 44.6 V | 44.8 V | 45.0 V | 45.2 V |
| Short Circuit Current (I_{sc}) | 5.18 A | 5.26 A | 5.35 A | 5.47 A | 5.56 A | 5.67 A |
| Maximum Power Voltage (V_{mpp}) | 35.9 V | 36.1 V | 36.3 V | 36.5 V | 36.7 V | 36.9 V |
| Maximum Power Current (I_{mpp}) | 4.76 A | 4.85 A | 4.96 A | 5.09 A | 5.18 A | 5.29 A |
| 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 1000 W/m² at AM 1.5 solar spectrum and temperature 25 ± 2 °C.
Electrical Characteristics: measurement tolerance of ± 3 %.

Electrical Characteristics at Normal Operating Cell Temperature (NOCT)

| Power Class | 170 W | 175 W | 180 W | 185 W | 190 W | 195 W |
|-------------------------------------|--------|--------|--------|--------|--------|--------|
| Maximum Power (P_{max}) | 124 W | 128 W | 132 W | 136 W | 139 W | 143 W |
| Open Circuit Voltage (V_{oc}) | 41.0 V | 41.2 V | 41.4 V | 41.7 V | 41.9 V | 42.1 V |
| Short Circuit Current (I_{sc}) | 4.28 A | 4.33 A | 4.42 A | 4.50 A | 4.56 A | 4.64 A |
| Maximum Power Voltage (V_{mpp}) | 32.5 V | 32.7 V | 32.9 V | 33.1 V | 33.3 V | 33.5 V |
| Maximum Power Current (I_{mpp}) | 3.82 A | 3.91 A | 4.01 A | 4.11 A | 4.18 A | 4.27 A |
| Module Efficiency (%) | 12.1 % | 12.5 % | 12.9 % | 13.3 % | 13.6 % | 14.0 % |

P_{max} , V_{oc} , I_{sc} , V_{mpp} and I_{mpp} tested at NOCT defined as irradiance of 800 W/m²; wind speed 1 m/s.
Electrical Characteristics: measurement tolerance of ± 3 %.

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

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|-------------------------|---------------------------------------|
| Maximum System Voltage | 1000 V (IEC) |
| Series Fuse Rating | 10 A |
| Maximum Reverse Current | Series fuse rating multiplied by 1.35 |

Mechanical Characteristics

| | |
|--------------------------|--|
| Dimensions | 1580 mm × 808 mm × 35 mm |
| Weight | 13 kg |
| Frame | Aluminum alloy |
| Front | Tempered glass |
| Encapsulant | EVA |
| Back Cover | Composite sheet |
| Cell Technology | Monocrystalline |
| Cell Size | 125 mm × 125 mm |
| Number of Cells (Pieces) | 72 (6 × 12) |
| Junction Box | Protection class IP67 with bypass-diode |
| Output Cables | Solar cable: 4 mm ² ; length 900 mm |
| Connector | Linyang LY0706-2 |

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 | 2400 Pa / 5400 Pa |

Packaging and Storage

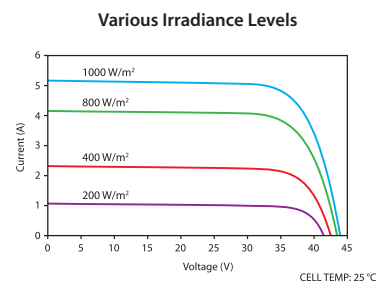
| | |
|-------------------------------------|----------------------|
| Storage Temperature | - 40 °C to 85 °C |
| Packaging Configuration | 28 pieces per pallet |
| Loading Capacity (40 ft. Container) | 784 pieces |

Nomenclature

Full product name:
SF160-24-1MxxxL-B
xxx represents the power class

Performance at Low Irradiance:

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



Basic Design

