

Five Key Features

- 1 Guaranteed quality: 12 year product warranty, 25 year linear performance warranty *
- 2 Predictable output: Positive power sorting of 0 to + 5 W
- 3 Innovation solutions: UL certified up to 1000V for optimized system designs
- 4 Robust design: Module certified to withstand high snow loads, up to 5400 Pa **
- 5 Tariff free: High performance Taiwan cells

* Please refer to Hanwha Solar Product Warranty for details.

** Please refer to Hanwha Solar module Installation Guide.

Quality and Environmental Certificates

- ISO 9001 quality standards and ISO 14001 environmental standards
- OHSAS 18001 occupational health and safety standards
- UL 1703 600V and 1000V certification
- CEC listed



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

Electrical Characteristics

Electrical Characteristics at Standard Test Conditions (STC)

| Power Class | 235 W | 240 W | 245 W | 250 W | 255 W |
|--|--------|--------|--------|--------|--------|
| Maximum Power (P_{max}) | 235 W | 240 W | 245 W | 250 W | 255 W |
| Open Circuit Voltage (V_{oc}) | 36.8 V | 37.1 V | 37.2 V | 37.4 V | 37.5 V |
| Short Circuit Current (I_{sc}) | 8.65 A | 8.75 A | 8.8 A | 8.89 A | 8.95 A |
| Voltage at Maximum Power (V_{mpp}) | 29.1 V | 29.5 V | 29.7 V | 30 V | 30.1 V |
| Current at Maximum Power (I_{mpp}) | 8.05 A | 8.13 A | 8.25 A | 8.33 A | 8.47 A |
| Module Efficiency (%) | 14.2 % | 14.5 % | 14.8 % | 15.1 % | 15.4 % |

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 | 235 W | 240 W | 245 W | 250 W | 255 W |
|--|--------|--------|--------|--------|--------|
| Maximum Power (P_{max}) | 176 W | 180 W | 184 W | 188 W | 192 W |
| Open Circuit Voltage (V_{oc}) | 34.3 V | 34.6 V | 34.7 V | 34.9 V | 35.0 V |
| Short Circuit Current (I_{sc}) | 7.00 A | 7.08 A | 7.12 A | 7.19 A | 7.24 A |
| Voltage at Maximum Power (V_{mpp}) | 27.1 V | 27.5 V | 27.7 V | 28.0 V | 28.1 V |
| Current at Maximum Power (I_{mpp}) | 6.51 A | 6.58 A | 6.67 A | 6.74 A | 6.85 A |
| Module Efficiency (%) | 14.2 % | 14.5 % | 14.8 % | 15.1 % | 15.4 % |

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 | -0.48 % / °C |
| Temperature Coefficients of V | -0.35 % / °C |
| Temperature Coefficients of I | +0.05% / °C |

Maximum Ratings

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

Mechanical Characteristics

| | |
|--------------------------|---|
| Dimensions | 1652 mm × 1000 mm × 45 mm |
| Weight | 21 kg |
| Frame | Aluminum alloy, available in silver or black finish |
| Front | Tempered glass |
| Encapsulant | EVA |
| Back Cover | White or black back sheet |
| Cell Technology | Polycrystalline (Taiwan) |
| Cell Size | 156 mm × 156 mm (6 in × 6 in) |
| Number of Cells (Pieces) | 60 (6 × 10) |
| Junction Box | Protection class IP67 with bypass-diode |
| Output Cables | Solar cable: 4 mm ² ; length 900 mm |
| Connector | Amphenol H4 |

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 | 22 pieces per pallet |
| Loading Capacity (40 ft. HQ Container) | 572 pieces |

Nomenclature

eg.HSL60P6-PA-0-245TW

HSL60P6-PA- -xxx

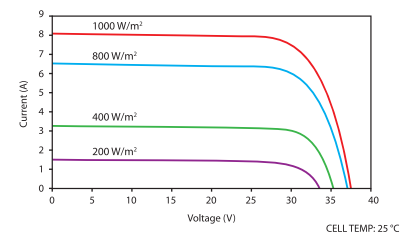
| Code | Certification | Code | Frame / Backsheet |
|------|---------------|------|-------------------|
| 0 | 600 V (UL) | T | Silver / White |
| 4 | 1000 V (UL) | TW | Black / White |
| | | TB | Black / Black |

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 %.

Various Irradiance Levels



Basic Design

