



Key Features

- 1 Guaranteed quality: 10 year product warranty, 25 year linear performance warranty *
- 2 Predictable output: Positive power sorting of 0 to + 5 W
- 3 Robust design: Module certified to withstand high snow loads, up to 5400Pa**
- 4 Superior Low-Light Performance: High performance during mornings and evenings

* 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
- KOTRA Green seal of excellence
- UL1703 certification



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
Maximum Power (P_{max})	235 W	240 W	245 W	250 W
Open Circuit Voltage (V_{oc})	37.1 V	37.3 V	37.4 V	37.5 V
Short Circuit Current (I_{sc})	8.51 A	8.58 A	8.63 A	8.67 A
Voltage at Maximum Power (V_{mpp})	29.8 V	30.0 V	30.4 V	30.8 V
Current at Maximum Power (I_{mpp})	7.89 A	8.02 A	8.08 A	8.14 A
Module Efficiency (%)	14.12 %	14.42 %	14.72 %	15.03 %
Cell Efficiency (%)	16.59 %	16.94 %	17.29 %	17.65 %

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
Maximum Power (P_{max})	171 W	175 W	178 W
Open Circuit Voltage (V_{oc})	34.1 V	34.3 V	34.4 V
Short Circuit Current (I_{sc})	6.88 A	6.94 A	6.98 A
Voltage at Maximum Power (V_{mpp})	27.0 V	27.1 V	27.5 V
Current at Maximum Power (I_{mpp})	6.33 A	6.43 A	6.48 A
Module Efficiency (%)	10.28 %	10.52 %	10.70 %

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

Temperature Coefficients of P	- 0.43 %/°C
Temperature Coefficients of V	- 0.31 %/°C
Temperature Coefficients of I	+ 0.056 %/°C

Maximum Ratings

Maximum System Voltage	600 V (UL & CUL)
Series Fuse Rating	15 A
Maximum Reverse Current	1.35×Fuse rating

Mechanical Characteristics

Dimensions	1665mm × 999mm × 50 mm
Weight	20kg
Frame	Anodized aluminum frame
Front	3.2mm low iron tempered glass
Encapsulant	EVA
Back Cover	White back sheet
Cell Technology	Poly-Si
Cell Size	156mm × 156 mm
Number of Cells (Pieces)	60 (6 × 10)
Junction Box	Protection class IP65, with bypass-diode
Output Cables	Solar cable: 4 mm ² ; length: 1000 mm
Connector	MC4 compatible

System Design

Operating Temperature	- 40 °C to 85 °C
Hail Safety Impact Velocity	Hailstone (25mm) at 23m/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 Method	Sleeve packing

Nomenclature

Full product name:
HSL60P-PA-0-xxxK(UL)
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 1.5G spectrum) is less than 5 %.

