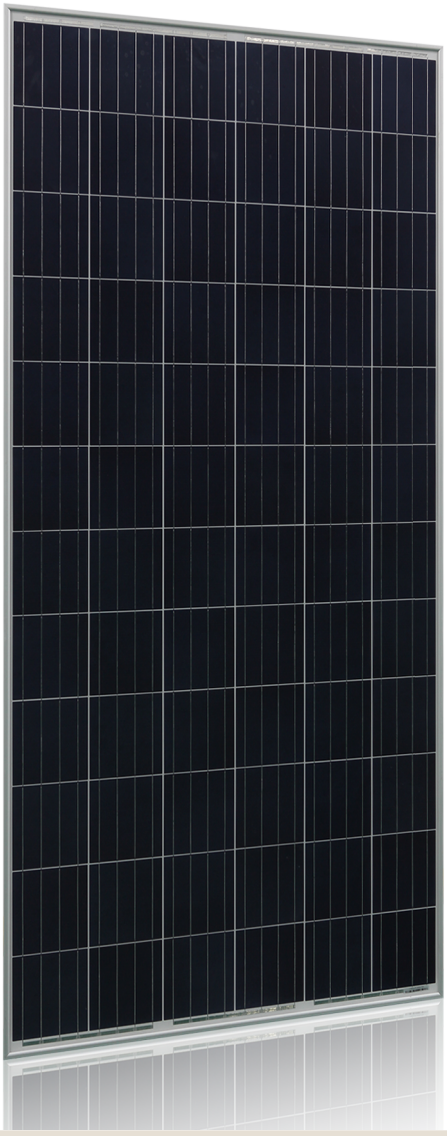
# HSL 72S
## 4BB 72 Cell Poly Module

Hanwha Solar



## Key Features

**Anti-PID**
Qualified to Withstand PID (Potential Induced Degradation) *

**Guaranteed Quality**
12 Year Workmanship, 25 Year Linear Performance Warranty **

**Predictable Output**
Positive Power Sorting, 0 to +5 Watt

**Innovative Technology**
4BB Cell, Improved Module Efficiency and Power

**Harsh Environment Resistance**
Verified against Salt Mist and Ammonia Corrosion

**Better Performance**
Improved Low Light Irradiance Performance and TCOE

**Efficient Logistics**
Compact Design, Efficient Shipping, Easy Handling

* PID test conditions : module charged -1000V with Al-foil covered surface, 25 °C, 168h
** Please refer to Hanwha Solar Product Warranty for details

## Quality and Environmental Certificates

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

## 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

# HSL 72S

## 4BB 72 Cell Poly Module

# Electrical Characteristics

### Electrical Characteristics at Standard Test Conditions (STC)

| Power Class | 290 W | 295 W | 300 W | 305 W | 310 W | 315 W |
|---|---|---|---|---|---|---|
| Maximum Power ($P_{max}$) | 290 W | 295 W | 300 W | 305 W | 310 W | 315 W |
| Open Circuit Voltage ($V_{oc}$) | 44.4 V | 44.6 V | 44.8 V | 45.0 V | 45.1 V | 45.3 V |
| Short Circuit Current ($I_{sc}$) | 8.49 A | 8.60 A | 8.70 A | 8.81 A | 8.91 A | 9.02 A |
| Voltage at Maximum Power ($V_{mpp}$) | 36.2 V | 36.4 V | 36.6 V | 36.8 V | 37.1 V | 37.3 V |
| Current at Maximum Power ($I_{mpp}$) | 8.02 A | 8.11 A | 8.20 A | 8.29 A | 8.36 A | 8.45 A |
| Module Efficiency (%) | 14.8 % | 15.1 % | 15.3 % | 15.6 % | 15.8 % | 16.1 % |

$P_{max}$, $V_{oc}$, $I_{sc}$, $V_{mpp}$ and $I_{mpp}$ tested at Standard Testing Conditions (STC) defined as irradiance of 1000W/m² at AM 1.5 solar spectrum and a temperature of 25±2°C. Module power class have positive power sorting: 0 to +5W. Measurement tolerance: +/- 3% ($P_{max}$)

### Electrical Characteristics at Nominal Operating Cell Temperature (NOCT)

| Power Class | 290 W | 295 W | 300 W | 305 W | 310 W | 315 W |
|---|---|---|---|---|---|---|
| Maximum Power ($P_{max}$) | 213 W | 217 W | 221 W | 224 W | 228 W | 234 W |
| Open Circuit Voltage ($V_{oc}$) | 41.6 V | 41.8 V | 42.0 V | 42.2 V | 42.3 V | 42.4 V |
| Short Circuit Current ($I_{sc}$) | 6.86 A | 6.95 A | 7.03 A | 7.12 A | 7.20 A | 7.29 A |
| Voltage at Maximum Power ($V_{mpp}$) | 33.3 V | 33.5 V | 33.6 V | 33.8 V | 34.1 V | 34.4 V |
| Current at Maximum Power ($I_{mpp}$) | 6.40 A | 6.48 A | 6.58 A | 6.63 A | 6.69 A | 6.81 A |
| Module Efficiency (%) | 13.6 % | 13.9 % | 14.1 % | 14.3 % | 14.6 % | 15.0 % |

$P_{max}$, $V_{oc}$, $I_{sc}$, $V_{mpp}$ and $I_{mpp}$ tested at Nominal Operating Cell Temperature (NOCT) defined as irradiance of 800W/m²; 20°C; Wind speed 1m/s. Measurement tolerance: +/- 3% ($P_{max}$)

### Temperature Characteristics

| | |
|---|---|
| Normal Operating Cell Temperature (NOCT) | 45°C + / - 3°C |
| Temperature Coefficients of Pmax | - 0.41 % / °C |
| Temperature Coefficients of Voc | - 0.31 % / °C |
| Temperature Coefficients of Isc | + 0.055 % / °C |

### Maximum Ratings

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

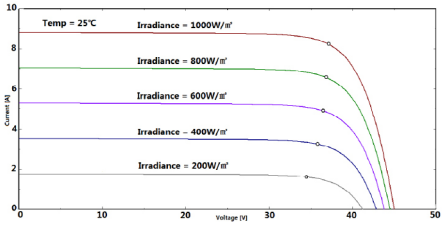
### Nomenclature:

Full product name:
HSL72P6-PC-1-xxx
xxx represents the power class

### Performance at Low Irradiance:

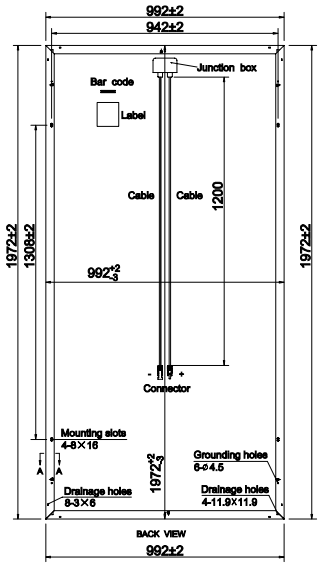
The typical efficiency at 200 W/m² in relation to 1000 W/m², (25°C, AM 1.5) is at least 97 % of STC efficiency.

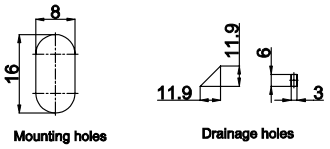
**Various Irradiance Levels**

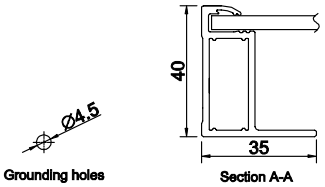



# Mechanical Characteristics

| | |
|---|---|
| Dimensions | 1972mm ×992mm ×40 mm |
| Weight | 23±0.5kg |
| Frame | Aluminum-alloy |
| Front | 3.2mm tempered glass with anti reflective coating |
| Encapsulant | EVA |
| Back Cover | Composite sheet |
| Cell Technology | 4 busbar Polycrystalline |
| Cell Size | 156 mm × 156 mm (6 in ×6 in) |
| Number of Cells (Pieces) | 72 (6 × 12) |
| Junction Box | Protection class IP 67 |
| Output Cables | Solar cable: 4 mm²; length: 1200 mm |
| Connector | 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 | 4000Pa/5400Pa |

# Packaging and Storage

| | |
|---|---|
| Storage Temperature | – 40 °C to 85 °C |
| Packaging Configuration | 25 pieces per pallet |
| Loading Capacity (40 ft. HQ Container) | 550 pieces |

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