# HYUNDAI SOLAR MODULE

**UH SERIES**

**M3+ Shingled Techonology**

HiE-S465UH

Shingled Technology

For Utility-Scale Applications

More Power Generation In Low Light

## M3+ PERC Shingled

M3+ PERC Shingled Technology provides ultra-high efficiency with better performance in low irradiation. Maximizes installation capacity in limited space.

## Mechanical Strength

Tempered glass and reinforced frame design withstand rigorous weather conditions such as heavy snow and strong wind.

## Reliable Warranty

Global brand with powerful financial strength provide reliable 25-year warranty. **(Australia and Europe Only)**

## UL / VDE Test Labs

Hyundai's R&D center is an accredited test laboratory of both UL and VDE.

### Hyundai's Warranty Provisions

- 25-Year Product Warranty
  - On materials and workmanship **Australia and Europe Only**
- 25-Year Performance Warranty
  - Initial year: 98.0%
  - Linear warranty after second year: with 0.55%p annual degradation, 84.8% is guaranteed up to 25 years

### About Hyundai Energy Solutions Co., Ltd

Established in 1972, Hyundai Heavy Industries Group is one of the most trusted names in the heavy industries sector and is a Fortune 500 company. As a global leader and innovator, Hyundai Heavy Industries is committed to building a future growth engine by developing and investing heavily in the field of renewable energy.

As a core energy business entity of HHI, Hyundai Energy Solutions has strong pride in providing high-quality PV products to more than 3,000 customers worldwide.

### Certification

HYUNDAI ENERGY SOLUTIONS

## Electrical Characteristics

| | | Mono-Crystalline Module (HiE-S____UH) |
|---|---|---|
| | | 465 |
| Maximum Rating Power(Pm) | W | 465 |
| Open Circuit Voltage(Voc) | V | 49.4 |
| Short Circuit Current(Isc) | A | 12.03 |
| Maximum Power Voltage(Vmp) | V | 40.9 |
| Maximum Power Current(Imp) | A | 11.37 |
| Module Efficiency | % | 20.7 |
| Maximum System Voltage | V | DC 1,500 |
| Temperature Coefficient of Pmax | %/°C | -0.340 |
| Temperature Coefficient of Voc | %/°C | -0.270 |
| Temperature Coefficient of Isc | %/°C | +0.040 |

*All data at STC(Standard Test Conditions). Above data may be changed without prior notice.
*Tolerance of Pmax:0~+5W.
*Measuring uncertainty of power:±3%.
* Performance deviation of Voc [V], Isc [A], Vm[V] and Im[A]:±3%.

## Mechanical Characteristics

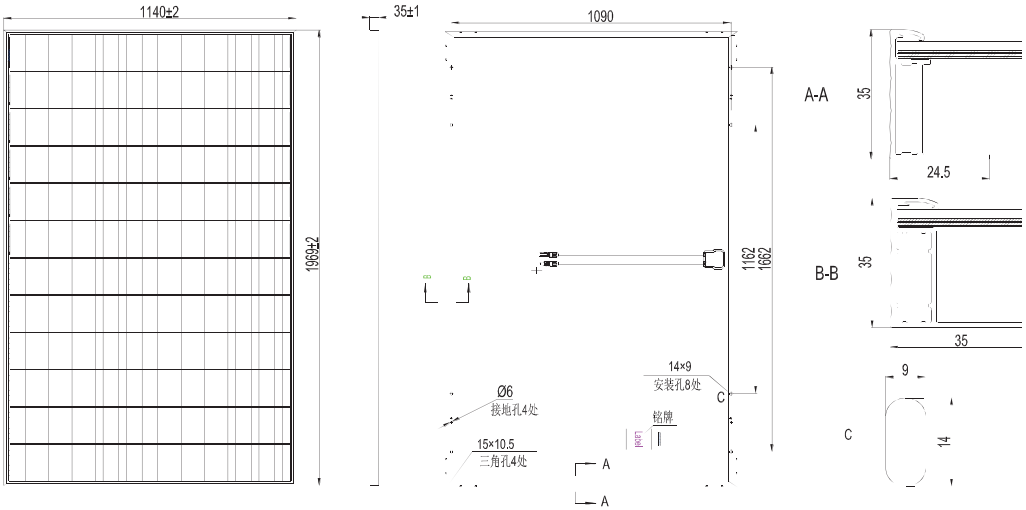
| | | | |
|---|---|---|---|
| Dimensions | 1969×1140×35 mm (L×W×H) | Weight | 24.5kg |
| Back Sheet | High weatherability backsheet | Encapsulation | EVA |
| Cells | 158.75 x 158.75 PERC solar cells | | |
| Cable | Length 1200mm, 1×4mm² | | |
| Junction Box | Rated current:15A, IP67, TUV&UL | | |
| Frame | Anodized aluminum profile | | |
| Front Glass | White toughened safety glass, 3.2mm | | |
| Connector | Zhejiang Renhe Photovoltaic Technology Co., Ltd./05-8 | | |
| | Staubli Electrical Connectors AG/ PV-KST4-EVO 2/xy_UR(male); PV-KBT4-EVO 2xy_UR(female) | | |

## Installation Safety Guide

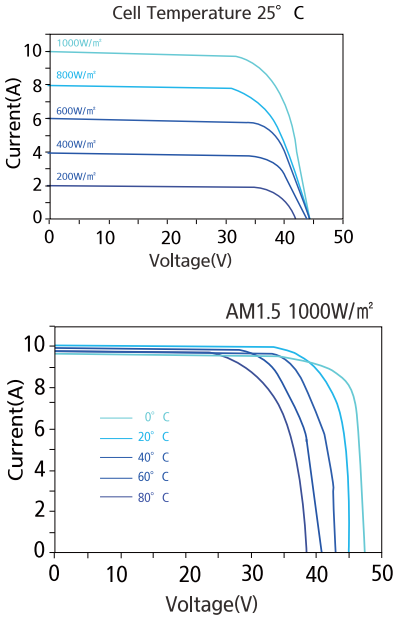
- Only qualified personnel should install or perform maintenance.
- Be aware of dangerous high DC voltage.
- Do not damage or scratch the rear surface of the module.
- Do not handle or install modules when they are wet.

| | |
|---|---|
| Nominal Module Operating Temperature (NMOT) | 42.3°C ( ±2°C ) |
| Temperature Range | -40° C to +85° C |
| Maximum System Voltage | 1500V DC(IEC) |
| Fire Rating | Class C |
| Series Fuse Rating | 20A |
| Maximum Surface Load Capacity | 5400Pa |

## Module Diagram (unit : mm)




## I-V Curves




HYUNDAI ENERGY SOLUTIONS

Manufactured in China



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