

# HYUNDAI SOLAR MODULE



## PERC Shingled

HiE-S385VG HiE-S390VG HiE-S395VG HiE-S400VG



Shingled Technology



For Both Residential & Commercial Applications



More Power Generation In Low Light



### M6 PERC Shingled

M6 PERC Shingled Technology provides ultra-high efficiency with better performance in low irradiation. Maximizes installation capacity in limited space.



### Anti-LID / PID

Both LID(Light Induced Degradation) and PID(Potential Induced Degradation) are strictly eliminated to ensure higher actual yield during lifetime.



### 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 20-year warranty. (Europe only)



### Corrosion Resistant

Various tests under harsh environmental conditions such as ammonia and salt-mist passed.



### UL / VDE Test Labs

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

#### Hyundai's Warranty Provisions



- 20-Year Product Warranty (Europe only)
- On materials and workmanship



- 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

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



## Electrical Characteristics

|   |      | Mono-Crystalline Module (HiE-S___VG)   |       |       |       |
|---|------|--|-------|-------|-------|
|   |      | 385                                    | 390   | 395   | 400   |
| Nominal Output (P <sub>mpp</sub> )              | W    | 385                                    | 390   | 395   | 400   |
| Open Circuit Voltage (V <sub>oc</sub> )         | V    | 46.2                                   | 46.3  | 46.3  | 46.4  |
| Short Circuit Current (I <sub>sc</sub> )        | A    | 10.82                                  | 10.87 | 10.92 | 10.97 |
| Voltage at P <sub>max</sub> (V <sub>mpp</sub> ) | V    | 38.4                                   | 38.5  | 38.5  | 38.6  |
| Current at P <sub>max</sub> (I <sub>mp</sub> )  | A    | 10.03                                  | 10.13 | 10.26 | 10.36 |
| Module Efficiency                               | %    | 19.6                                   | 19.9  | 20.2  | 20.4  |
| Cell Type                                       | -    | PERC Mono-Crystalline Silicon Shingled |       |       |       |
| Maximum System Voltage                          | V    | 1,500                                  |       |       |       |
| Temperature Coefficient of P <sub>max</sub>     | %/°C | -0.34                                  |       |       |       |
| Temperature Coefficient of V <sub>oc</sub>      | %/°C | -0.27                                  |       |       |       |
| Temperature Coefficient of I <sub>sc</sub>      | %/°C | 0.04                                   |       |       |       |

\*All data at STC (Standard Test Conditions). Above data may be changed without prior notice.

## Mechanical Characteristics

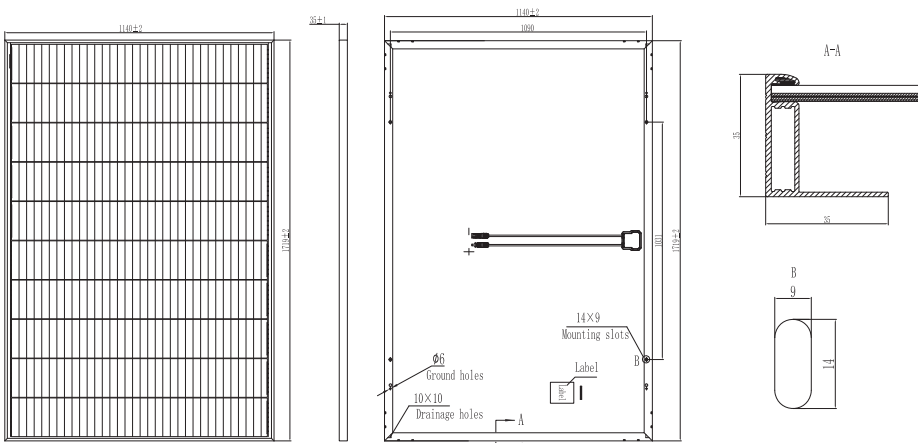
|               |   |           |                    |
|---------------|---|-----------|--------------------|
| Dimensions    | 1,719 × 1,140 × 35mm (L × W × H)  |           |                    |
| Weight        | 22kg  |           |                    |
| Solar Cells   | 340 cells, PERC Mono-crystalline Shingled (166 × 166mm)   |           |                    |
| Output Cables | Length 1,500mm, 1×4mm <sup>2</sup>  | Connector | Stäubli : MC4-Evo2 |
| Junction Box  | Rated current : 20A, IP67, TUV&UL   |           |                    |
| Construction  | Front Glass : White toughened safety glass, 3.2mm<br>Encapsulation : EVA (Ethylene-Vinyl-Acetate) |           |                    |
| Frame         | Anodized aluminum   |           |                    |

## Installation Safety Guide

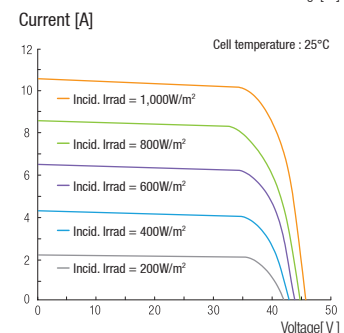
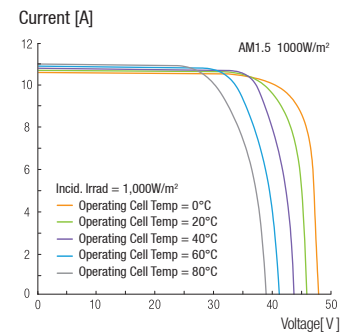
- Only qualified personnel should install or perform maintenance.
- Be aware of dangerous high DC voltage.
- Do not damage or scratch the rear surface of the module.
- Do not handle or install modules when they are wet.

|                                    |   |
|------------------------------------|---|
| Nominal Operating Cell Temperature | 42.3 ± 2°C                              |
| Operating Temperature              | -40 ~ 85°C                              |
| Maximum System Voltage             | DC 1,500 / 1,000 (IEC)<br>DC 1,000 (UL) |
| Maximum Reverse Current            | 20A                                     |
| Maximum Surface Load Capacity      | Front 5,400 Pa<br>Rear 2,400 Pa         |

## Module Diagram (unit : mm)



## I-V Curves



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ENERGY SOLUTIONS