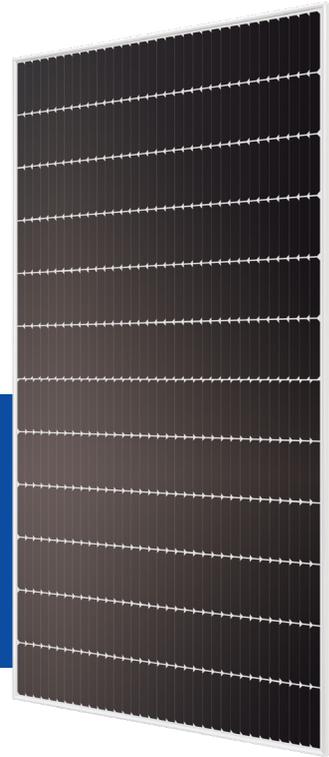


# HYUNDAI SOLAR MODULE



## PERC Shingled

HiE-S410SI HiE-S415SI HiE-S420SI



Shingled Technology



For Utility-Scale Applications



More Power Generation In Low Light



### PERC Shingled Technology

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.



### Extended Product Warranty

Global brand with powerful financial strength provide reliable 15-year product warranty.



### 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



- 15-Year Product Warranty
- 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 <sub>1</sub> SI)		
		410	415	420
Nominal Output (P <sub>mpp</sub> )	W	410	415	420
Open Circuit Voltage (V <sub>oc</sub> )	V	45.3	45.4	45.5
Short Circuit Current (I <sub>sc</sub> )	A	11.43	11.47	11.53
Voltage at P <sub>max</sub> (V <sub>mpp</sub> )	V	37.5	37.6	37.7
Current at P <sub>max</sub> (I <sub>mpp</sub> )	A	10.93	11.04	11.14
Module Efficiency	%	19.7	20.0	20.2
Cell Type	-	Mono-Crystalline Silicon		
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

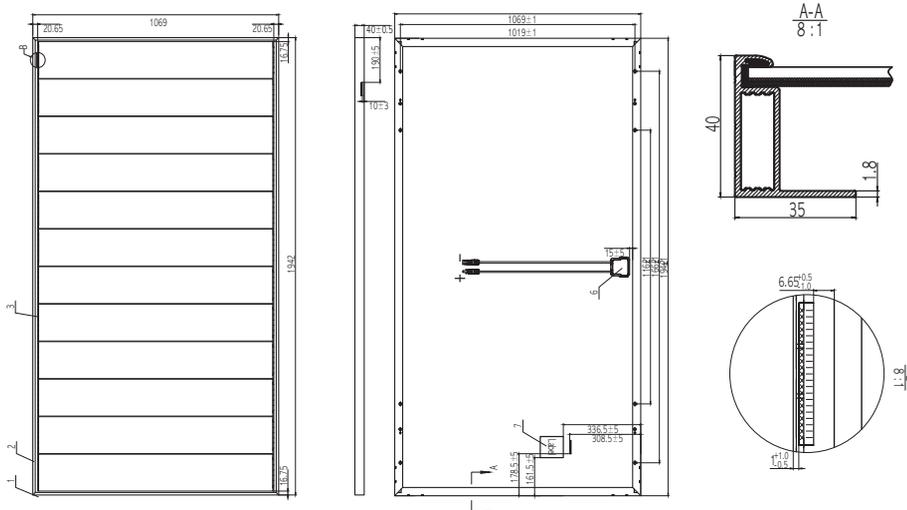
Dimensions	1,942 × 1,069 × 40mm (L × W × H)		
Weight	24.0kg		
Solar Cells	408 cells, 6" PERC Mono-crystalline silicon solar cells (in increment of 5)		
Output Cables	Length 1200mm, 1×4mm <sup>2</sup>	Connector	Compatible with MC4
Junction Box	Rated current : 15A, IP67, TUV&UL		
Construction	Front Glass : White toughened safety glass, 3.2mm Encapsulation : EVA (Ethylene-Vinyl-Acetate)		
Frame	Anodized aluminum profile		

## 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)
Maximum Reverse Current	20A
Maximum Surface Load Capacity	Front 5,400 Pa Rear 2,400 Pa

## Module Diagram (unit : mm)



## I-V Curves

