

# HYUNDAI SOLAR MODULE

## DG SERIES

**G12 PERC Shingled**  
 HiE-S410DG(FB) HiE-S415DG(FB)  
 HiE-S420DG(FB)



Shingled  
Technology



For Both Residential  
& Commercial  
Applications



More Power  
Generation  
In Low Light



### G12 PERC Shingled

G12 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.



HYUNDAI

### 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 material 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, 84.80% 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



## Electrical Characteristics

		Mono-Crystalline Module (HiE-S__DG(FB))		
		410	415	420
Nominal Output (Pmpp)	W	410	415	420
Open Circuit Voltage(Voc)	V	41.4	41.5	41.6
Short Circuit Voltage (Isc)	A	12.65	12.80	12.92
Voltage at Pmax (Vmpp)	V	34.4	34.4	34.5
Current at Pmax (Imp)	A	11.97	12.08	12.19
Module Efficiency	%	20.6	20.9	21.1
Cell Type	-	PERC Mono-Crystalline Silicon Shingled		
Maximum System Voltage	V	1,500		
Temperature Coefficient of Pmax	%/°C	-0.34		
Temperature Coefficient of Voc	%/°C	-0.27		
Temperature Coefficient of Isc	%/°C	0.04		

\*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

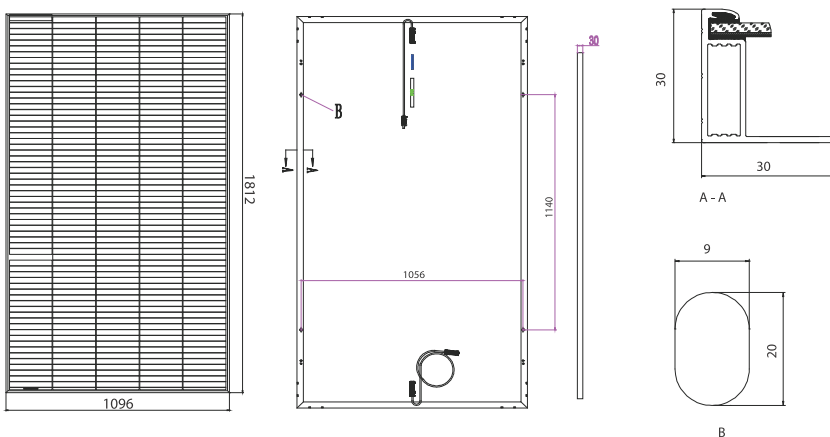
Dimensions	1,812 × 1,096 × 30 mm (L × W × H)		
Weight	20.8kg		
Solar Cells	305 Cells, PERC Mono-crystalline Shingled (210 × 210mm)		
Output Cables	4mm <sup>2</sup> ,+500mm/-1100mm(Vertical), +220mm/-180mm(Horizontal)	Connector	Stäubli : MC4-Evo2
Junction Box	IP68, TUV&UL, two diodes		
Construction	Front Glass: AR Coated tempered glass, 3.2mm Encapsulation: EVA (Ethylene-Vinyl-Acetate)		
Frame	Anodized Aluminum		

## Installation Safety Guide

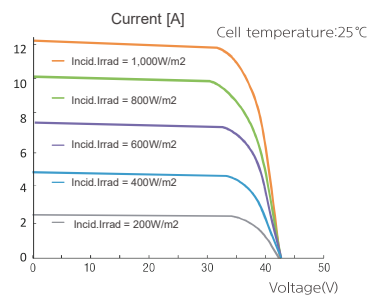
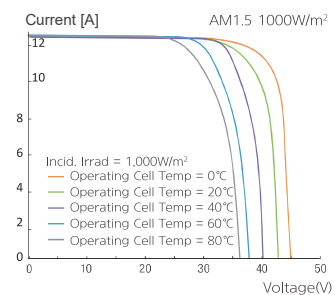
- Only qualified personnel should install or perform maintenance.
- Be aware of dangerous high DC voltage.
- Do not damage or scratch the rear surface of the module.
- Do not handle or install modules when they are wet.

Nominal Operating Cell Temperature	42.3°C ( ±2°C )
Operating Temperature	-40 ~ 85 °C
Maximum System Voltage	DC 1,500 / 1,000 (IEC)
Fire Rating	Class C
Series Fuse Rating [A]	25
Maximum Surface Load Capacity	Front 5,400 Pa Rear 2,400 Pa

## Module Diagram (Unit: mm)



## I-V Curves



Manufactured in China

**HYUNDAI**  
ENERGY SOLUTIONS