# HYUNDAI SOLAR MODULE



# **G12 PERC Shingled**

HiE-S430HG(FB) HiE-S435HG(FB) HiE-S440HG(FB) HiE-S445HG(FB)





Shingled Technology

For Both Residential & Commercial Applications



More Power Generation In Low Light



**G12 PERC Shingled** 

G12 PERC Shinaled Technology provides ultra-high efficiency with better performance in low irradiation. Maximizes installation capacity in limited space.



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

**Corrosion Resistant** 

Various tests under harsh environmental

conditions such as ammonia and salt-mist



## **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)

## Hyundai's Warranty Provisions







25

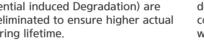
YEAR

## 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

## Certification







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

#### **About Hyundai Energy Solutions**

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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.



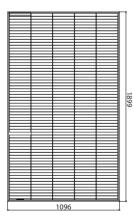
Electrical Characteristics		Mono-Crystalline Module (HiE-SHG(FB))			
		445	440	435	430
Nominal Output (Pmpp)	W	445	440	435	430
Open Circuit Voltage(Voc)	V	43.8	43.7	43.6	43.5
Short Circuit Voltage (Isc)	А	13.01	12.90	12.79	12.68
Voltage at Pmax (Vmpp)	V	36.4	36.3	36.2	36.1
Cuurent at Pmax (Impp)	А	12.23	12.13	12.02	11.92
Module Efficiency	%	21.4	21.1	20.9	20.7
Cell Type	-	PERC Mono-Crystalline Silicon Shingled			
Maximum System Voltage	V	1,500			
Temperature Coefficiency of Pmax	%/°C	-0.34			
Temperature Coefficiency of Voc	%/°C	-0.27			
Temperature Coefficiency of Isc	%/°C	0.04			

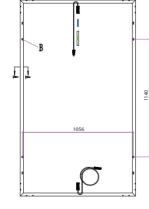
\*All data at STC(Standard Test Conditions). Above data may be changed without prior notice. \*Tolerance of Pmax:0~+5W. \* Performance deviation of Voc [V], lsc [A], Vm[V] and Im[A]:±3%.

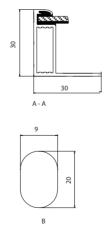
#### **Mechanical Characteristics**

Dimensions	1,899 $\times$ 1,096 $\times$ 30 mm (L $\times$ W $\times$ H)				
Weight	21.8kg				
Solar Cells	320 Cells, PERC Mono-crystaline Shingled (210 $ imes$ 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-Vingl-Acetate)				
Frame	Anodized Aluminum				

## Module Diagram (Unit: mm)





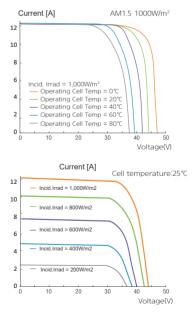


# **Installation Safety Guide**

- 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℃)
Operating Temperature	-40 ~ 85 ℃
Maximum System Voltage	DC 1,500 / 1,000 (IEC)
Series Fuse Rating [A]	25
Maximum Surface Load Capacity	Front 5,400 Pa Rear 2,400 Pa

## **I-V Curves**





# Manufactured in China

