

HYUNDAI SOLAR MODULE

HG SERIES

G12 PERC Shingled
HiE-S435HG HiE-S440HG HiE-S445HG



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.



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 25-year warranty. (Australia and 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



• **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

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__HG)		
		445	440	435
Nominal Output (Pmpp)	W	445	440	435
Open Circuit Voltage(Voc)	V	43.8	43.7	43.6
Short Circuit Current (Isc)	A	13.01	12.90	12.79
Voltage at Pmax (Vmpp)	V	36.4	36.3	36.2
Current at Pmax (Impp)	A	12.23	12.13	12.02
Module Efficiency	%	21.4	21.1	20.9
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.

* Performance deviation of Voc [V], Isc [A], Vm[V] and Im[A]: ±3%.

Mechanical Characteristics

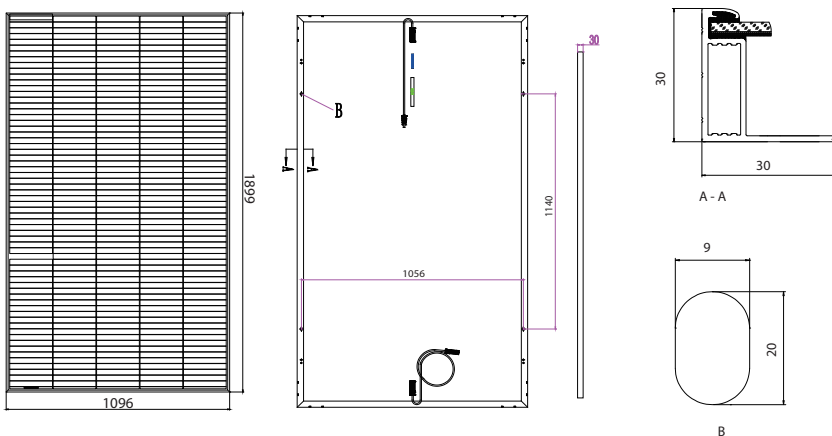
Dimensions	1,899 × 1,096 × 30 mm (L × W × H)		
Weight	21.8kg		
Solar Cells	320 Cells, PERC Mono-crystalline Shingled (210 × 210mm)		
Output Cables	4mm ² , +500mm/-1100mm(Vertical), +220mm/-180mm(Horizontal)	Connector	Stäubli : MC4-Evo2
Junction Box	IP68, TUV&UL, two diodes		
Construction	Front Glass: Tempered glass, 3.2mm Encapsulation: EVA (Ethylene-Vinyl-Acetate)		
Frame	Anodized Aluminum		

Installation Safety Guide

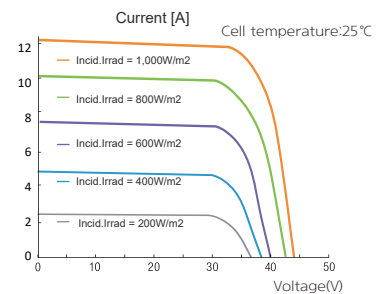
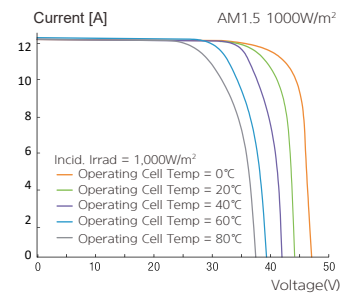
- Only qualified personnel should install or perform maintenance.
- Be aware of dangerous high DC voltage.
- Do not damage or scratch the rear surface of the module.
- Do not handle or install modules when they are wet.

Nominal Operating Cell Temperature	42.3°C (±2°C)
Operating Temperature	-40 ~ 85 °C
Maximum System Voltage	DC 1,500 / 1,000 (IEC)
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



Sales & Marketing
sales@hyundai-es.co.kr

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Axpert VM 4 TWIN Off-Grid Inverter



- Dual output for smart load management
- Maximum PV input current 27A
- Wide PV input voltage range 60VDC~450VDC
- Customizable status LED ring with RGB lights
- Touchable button with large 4.3" colored LCD
- Built-in Wifi for mobile monitoring (Android/iOS App available)
- Supports USB On-the-Go function
- Data log event stored in the inverter
- Reserved communication port (RS485, CAN-BUS or RS232) for BMS
- Battery independent design
- Battery equalization extends lifecycle
- Enhanced charging power
- Built-in anti-dust kit

Axpert VM 4 TWIN Off-Grid Inverter Selection Guide

MODEL	Axpert VM 4 TWIN 4K	Axpert VM 4 TWIN 6K
RATED POWER	4000VA/4000W	6000VA/6000W
INPUT		
Voltage	230 VAC	
Selectable Voltage Range	170-280 VAC (For Personal Computers) 90-280 VAC (For Home Appliances)	
Frequency Range	50 Hz/60 Hz (Auto sensing)	
OUTPUT		
AC Voltage Regulation (Batt. Mode)	230VAC \pm 10%	
Surge Power	8000VA	12000VA
Efficiency (Peak)	90% ~ 93%	
Transfer Time	10 ms (For Personal Computers) 20 ms (For Home Appliances)	
Waveform	Pure sine wave	
BATTERY		
Battery Voltage	24 VDC	48 VDC
Floating Charge Voltage	27 VDC	54 VDC
Overcharge Protection	33 VDC	63 VDC
SOLAR CHARGER & AC CHARGER		
Solar Charger type	MPPT	
Maximum PV Array Power	5000W	6000W
MPP Range @ Operating Voltage	60 ~ 450 VDC	60 ~ 450 VDC
Maximum PV Array Open Circuit Voltage	500 VDC	500 VDC
Maximum PV Input Current	27A	
Maximum Solar Charge Current	120A	120A
Maximum AC Charge Current	100A	100A
Maximum Charge Current	120A	120A
PHYSICAL		
Dimension, D x W x H (mm)	119 x 313.6 x 457.5	
Net Weight (kgs)	10	12
Communication Interface	USB/RS232/RS485/WiFi/Dry-contact	
OPERATING ENVIRONMENT		
Humidity	5% to 95% Relative Humidity (Non-condensing)	
Operating Temperature	-10°C to 50°C	
Storage Temperature	-15°C to 60°C	

Product specifications are subject to change without further notice.

US3000C Pylontech Litio

US3000C Moduli da 3,55 kWh

La batteria al litio US3000C di Pylontech è la versione rinnovata della già conosciuta US3000.

La semplicità e la modularità della US3000C da 3,55 kWh di capacità la rendono adatta a realizzare sistemi di accumulo di piccole e grandi capacità ed ampliabili secondo le esigenze energetiche attuali e future.

Tra le novità inserite c'è la funzione **Soft-Start** incorporata in grado di ridurre la corrente di picco quando l'inverter deve partire con la sola batteria.

La batteria US3000C dispone di un BMS integrato in grado di gestire e monitorare le informazioni sulle celle tra cui tensione, corrente e temperatura.

Specifiche tecniche:

- la **struttura molecolare** interna delle batterie LFP **più stabile** e **più sicura**, consente un aumento della temperatura di combustione pari a 600 °C rispetto ai 300 °C relativi a NMC e LCO;
- **Profondità di scarica** (DOD) del 95%, disponibile per gli inverter allineati all'ultimo protocollo Pylontech;
- supporto "sveglia" con segnale 5 ~ 12V dalla porta RJ45.
- Supporta l'aggiornamento del modulo batteria dal controller superiore tramite comunicazione CAN o RS485.
- **Doppia protezione attiva a livello BMS**
- possibilità di operare in diverse condizioni di temperatura;
- **Monitoraggio e assistenza inclusi**



Ciascun elemento, da 74 Ah e di altezza 3 unità rack

Dati tecnici

Batteria al Litio

Modello	US3000C
DATI ELETTRICI	
Tipo cella	Li-ion (LFP)
Tensione [V]	48
Corrente Raccomandata [A]	37
Capacità nominale [Wh]	3552
Tensione di lavoro [V]	45...53.5
DOD [%]	95
BUS	
Bus di comunicazione	RS232, RS485, CAN
Protocollo di comunicazione	YD/T 1363.3-2005
DIMENSIONI E PESI	
Altezza [mm]	132
Larghezza [mm]	442
Profondità [mm]	420
Peso [kg]	32
VARIE	
Durata a 25 °C	15+ anni
Life Cycles	>6000 25°C - 95% DoD
Temperatura di scarica [°C]	-10...50
Temperatura di carica [°C]	0...50
Temperatura di immagazzinaggio [°C]	-20...60
Grado di protezione	IP20
Normativa sismica	GR-1089
Normativa per il trasporto	UN 3090
Normativa EMC	IEC62619, IEC63056, IEC62040, IEC62477-1, UL1973,U1642,U-L9540A, VDE2510-50, IEC61000-6-2, IEC61000-6-3, UN38.3
Normativa ambientale	GB/T 2423
Certificazioni	TÜV / CE / UN38.3 / UL