HYUNDAI SOLAR MODULE

DG SERIES

G12 PERC Shingled

HiE-S410DG(FB) HiE-S415DG(FB)
HiE-S420DG(FB) HiE-S425DG(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.

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 YEARS

- **25-Year Product Warranty**
  - On material and workmanship **Australia and Europe Only**

25 YEARS

- **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

HYUNDAI ENERGY SOLUTIONS

Electrical Characteristics

		Mono-Crystalline Module (HiE-S___DG(FB))			
		425	420	415	410
Nominal Output (Pmpp)	W	425	420	415	410
Open Circuit Voltage(Voc)	V	41.7	41.6	41.5	41.4
Short Circuit Current (Isc)	A	13.03	12.92	12.80	12.65
Voltage at Pmax (Vmpp)	V	34.6	34.5	34.4	34.4
Current at Pmax (Impp)	A	12.30	12.19	12.08	11.97
Module Efficiency	%	21.4	21.1	20.9	20.6
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], Isc [A], Vm[V] and Im[A]:±3%.

Mechanical Characteristics

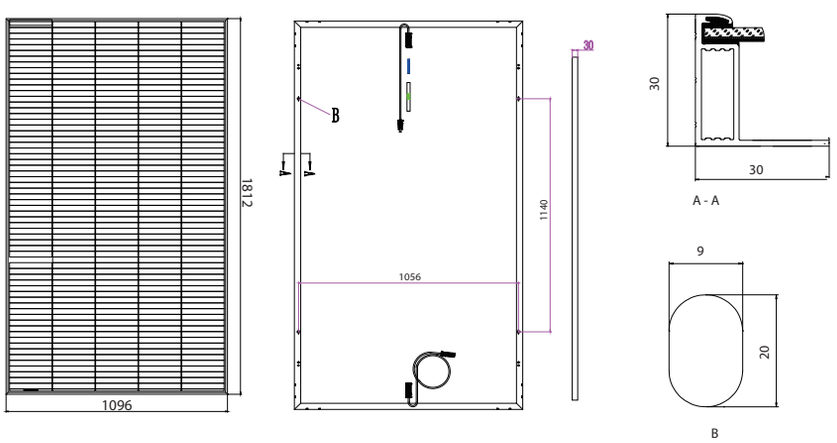
Dimensions	1,812 × 1,096× 30 mm (L × W × H)		
Weight	20.8kg		
Solar Cells	305 Cells, PERC Mono-crystaline Shingled (210 × 210mm)		
Output Cables	4mm²,+500mm/-1100mm(Vertical), +220mm/-180mm(Horizontal)	Connector	Stäubli : MC4-Evo2
Junction Box	IP68, TUV&UL, two diodes		
Construction	Front Glass: AR Coated tempered glass, 3.2mm Encapsulation: EVA (Ethylene-Vingl-Acetate)		
Frame	Anodized Aluminum		

Installation Safety Guide

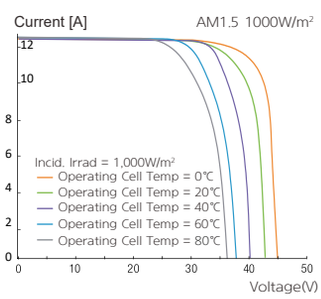
- Only qualified personnel should install or perform maintenance.
- Be aware of dangerous high DC voltage.
- Do not damage or scratch the rear surface of the module.
- Do not handle or install modules when they are wet.

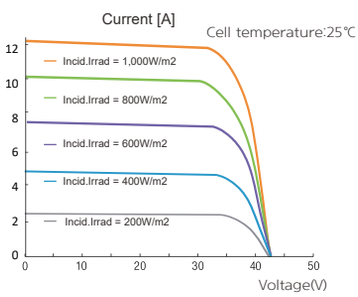
Nominal Operating Cell Temperature	42.3℃ (±2℃)
Operating Temperature	-40 ~ 85 ℃
Maximum System Voltage	DC 1,500 / 1,000 (IEC)
Series Fuse Rating [A]	25
Maximum Surface Load Capacity	Front 5,400 Pa Rear 2,400 Pa

Module Diagram (Unit: mm)



I-V Curves





Manufactured in China

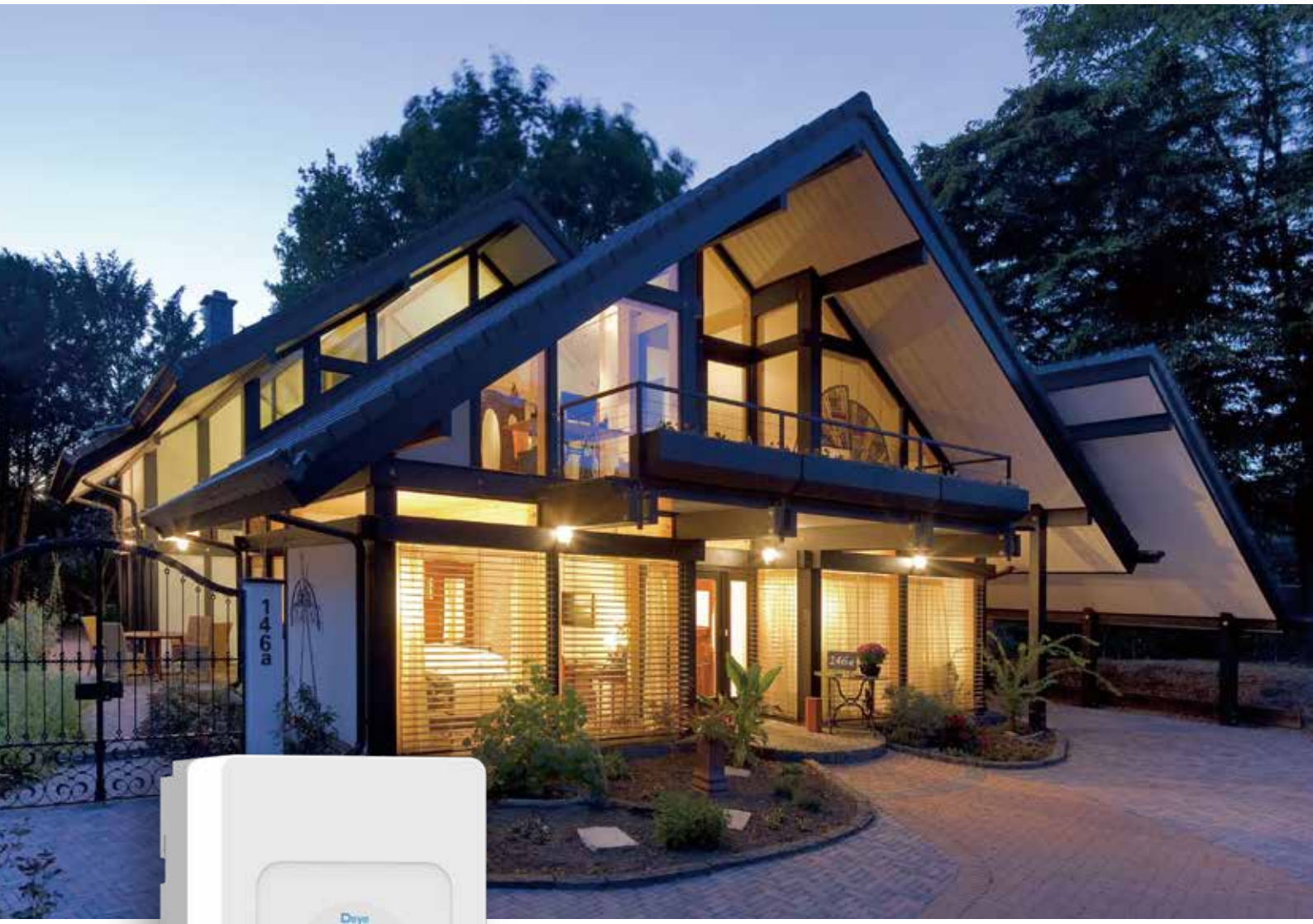
HYUNDAI ENERGY SOLUTIONS

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

Printed Date : 07/2022

Single Phase Hybrid Inverter

SUN-3.6/5/6K-SG03LP1-EU



- Colorful touch LCD, IP65 protection degree
- AC couple to retrofit existing solar system
- Max. 16 pcs parallel for on-grid and off-grid operation; Support multiple batteries parallel
- Max. charging/discharging current of 135A
- 6 time periods for battery charging/discharging
- Support storing energy from diesel generator

Deye

Stock Code: 605117.SH

Technical Data

Model	SUN-3.6K -SG03LP1-EU	SUN-5K -SG03LP1-EU	SUN-6K -SG03LP1-EU
Battery Input Data			
Battery Type	Lead-acid or Lithium-ion		
Battery Voltage Range (V)	40-60		
Max. Charging Current (A)	90	120	135
Max. Discharging Current (A)	90	120	135
Charging Strategy for Li-ion Battery	Self-adaption to BMS		
Number of Battery Input	1		
PV String Input Data			
Max. PV Input Power (W)	4680	6500	7800
Max. PV Input Voltage (V)	500		
Start-up Voltage (V)	125		
MPPT Voltage Range (V)	150-425		
Rated PV Input Voltage (V)	370		
Max. Operating PV Input Current (A)	13+13		
Max. Input Short-Circuit Current (A)	17+17		
No. of MPP Trackers/ No. of Strings per MPP Tracker	2/1+1		
AC Input/Output Data			
Rated AC Input/Output Active Power (W)	3600	5000	6000
Max. AC Input/Output Apparent Power (VA)	3960	5500	6600
Rated AC Input/Output Current (A)	16.4/15.7	22.7/21.7	27.3/26.1
Max. AC Input/Output Current (A)	18/17.2	25/23.9	30/28.7
Max. Continuous AC Passthrough (grid to load) (A)		35	40
Peak Power (off-grid) (W)	2 times of rated power, 10s		
Power Factor Adjustment Range	0.8 leading to 0.8 lagging		
Rated Input/Output Voltage/Range (V)	220/230 0.85Un-1.1Un		
Rated Input/Output Grid Frequency/Range(Hz)	50/45-55, 60/55-65		
Grid Connection Form	L+N+PE		
Total Current Harmonic Distortion THDi	<3% (of nominal power)		
DC Injection Current	<0.5% In		
Efficiency			
Max. Efficiency	97.6%		
Euro Efficiency	96.5%		
MPPT Efficiency	>99%		
Equipment Protection			
Integrated	DC Polarity Reverse Connection Protection, AC Output Overcurrent Protection AC Output Overvoltage Protection, AC Output Short Circuit Protection, Thermal Protection DC Terminal Insulation Impedance Monitoring, DC Component Monitoring, Ground Fault Current Monitoring Power Network Monitoring, Island Protection Monitoring, Earth Fault Detection, DC Input Switch Overvoltage Load Drop Protection, Residual Current (RCD) Detection, Surge protection level		
Surge Protection Level	TYPE II(DC), TYPE II(AC)		
Interface			
Communication Interface	RS485/RS232/CAN		
Monitor Mode	GPRS/WIFI/Bluetooth/4G/LAN(optional)		
General Data			
Operating Temperature Range (℃)	-40 to +60°C, >45°C Derating		
Permissible Ambient Humidity	0-100%		
Permissible Altitude	2000m		
Noise (dB)	<30		
Ingress Protection(IP) Rating	IP 65		
Inverter Topology	Non-Isolated		
Over Voltage Category	OVC II(DC), OVC III(AC)		
Cabinet Size (WxHxD mm)	330×580×232 (Excluding Connectors and Brackets)		
Weight (kg)	25		
Type of Cooling	Intelligent Air Cooling		
Warranty	5 Years/10 Years the Warranty Period Depends the Final Installation Site of Inverter, More Info Please Refer to Warranty Policy		
Grid Regulation	IEC 61727, IEC 62116, CEI 0-21, EN 50549, NRS 097, RD 140, UNE 217002, OVE-Richtlinie R25, G99, VDE-AR-N 4105		
Safety / EMC Standard	IEC/EN 61000-6-1/2/3/4, IEC/EN 62109-1, IEC/EN 62109-2		

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Meaningful Innovation.

5.12kWh

Rack Mounting Lithium Battery

05 YEAR WARRANTY

HYBRID ENERGY STORAGE SYSTEM

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V-TAC
Meaningful Innovation.

Rack Mounting Lithium Battery

LISTING DETAILS

Model No:	**VT48100E-P2**
SKU Code:	**11377**
EAN Code:	**3800157689359**

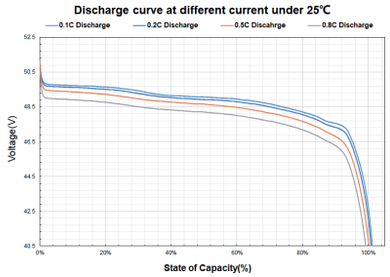
MASTER BOX PACKAGING

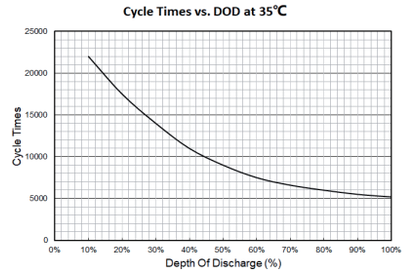
Qty Per Pallet:	**14pcs per pallet**
Net Weight :	**Approx. 41kg**
Product Size :	**445*400*130 mm**

GENERAL DATA

Nominal Capacity	100Ah@0.2C, 25°C
Nominal Voltage	51.2V
Nominal Energy	5.12kWh@0.2C, 25°C
Charge Voltage	56.8V
Standard Charge Current	20A@25°C
Max Continuous Charge Current	100A@25 °C
Standard Discharge Current	20A@25°C
Max Continuous Discharge Current	100A@25 °C
Discharge Cut-off Voltage	42.0V
Operating Temperature	Charge：0~+60°C Discharge：-20~+60°C
Allowed Humidity Range	≤95% RH
IP	IP20

TECHNICAL CURVES





LiFePO4
CATHODE MATERIAL

Self-designed BMS
International design certification

LifePO4 cells, ensuring safety of the battery

Long cyclic life-6000 cycle (80% DOD)

High rate charge/discharge current @ 100A

Modular design
Easy expandability