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

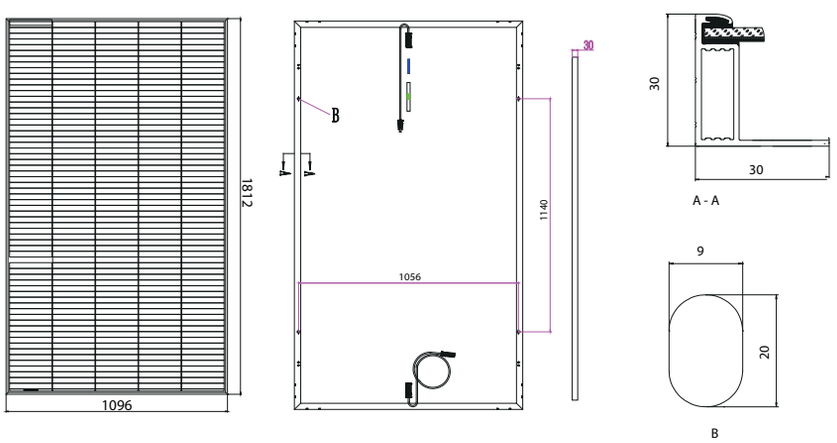
Dimensions	1,812 × 1,096× 30 mm (L × W × H)		
Weight	20.8kg		
Solar Cells	305 Cells, PERC Mono-crystaline Shingled (210 × 210mm)		
Output Cables	4mm²,+500mm/-1100mm(Vertical), +220mm/-180mm(Horizontal)	Connector	Stäubli : MC4-Evo2
Junction Box	IP68, TUV&UL, two diodes		
Construction	Front Glass: AR Coated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

Installation Safety Guide

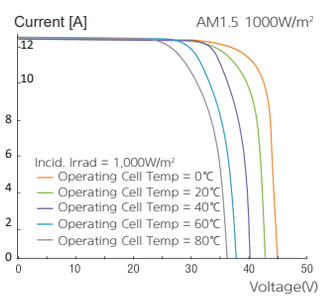
- Only qualified personnel should install or perform maintenance.
- Be aware of dangerous high DC voltage.
- Do not damage or scratch the rear surface of the module.
- Do not handle or install modules when they are wet.

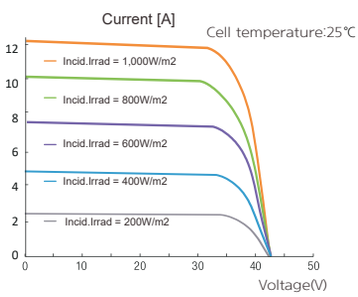
Nominal Operating Cell Temperature	42.3℃ (±2℃)
Operating Temperature	-40 ~ 85 ℃
Maximum System Voltage	DC 1,500 / 1,000 (IEC)
Series Fuse Rating [A]	25
Maximum Surface Load Capacity	Front 5,400 Pa Rear 2,400 Pa

Module Diagram (Unit: mm)



I-V Curves





Manufactured in China

HYUNDAI ENERGY SOLUTIONS

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SolarEdge Home Wave Inverter

Single Phase, for Europe

SE2200H, SE3000H, SE3500H, SE3680H,
SE4000H, SE5000H, SE6000H

INVERTERS

Optimized installation with HD-Wave technology

- Specifically designed to work with SolarEdge Power Optimizers
- Industry leading efficiency with 200% DC oversizing
- Quick and easy inverter commissioning directly from a smartphone using the SolarEdge SetApp
- Seamless wireless connectivity with system devices such as the SolarEdge Home Battery, via optional SolarEdge Home Network platform
- Extremely compact, lightweight and easy to install
- Built-in module-level monitoring
- Suitable for outdoor and indoor installation
- Fixed voltage inverter for longer strings
- Advanced safety feature - integrated arc fault protection

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SolarEdge Home Wave Inverter

Single Phase, for Europe (2.2 – 6 kW)

SE2200H, SE3000H, SE3500H, SE3680H, SE4000H, SE5000H, SE6000H

	SE2200H	SE3000H	SE3500H	SE3680H	SE4000H	SE5000H	SE6000H	
APPLICABLE TO INVERTERS WITH PART NUMBER	SEXXXXH-XXXXXBXX4							
OUTPUT								
Rated AC Power Output	2200	3000	3500	3680	4000	5000[1]	6000	VA
Maximum AC Power Output	2200	3000	3500	3680	4000	5000[1]	6000	VA
AC Output Voltage (Nominal)	220/230							Vac
AC Output Voltage Range	184 - 264.5							Vac
AC Frequency (Nominal)	50/60 ± 5							Hz
Maximum Continuous Output Current	10	14	16	16	18.5	23	27.5	A
Total Harmonic Distortion (THD)	<3							%
Power Factor	1, adjustable -0.9 to 0.9							
Utility Monitoring, Islanding Protection, Configurable Power Factor, Country Configurable Thresholds	Yes							
INPUT								
Maximum DC Power	4400	6000	7000	7360	8000	10000[2]	12000	W
Transformer-less, Ungrounded	Yes							
Maximum Input Voltage	480							Vdc
Nominal DC Input Voltage	380							Vdc
Maximum Input Current	6.5	9	10	10.5	11.5	13.5	16.5	Adc
Reverse-Polarity Protection	Yes							
Ground-Fault Isolation Detection	600kΩ Sensitivity per Unit							
Maximum Inverter Efficiency	99.2							%
European Weighted Efficiency	98.3	98.8				99		%
Nighttime Power Consumption	< 2.5							W
ADDITIONAL FEATURES								
Supported Communication Interfaces	RS485, Ethernet, Wi-Fi (optional), wireless SolarEdge Home Network (optional)[3], Cellular (optional), ZigBee (optional)							
Smart Energy Management	Export Limitation							
Inverter Commissioning	With the SetApp mobile application using built in Wi-Fi station for local connection							
Arc Fault Protection	Integrated, User Configurable (According to UL1699B)							
STANDARD COMPLIANCE								
Safety	IEC-62109-1/2							
Grid Connection Standards	IEC61727, IEC62116, EN 50438, VDE-AR-N-4105, VDE 0126-1-1, UTE_C_15-712, G98, G99, CEI-021, ÖNORM, TF3.2.1, C10-11, NRS 097-2-1							
Electromagnetic Compatibility (EMC)	EN/IEC 61000-6-1, EN/IEC 61000-6-2, EN/IEC 61000-6-3, EN/IEC 61000-6-4, EN 55011, FCC Part 15, EN/IEC 61000-3-2, EN/IEC 61000-3-3, EN/IEC 61000-3-11, EN/IEC 61000-3-12							
INSTALLATION SPECIFICATIONS								
AC Output - Supported Cable Diameter	9-16							mm
AC - Supported Wire Cross Section	1-13							mm^2
DC Input	1 x MC4				2 x MC4 pair			
Dimensions (H x W x D)	280 x 370 x 142							mm
Noise	< 25							dBA
Weight	7.8				9		10.6	kg
Cooling	Natural Convection							
Operating Temperature Range	-40 to +60[4]							°C
Protection Rating	IP65 — Outdoor and Indoor							

(1) 4600VA in Germany
(2) 7130VA in Germany
(3) For more information, refer to: https://www.solaredge.com/sites/default/files/se-energy-net-plug-in-datasheet.pdf
(4) Full power up to at least 50°C / 122°F. For power de-rating information refer to: https://www.solaredge.com/sites/default/files/se-temperature-derating-note.pdf

CE RoHS

Power Optimizer
For Residential Installations

S440, S500

POWER OPTIMIZER

Enabling PV power optimization at the module level

- Specifically designed to work with SolarEdge residential inverters
- Detects abnormal PV connector behavior, preventing potential safety issues*
- Module-level voltage shutdown for installer and firefighter safety
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch loss, from manufacturing tolerance to partial shading
- Faster installations with simplified cable management and easy assembly using a single bolt
- Flexible system design for maximum space utilization
- Compatible with bifacial PV modules

* Functionality subject to inverter model and firmware version

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/ Power Optimizer

For Residential Installations

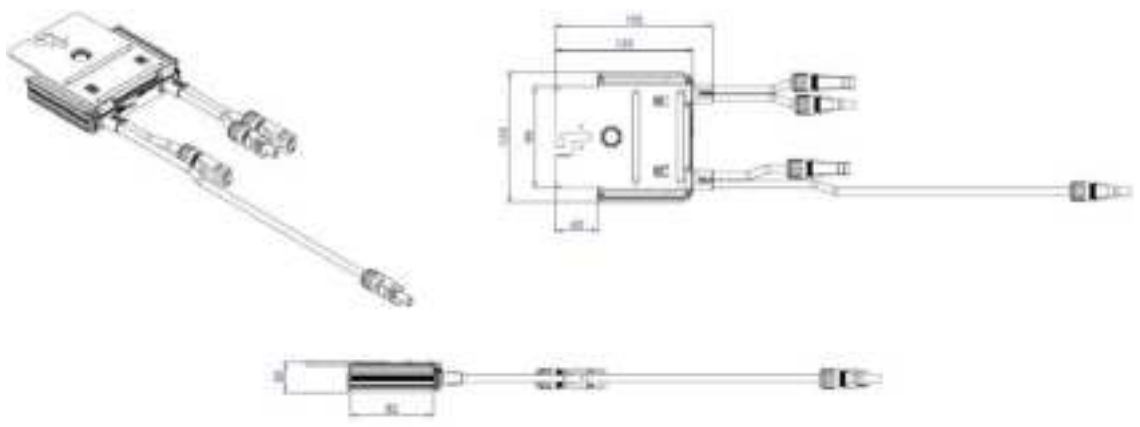
S440, S500

	S440	S500	UNIT
Rated Input DC Power[1]	440	500	W
Absolute Maximum Input Voltage (Voc)	60		Vdc
MPPT Operating Range	8 - 60		Vdc
Maximum Short Circuit Current (Isc) of Connected PV Module	14.5	15	Adc
Maximum Efficiency	99.5		%
Weighted Efficiency	98.6		%
Overvoltage Category	II		
OUTPUT DURING OPERATION			
Maximum Output Current	15		Adc
Maximum Output Voltage	60		Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM INVERTER OR INVERTER OFF)			
Safety Output Voltage per Power Optimizer	1		Vdc
STANDARD COMPLIANCE			
EMC	FCC Part 15 Class B, IEC61000-6-2, IEC61000-6-3, CISPR11, EN-55011		
Safety	IEC62109-1 (class II safety), UL1741		
Material	UL94 V-0, UV Resistant		
RoHS	Yes		
Fire Safety	VDE-AR-E 2100-712:2013-05		
INSTALLATION SPECIFICATIONS			
Maximum Allowed System Voltage	1000		Vdc
Dimensions (W x L x H)	129 x 155 x 30		mm
Weight (including cables)	655 / 1.5		gr / lb
Input Connector	MC4[2]		
Input Wire Length	0.1		m
Output Connector	MC4		
Output Wire Length	(+) 2.3, (-) 0.10		m
Operating Temperature Range[3]	-40 to +85		˚C
Protection Rating	IP68 / NEMA6P		
Relative Humidity	0 - 100		%

(1) Rated power of the module at STC will not exceed the Power Optimizer Rated Input DC Power. Modules with up to +5% power tolerance are allowed
(2) For other connector types please contact SolarEdge
(3) For ambient temperature above +70°C / +158°F power de-rating is applied. Refer to Power Optimizers Temperature De-Rating Technical Note for more details

PV System Design Using a SolarEdge Inverter		Single Phase HD-Wave	Three Phase	Three Phase for 277/480V Grid	
Minimum String Length (Power Optimizers)	S440, S500	8	16	18	
Maximum String Length (Power Optimizers)		25	50		
Maximum Nominal Power per String[4]		5700	11250[5]	12750[6]	W
Parallel Strings of Different Lengths or Orientations		Yes			

(4) If the inverters rated AC power ≤ maximum nominal power per string, then the maximum power per string will be able to reach up to the inverters maximum input DC power Refer to: https://www.solaredge.com/sites/default/files/se-power-optimizer-single-string-design-application-note.pdf
(5) For the 230/400V grid: it is allowed to install up to 13,500W per string when the maximum power difference between each string is 2,000W
(6) For the 277/480V grid: it is allowed to install up to 15,000W per string when the maximum power difference between each string is 2,000W
(7) It is not allowed to mix S-series and P-series Power Optimizers in new installations



CE RoHS

SolarEdge Home Battery 400V

For Europe

BAT-10K1P

BATTERIES

Optimized for SolarEdge Home Wave Inverter and StorEdge Inverter technology

- DC coupled battery featuring outstanding overall system efficiency, generating more energy to store and use for on-grid and backup power applications
- Integrates seamlessly with the complete SolarEdge Home ecosystem using SolarEdge Home Network, offering a single source for warranty, support, and training, to streamline logistics & operations
- Enhanced safety with Rapid Shutdown, SafeDC™
- Qualified by the latest and most stringent UL fire safety standard
- Solar, storage, EV charging, and smart devices all monitored and managed by a single app to an optimized production, consumption, and backup* power
- Simple plug and play installation, with automatic SetApp-based configuration
- Flexible installation - wall or floor mount, all indoor or outdoor
- Wireless communication to the inverter, reducing wiring, labor, and installation

* Backup application requires inverter with backup capability

SolarEdge Home Battery 400V

For Europe

BAT-10K1P

		BAT-10K1PS0B-x2	
OUTPUT			
Usable Energy (100% depth of discharge)		9700	Wh
Continuous Output Power		5000	W
Peak Output Power in Backup (for 10 seconds)		7500	W
Peak Roundtrip Efficiency		>94.5	%
Warranty(1)		10	Years
Voltage Range		350-450	Vdc
ADDITONAL FEATURES			
Compatible Inverters		SolarEdge Home Wave Inverter, StorEdge Single Phase Inverter with HD-Wave Technology	
Battery per Inverter		Up to 3(2)	
Communication Interfaces		Wireless and RS485(3)	
STANDARD COMPLIANCE			
Certification	Cell	IEC 62619	
	Battery	IEC 62619, UN38.3	
Emissions		IEC61000-6-1, IEC61000-6-2, IEC61000-6-3	
INSTALLATION SPECIFICATIONS			
Dimensions (W x H x D)		790 x 1179 x 250	mm
Weight		119	kg
Mounting		Floor(4) or wall mount(5)	
Operating Temperature(6)		-10 to +50	°C
Storage Temperature (more than 3 months)		-10 to +30	°C
Storage Temperature (less than 3 months)		-30 to +60	°C
Enclosure Protection		IP55 - indoor and outdoor	
Maximum Altitude		2000	m
Cooling		Natural convection	
Noise at 1m Distance		<25	dBA

(1) For warranty details, see the SolarEdge Home Battery Limited Warranty.

(2) Installations with multiple SolarEdge Home Battery 400V batteries require a pair of branch connectors (purchased separately) per battery excluding the last battery.

(3) The SolarEdge Home Battery 400V is designed for use with SolarEdge Home Network for wireless communication. The inverter might require a matching SolarEdge Home Network plug-in. Using RS485 could reduce the usable energy to 9500Wh.

(4) The floor stand is purchased separately. One floor stand is required per SolarEdge Home Battery 400V. See the Accessories' PN table below.

(5) Wall mount installation requires handles that should be purchased separately. See the Accessories' PN table below.

(6) Note that operating the SolarEdge Home Battery 400V at extreme temperatures for extended durations of time may void the SolarEdge Home Battery warranty coverage. See the SolarEdge Home Battery Limited Product Warranty for additional details.

SolarEdge Home Battery – Accessories (purchased separately)	
Accessory	**PN**
Floor stand	IAC-RBAT-FLRSTD-01
Reusable lifting handles	IAC-RBAT-HANDLE-01
Branch connector set (includes 10 pairs of DC + and DC - connectors) Required for installations with multiple SolarEdge Home Battery 400V batteries with a single inverter	IAC-RBAT-RWYCBL-01
SolarEdge Home Network Plug-in	See the SolarEdge Home Network Plug-In datasheet.

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