

EVO 5N

465-485W

SE5-60HBD

N-type TOPCon Ultra Black  
Bifacial Dual Glass Solar Module

22.47%

Max. Module Efficiency

### 10-30% Additional Power Generation

30 years lifespan brings 10-30% additional power generation comparing with conventional P-type module.

### ZERO LID (Light Induced Degradation)

N-type solar cell has no LID naturally which can increase power generation.

### Higher Reliability

Adopted SunEvo latest S-TOPCo 2.0 technology, No polysilicon wrap around, Full electrical isolation, Zero leakage current; Much Safer for roof.

### Better Weak Illumination Response

Higher power output even under low-light environments like on cloudy or foggy days.

### Better Temperature Coefficient

Higher power generation under working conditions, thanks to passivating contact cell technology.

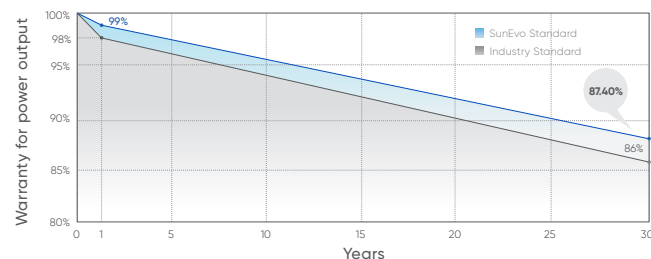
### Quality Management System and Product Certification

IEC61215/61730, IEC62804(PID), IEC61701(Salt),  
IEC62716 (Ammonia), IEC60068-2-68(Sand),  
ISO 9001:2015/quality management system,  
ISO 14001:2015/environmental management system,  
ISO 45001:2018/occupation health safety management system,  
ISO 50001:2011/energy management system,  
IEC TS 62941-2016/PV industry quality management system.

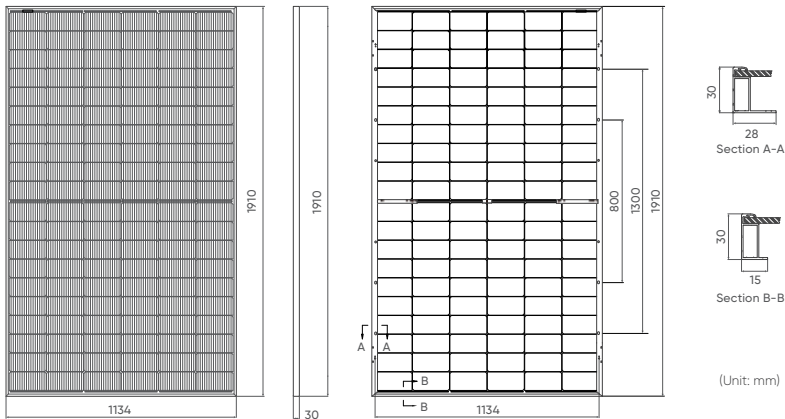
### Quality Guarantee

25 year Materials Warranty

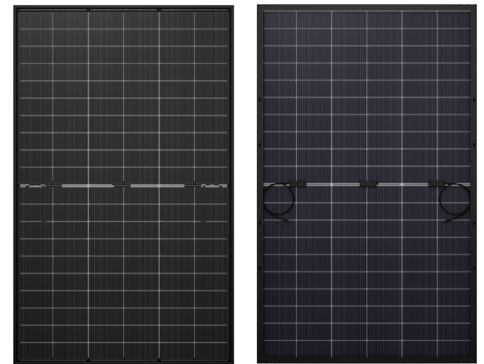
30 year Power Warranty



Drawings



Product Image



Mechanical Characteristics

Solar Cells	N-type Mono
No. of Cells	120 (6×20)
Dimensions	1910 x 1134 x 30mm
Weight	26.0kgs
Glass	Front: 2.0mm coated semi-tempered glass; Back: 2.0mm semi-tempered glass
Frame	Anodized aluminium alloy
Junction Box	Ip68 rated (3 by pass diodes)
Output Cables	4mm <sup>2</sup> , 300mm (+) / 300mm (-), Length can be customized
Connectors	MC4 compatible
Mechanical Load Test	5400Pa
Packaging	36pcs/box, 216pcs/20'GP, 864pcs/40'HQ

Operating Characteristics

Operating Module Temperature	-40°C to +85°C
Maximum System Voltage	1500V DC (IEC)
Maximum Series Fuse Rating	30A
Power Tolerance	0~+5W

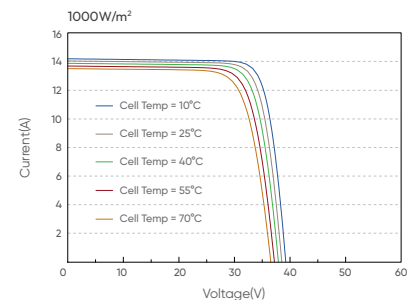
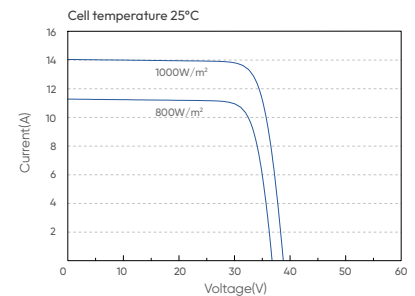
Temperature Characteristics

Nominal Operating Temperature (NMOT)	45±2°C
Temperature Coefficient of Pmax	-0.29%/°C
Temperature Coefficient of Voc	-0.25%/°C
Temperature Coefficient of Isc	+0.045%/°C

Electrical Parameters (STC\*)

Module Type: SE5-60HBD	465	470	475	480	485
Maximum Power (Pmax/W)	465	470	475	480	485
Voltage at Maximum Power (Vmpp/V)	35.50	35.69	35.88	36.06	36.25
Current at Maximum Power (Impp/A)	13.10	13.17	13.24	13.31	13.38
Open Circuit Voltage (Voc/V)	43.15	43.30	43.45	43.60	43.76
Short Circuit Current (Isc/A)	13.61	13.69	13.77	13.85	13.93
Module Efficiency (%)	21.47	21.78	22.01	22.24	22.47

I-V Curve



Bifacial Output (Rearside Power Gain)

		488	494	499	504	509
5%	Maximum Power (Pmax/W)	488	494	499	504	509
	Module Efficiency STC (%)	22.54	22.78	23.03	23.27	23.51
15%	Maximum Power (Pmax/W)	535	541	546	552	558
	Module Efficiency STC (%)	24.69	24.95	25.22	25.49	25.75
25%	Maximum Power (Pmax/W)	581	588	594	600	606
	Module Efficiency STC (%)	26.84	27.12	27.41	27.70	27.99

1. Standard Test Conditions [STC]: irradiance 1000W/m<sup>2</sup>, AM 1.5, ambient temperature 25°C according to EN 60904-3;  
 2. Tolerance of Pm: 0~+5W, Measuring uncertainty of power: ±3%. Performance deviation of Voc [V], Isc [A], Vm [V] and Im [A]: ±3%.