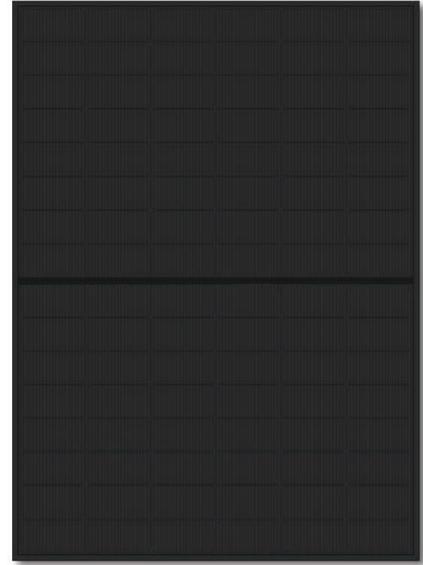


# HS-48TBB 435~455-S7

N-type monocrystalline high-efficiency  
bifacial double glass all black module

## 22.8%

Maximum module efficiency



## Product features

### The whole industry chain integrated production

Polysilicon, wafer, cell, glass, frame, junction box are all self-produced, and the overall compability is better.

### Better temperature coefficient

Improve power generation at high temperature and increase power output by 1%.

### Higher bifaciality

Bifaciality can be as high as 85%, with backside gain up to 11.48% in sandy conditions.

### High conversion efficiency

With outstanding cell technology and advanced manufacturing processes, the module can achieve conversion efficiency up to 22.5%.

### Excellent performance in low light intensity

Improve the performance of power generation under low light conditions such as in the morning or evening and in cloudy and rainy days.

### High reliability

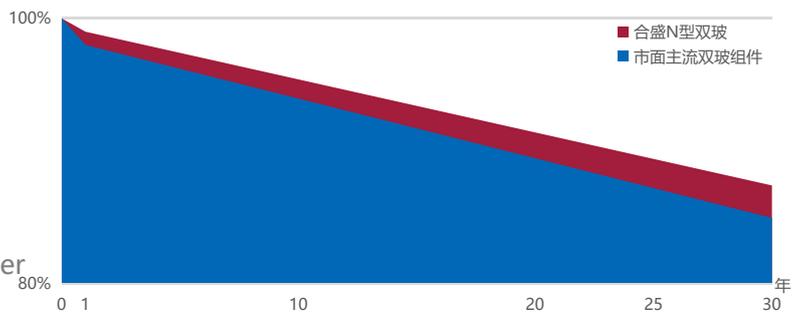
The module has better sustainability in harsh environments such as in high-cold areas, desert and mudflats after more rigorous testings.



- 12-year product warranty
- 1% 1st-year power degradation



- 30-year linear power warranty
- 0.4% annual power degradation



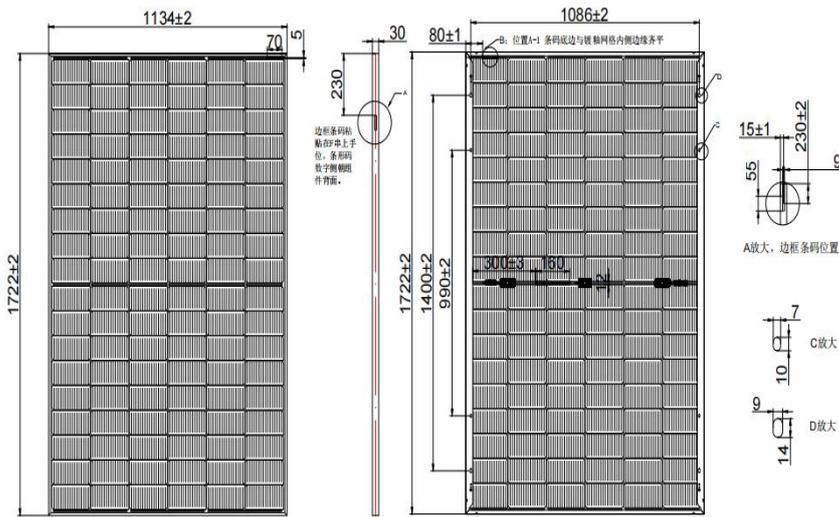
IEC61215(2016), IEC61730(2016)

ISO9001:2015: Quality Management System (QMS)

ISO14001:2015: Environmental Management System

ISO45001:2018:Occupational Health and Safety Management System





**Mechanical Parameters**

Cell type	N-type Monocrystalline solar cells
Number of half cell	96 (6×16)
Dimensions	1762×1134×30mm
Weight	20.9kg
Front Glass	1.6mm anti-reflective coating glass
Back Glass	1.6mm Heat-strengthened glass
Frame	Anodized aluminum alloy
Junction box	IP68
Output cable	4.0mm <sup>2</sup> ; + 400/-200mm or customised
Size of each pallet	1778×1140×1250mm

**Electrical performance parameters**

Module Type	HS-48TBB 435-455-S7									
Test Condition	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax/W)	435	355	440	359	445	363	450	368	455	372
Optimum Operating Voltage (Vmp/V)	29.45	29.32	29.58	29.52	29.71	29.69	29.84	29.86	29.97	30.03
Optimum Operating Current (Imp/A)	14.77	12.10	14.87	12.17	14.98	12.24	15.08	12.31	15.18	12.38
Open Circuit Voltage (Voc/V)	34.71	34.81	34.88	34.98	35.05	35.15	35.22	35.32	35.39	35.49
Short Circuit Current (Isc/A)	15.88	12.68	15.96	12.74	16.04	12.80	16.12	12.86	16.20	12.92
Module Efficiency (%)	21.8%		22.0%		22.3%		22.5%		22.8%	
Operating Temperature Range (°C)	-40°C ~ +85°C									
Maximum System Voltage	1500V DC (IEC)									
Maximum Rated Fuse Current	25A									
Power Tolerance	0~ +5W									
Temperature Coefficient of peak power (Pmax)	-0.29%/°C									
Temperature Coefficient of open circuit voltage(Voc)	-0.25%/°C									
Temperature Coefficient of short-circuit current(Isc)	0.043%/°C									
Nominal Operating Temperature of cell (NOTC)	45±2°C									
Bifaciality(BiFi)	80±5%									

STC: Irradiance 1000W/m<sup>2</sup>    Cell temperature: 25°C    Air quality=1.5  
 NOCT: Irradiance 800W/m<sup>2</sup>    Ambient temperature: 20°C    Air quality =1.5    Wind speed 1m/s

**Parameters of bifacial power generation (Backside Power Gain)**

	Maximum power(Pmax)	457Wp	462Wp	467Wp	473Wp	478Wp
5%	Module efficiency(%)	22.9%	23.1%	23.4%	23.6%	23.9%
	Maximum power(Pmax)	479Wp	484Wp	490Wp	495Wp	501Wp
10%	Module efficiency(%)	23.9%	24.2%	24.5%	24.8%	25.0%
	Maximum power(Pmax)	500Wp	506Wp	512Wp	518Wp	523Wp
15%	Module efficiency(%)	25.0%	25.3%	25.6%	25.9%	26.2%