



Hitouch 6N

HN21RN-48HT

450-470W

BIFACIAL

Full Black Module

23.5%

Maximum Efficiency



Long-Term Reliability

Module certified to withstand 5400 Pa positive static load and 2400 Pa negative static load.

Excellent anti-PID performance to guarantee a better sustainability in harsh environment.



Lower Hot Spot and Crack Risk

Reduce hot-spot risk with optimized electrical design and lower operating current.

Reduce crack risk by optimization of solar cell design.



Higher Power Output

Higher module conversion efficiency benefit from bigger wafer and half-cell structure.

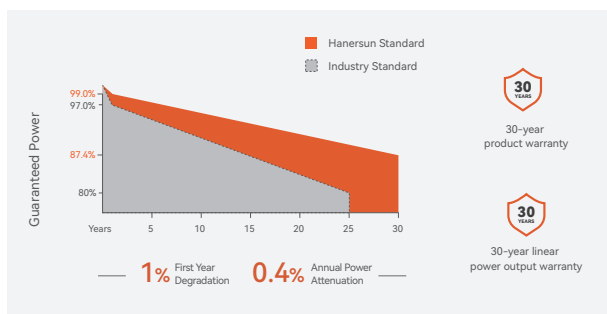
Better light trapping and current collection to improve module power output and reliability.



Excellent Temperature Coefficient

Lower operating temperature and temperature coefficient increases the power output.

Power Warranty



Certificates



Insurance

Munich RE



About Hanersun

Hanersun is a world-leading clean energy company, focusing on R&D, manufacturing and distribution of solar module and energy storage system, as well as comprehensive clean energy solutions. Committed to high-efficiency technologies, the company is one of the first to launch PV modules of 600W+ and 700W+ in the industry.

Electrical Characteristics (STC&BNPI) HN21RN-48HTXXXW(XXX=450-470)

Testing Condition	STC	BNPI	STC	BNPI	STC	BNPI	STC	BNPI	STC	BNPI
Maximum Power (Pmax)*	450	499	455	504	460	510	465	516	470	521
Maximum Power Voltage (Vmp)	29.78	29.78	29.94	29.94	30.1	30.1	30.26	30.26	30.42	30.42
Maximum Power Current (Imp)	15.12	16.75	15.20	16.84	15.29	16.95	15.37	17.06	15.46	17.13
Open-circuit Voltage (Voc)*	35.73	35.73	35.93	35.93	36.13	36.13	36.33	36.33	36.53	36.53
Short-circuit Current (Isc)*	16.00	17.73	16.06	17.79	16.12	17.87	16.18	17.93	16.24	18.00
Module Efficiency(%)	22.5%		22.8%		23.0%		23.3%		23.5%	

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5

BNPI: Irradiance: Front 1000W/m², Rear 135W/m², Cell Temperature 25°C, AM=1.5

*Measuring Tolerance: ±3%
Power Binning Tolerance: 0~+5W

Electrical characteristics with different power bin (reference to 10% backside power gain)

Module Type	450W	455W	460W	465W	470W
Maximum Power (Pmax)	495	501	506	512	517
Maximum Power Voltage (Vmp)	29.78	29.94	30.10	30.26	30.42
Maximum Power Current (Imp)	16.64	16.74	16.82	16.93	17.00
Open-circuit Voltage (Voc)	35.73	35.93	36.13	36.33	36.53
Short-circuit Current (Isc)	17.60	17.67	17.73	17.80	17.86

Mechanical Parameters

Solar Cells	N-TYPE Monocrystalline(210R)	No. of Cells	96 [2 x (8 x 6)]
Module Dimensions	1762*1134*30mm	Weight	24.1kg
Glass	2mm-2mm	J-Box	IP68
Frame	Anodized Aluminium Alloy	Output Cable	4.0mm ² , 1200/1200mm
Connector	Stäubli Electrical connectors AG / PV-KST4-EVO2A/xy, PV-KBT4-EVO2A/xy Zerun Co.,Ltd / Z4S-abcd		

Operating Parameters

Operational Temperature	-40°C~+70°C
Maximum System Voltage	1500V DC (IEC)
Maximum Series Fuse Rating	35A
Bifacial	φPmax=80±5% φIsc=80±5% φVoc=98±2%
Fire Class Rating	Class C

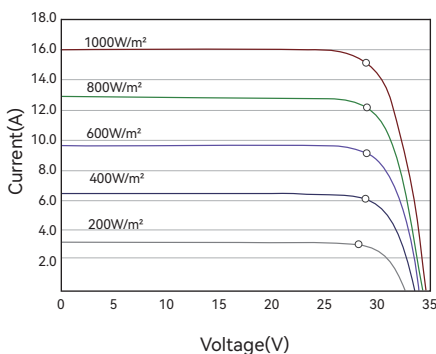
Packaging

Pcs per Pallet: 37

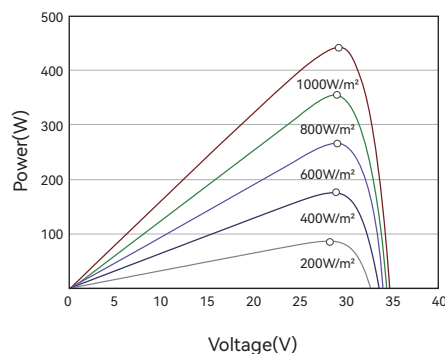
Temperature Ratings

Temperature Coe ficient of Pmax	-0.28%/°C
Temperature Coefficient of Voc	-0.23%/°C
Temperature Coefficient of Isc	+0.045%/°C

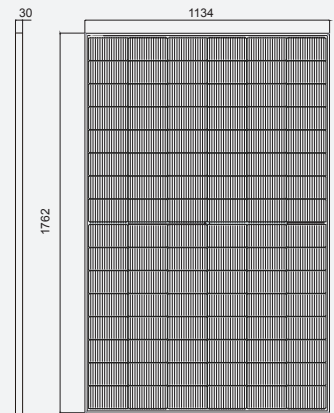
I-V Curves of PV Module (460W)



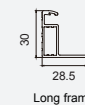
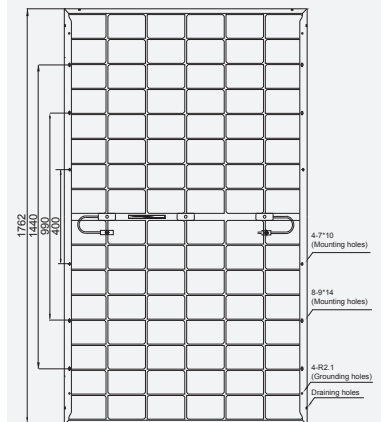
P-V Curves of PV Module (460W)



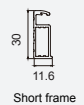
Dimensions (Unit: mm)



Front View



Long frame



Short frame

Back View