N-TOPCon

HANERSUN



Hitouch 6N

HN21RN-48HT

435-455W

BIFACIAL
High Efficiency Module

22.8%
Maximum Efficiency

Long-Term Reliability

Module certified to withstand extreme wind (2400 Pascal) and snow loads (5400 Pascal).

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

Higher Power Output

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

MBB technology enhances current collection with lower series resistance.

Lower Hot Spot and Crack Risk

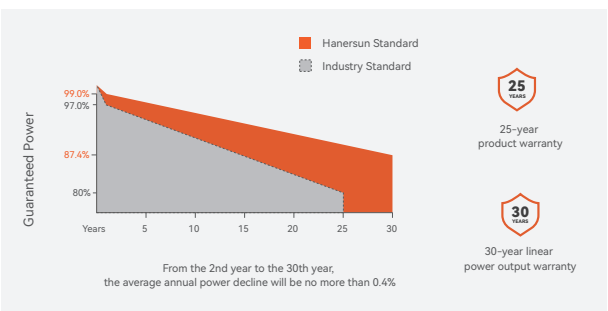
Reduce hot-spot risk with optimized electrical design and lower operating current.

Reduce crack risk by MBB solar cell design.

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, with a business scope from the R&D and intelligent manufacturing of solar modules, energy storage products, to comprehensive energy solutions.

Made in China

Electrical Characteristics (STC&BNPI) HN21RN-48HTXXXW(XXX=435-455)

Testing Condition	STC	BNPI	STC	BNPI	STC	BNPI	STC	BNPI	STC	BNPI
Maximum Power (Pmax)*	435	482	440	488	445	493	450	499	455	504
Maximum Power Voltage (Vmp)	29.30	29.30	29.46	29.46	29.62	29.62	29.78	29.78	29.94	29.94
Maximum Power Current (Imp)	14.85	16.45	14.94	16.57	15.03	16.65	15.12	16.76	15.20	16.84
Open-circuit Voltage (Voc)*	35.13	35.13	35.33	35.33	35.53	35.53	35.73	35.73	35.93	35.93
Short-circuit Current (Isc)*	15.82	17.53	15.88	17.60	15.94	17.66	16.00	17.73	16.06	17.79
Module Efficiency(%)	21.8%		22.0%		22.3%		22.5%		22.8%	

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

BNPI: Irradiance: Front 1000W/m², Rear 135W/m², Cell Temperature 25℃, 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	435W	440W	445W	450W	455W
Maximum Power (Pmax)	479	484	490	495	501
Maximum Power Voltage (Vmp)	29.30	29.46	29.62	29.78	29.94
Maximum Power Current (Imp)	16.35	16.44	16.55	16.64	16.74
Open-circuit Voltage (Voc)	35.13	35.33	35.53	35.73	35.93
Short-circuit Current (Isc)	17.41	17.47	17.54	17.60	17.67

Mechanical Parameters

Solar Cells	N-TYPE Monocrystalline(210R)	No. of Cells	96 [2 x (8 x 6)]
Module Dimensions	1762*1134*30mm	Weight	25.5kg
Glass	2mm-2mm	J-Box	IP68
Frame	Anodized Aluminium Alloy	Output Cable	4.0mm², 1200/1200mm
Connector	Zerun Co.,Ltd / Z4S-abcd Stäubli Electrical connectors AG / PV-KST4-EVO2A/xy, PV-KBT4-EVO2A/xy		

Operating Parameters

Operational Temperature	-40℃~+85℃
Maximum System Voltage	1500V DC (IEC)
Maximum Series Fuse Rating	35A
Bifacility	ϕPmax=80±5% ϕIsc=80±5% ϕVoc=98±2%
Fire Class Rating	Class C

Temperature Ratings

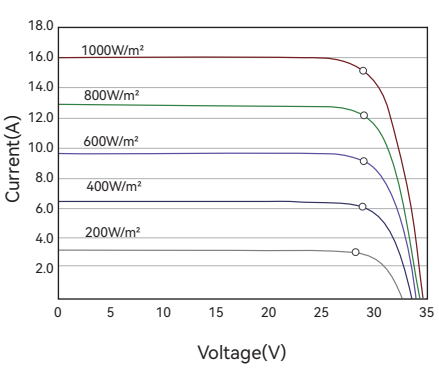
Temperature Coefficient of Pmax	-0.28%/℃
Temperature Coefficient of Voc	-0.23%/℃
Temperature Coefficient of Isc	+0.045%/℃

(Do not connect Fuse in Combiner Box with two or more strings in parallel connection)

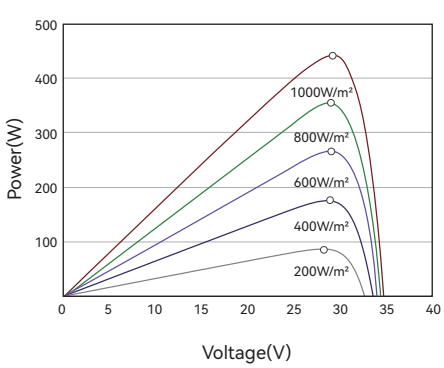
Packaging

Pcs per Pallet: 37	Pcs per 40' HC: 962

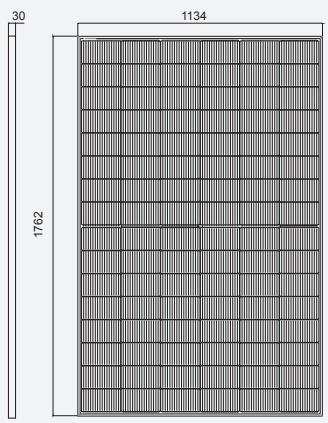
I-V Curves of PV Module (440W)



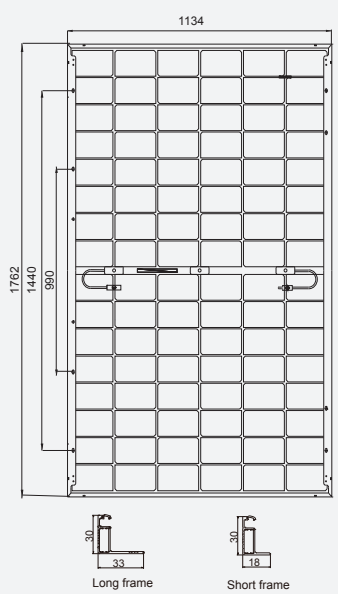
P-V Curves of PV Module (440W)



Dimensions (Unit: mm)



Front View



Back View

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