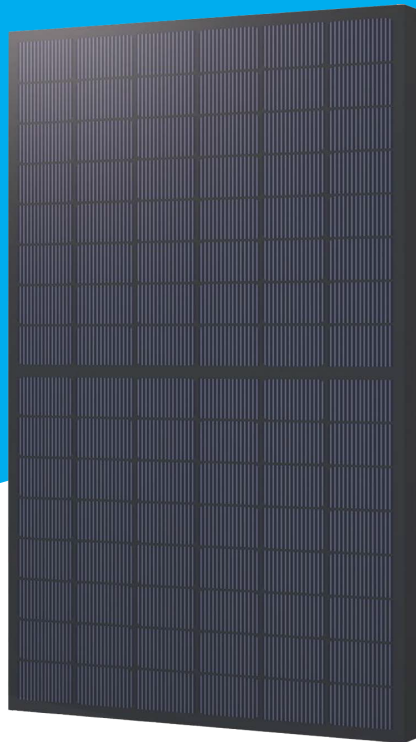




PNGNH48-DGBR

450-470 Watt (FB)

N-type Mono TOPCon



Key Features



Multi Busbar Solar Cell
Stronger current collection ability, Special circuit design with much lower hot spot temperature;



PID Resistant
Excellent PID resistance at 96 hours (85°C/85%) test,and also can be improved to meet higher standards for the particularly harsh environment;



Anti-Crack
Excellent anti-microcracking performance with more balanced interior stress;



Module efficiency up to 23.52%
Half cell structure brings low resistance characteristic, higher lifetime generating capacity, simultaneously lower annual power attenuation;



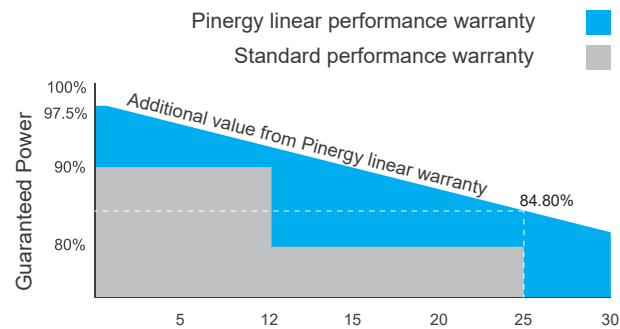
Low-Light Performance
Excellent power generation performance under Low-Light condition due to multi busbar; better shading response benefit from half cell module;



Strength and Durability
Certified for 5400Pa snow and 2400Pa Wind loads test;

Linear Performance Warranty

12 Years Product Warranty · 30 Years Linear Power Warranty



Certifications

- IEC 61215, IEC 61730, CE, CQC
- ISO9001: 2015: Quality management system
- ISO14001: 2015: Environmental management system
- ISO45001: 2018: Occupational health and safety management system



Electrical Specifications

Module Type: PNGNH48-DGBR-xxx , (xxx=Pmax)

Module Type	450	455	460	465	470
Testing Condition	STC	STC	STC	STC	STC
Max. Power (Pmax/W)	450	455	460	465	470
Voltage at Max. Power (Vmp/V)	29.71	29.94	30.13	30.33	30.54
Current at Max. Power (Imp/A)	15.15	15.20	15.27	15.33	15.39
Open circuit voltage (Voc/V)	35.05	35.30	35.55	35.80	36.05
Short circuit current (Isc/A)	15.95	16.00	16.05	16.11	16.17
Module efficiency (%)	22.52%	22.77%	23.02%	23.27%	23.52%
Power Tolerance (W)			0~+5		

Standard Test Condition (STC): Irradiance 1000W/m², Cell Temperature 25 °C , AM1.5

Nominal Module Operating Temperature (NOCT): Irradiance 800W/m², Ambient Temperature 20 °C , AM1.5, Wind Speed 1m/s

Electrical characteristics with different power bin (reference to 10% Irradiance ratio)

Maximum power (Pmax)	486.1	491.6	496.8	502.3	507.6
Voltage at Max. Power (Vmp/V)	29.71	29.94	30.13	30.33	30.54
Current at Max. Power (Imp/A)	16.36	16.42	16.49	16.56	16.62
Open circuit voltage (Voc/V)	35.05	35.30	35.55	35.80	36.05
Short circuit current (Isc/A)	17.23	17.28	17.33	17.40	17.46

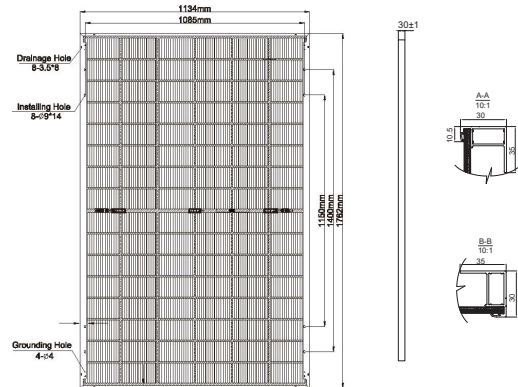
Mechanical Specifications

Cell Type	N-type
No. of Cells	96 (6×16)
Dimension	1762x1134x30mm
Weight	24.5kg
Glass	Dual glass,2.0mm coated tempered glass
Frame	Anodized Aluminium Alloy
Junction Box	IP68, 3 diodes
Output Cables	4mm², Length 300mm or customized
Connector type	MC4 compatible

Packaging Configurations

Per Pallet	36 pcs
Per 40' HQ Container	936 pcs

Engineering Drawings



Temperature Characteristics

NOCT Temperature	44 °C ±2 °C
Temperature Coefficient (Pmax)	-0.36%/ °C
Temperature Coefficient (Voc)	-0.28%/ °C
Temperature Coefficient (Isc)	0.05%/ °C

Maximum Ratings

Maximum system voltage (IEC)	1500V DC
Snow / Wind	5400Pa / 2400Pa
Operating Temperature	-40 °C ~ +85 °C
Maximum series fuse rating	35A

Curve & Temperature Dependence

