



PHILADELPHIA SOLAR
DELIVERING CLEAN ENERGY SOLUTIONS

NEXUS

PS-MNB108(HCBF)-xxxW

Half-Cell N-Type 16BB Bifacial Module

445 - 460 Watt

Positive power tolerance of 0 ~+3%



Made In Jordan

Philadelphia Solar's Mono-Crystalline N-type modules with power up to **460Wp** are produced using the state-of-the-art (automated) robotic production lines. These modules are suitable to be used for most electrical power applications and have excellent durability to prevailing weather conditions

CERTIFICATIONS

- UL 61215 / UL 61730
- IEC 61215 / IEC 61730
- CSA C22.2#61730:2019
- HALT TEST Highly Accelerated Life And Extended Reliability Test
- IEC 61853 PAN File
- IEC TS 62804 PID Resistance
- IEC 60068 Dust and Sand Resistance
- IEC 62716 Ammonia Resistance
- IEC 61701 Salt Mist Resistance
- Bankability Report
- EN ISO 9001: 2015 Quality Management System
- EN ISO 14001: 2015 Environmental Management System
- EN ISO 45001: 2018 Occupational health and safety management systems



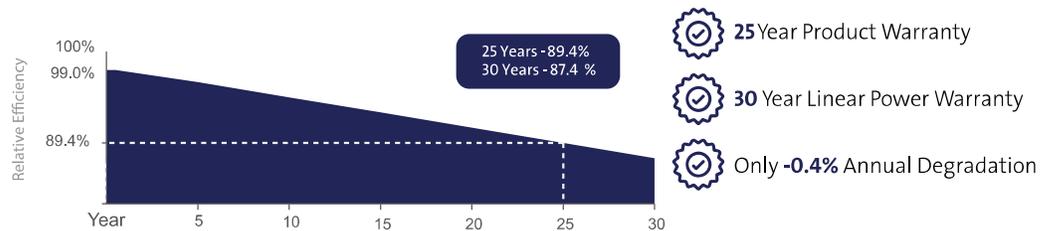
APPLICATIONS



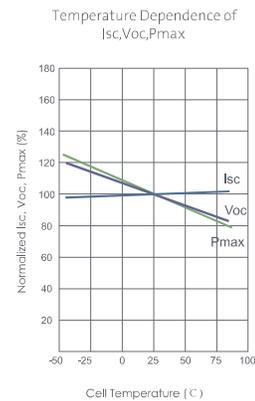
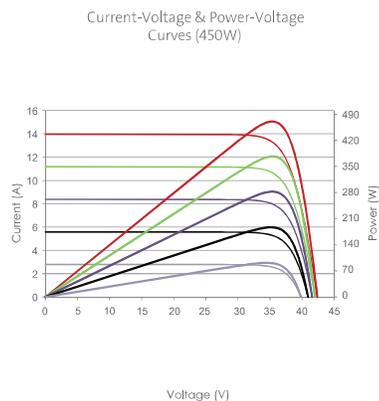
FEATURES

- Power output increases by 5-25% from the backside resulting in significantly reduced LCOE and (IRR).
- Withstand High Mechanical load : Front (5400 Pascal) Back (5400 Pascal)
- Exceptional Anti-PID performance through the use of optimized mass-production processes and strict materials control.
- Improved light trapping and current collection technology enhance module power output and reliability.
- Less partial shading current mismatch loss so more power output.
- Better temperature coefficients come from half-cell design.

LINEAR PERFORMANCE WARRANTY



Electrical Performance & Temperature Dependence



ELECTRICAL CHARACTERISTICS

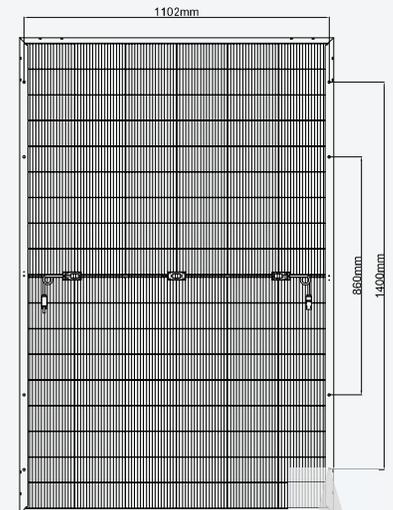
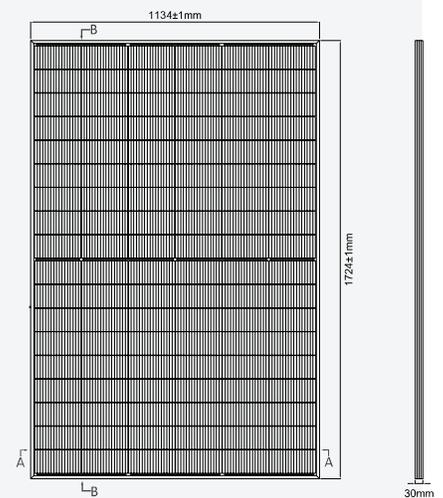
POWER AT STC	445 W	450 W	455 W	460 W
Short Circuit Current - I _{sc} (A)	14.38	14.47	14.54	14.62
Maximum Power Current - I _{mpp} (A)	13.40	13.44	13.48	13.52
Open Circuit Voltage - V _{oc} (V)	38.76	38.84	39.02	39.15
Maximum Power Voltage - V _{mpp} (V)	33.23	33.51	33.76	34.03
Module Efficiency - η' (%)	22.76%	23.02%	23.27%	23.53%
Bifaciality Ratio (%)	80% ± 5			
Power tolerance (%)	0~+3%			

Values at Standard Test Conditions STC (Air Mass AM 1.5, Irradiance 1000 W/m², Cell Temperature 25°C).

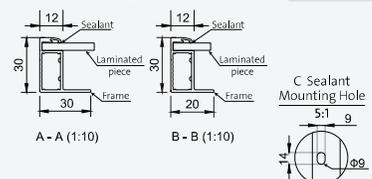
MATERIAL CHARACTERISTICS

Characteristics	Value
Cells per Module	108 (54x 2)
Cell Type	N Type Mono-Crystalline
Front Surface	3.2mm Tempered AR Coated Glass
Back Cover	Transparent Backsheet
Frame	Anodized Aluminum (Black/Silver)
Junction Box	IP 68 With original MC4
Cable Length	1200mm Cable length could be customized
Fire Classification	Type 1

MODULE DRAWINGS



Cross Section A-A & B-B



THERMAL CHARACTERISTICS

Characteristics	Value
Open Voltage Temperature Coefficient VOC (%/C°)	-0.25
Short Circuit Current Temperature Coefficient ISC (%/C°)	+0.046
Power Temperature Coefficient PMP (%/C°)	-0.29
NOCT (°C)	45 ± 2

OPERATING CONDITIONS

Maximum System Voltage - V _{max} (V)	1500
Maximum Series Fuse (A)	30
Operating Temperature Range (°C)	IEC: -40 to +85 UL: -40 to +90

PHYSICAL CHARACTERISTICS

Module Dimensions (mm)	1724x 1134 x 30
Module Weight (kg)	20.5 ± 1Kg

Packaging	Value
Modules per Pallet	37
40 Feet High-Cube Container	962 Modules

Mechanical Load**	Value
Max Static load (Front)	5400 Pa
Max Static load (Back)	5400 Pa
Dynamic load	1000 Pa

- ◆ Tolerance of power Current and Voltage (ISC,VOC) ± 3 %
- ◆ Datasheet is subjected to change without prior notice, always obtain the most recent version of the datasheet.
- ◆ ** Caution: For professional use only, the installation and handling of PV modules and cleaning modules require professional skills and should only be performed by qualified professionals, please read the Installation and Operation Manual before using the modules, also Cleaning Guidelines