



PHILADELPHIA SOLAR
DELIVERING CLEAN ENERGY SOLUTIONS

NEXUS

PS-MNB108(HCBF)-xxxW

Half-Cell N-Type 16BB Bifacial Module

425 - 440 Watt

Positive power tolerance of 0 ~+3%

Philadelphia Solar's Mono-Crystalline N-type modules with power up to **440Wp** 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



Intertek



TUV AUSTRIA

intertek



APPLICATIONS



On-Grid Commercial/
Industrial Roof-Tops



Off-Grid Systems
(Including Lighting Systems)

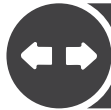


Solar Power Plants

FEATURES



Power output increases by 5-25% from the backside resulting in significantly reduced LCOE and (IRR).



Exceptional Anti-PID performance through the use of optimized mass-production processes and strict materials control.



Less partial shading current mismatch loss so more power output.



Withstand High Mechanical load :
Front (5400 Pascal)
Back (5400 Pascal)



Improved light trapping and current collection technology enhance module power output and reliability.

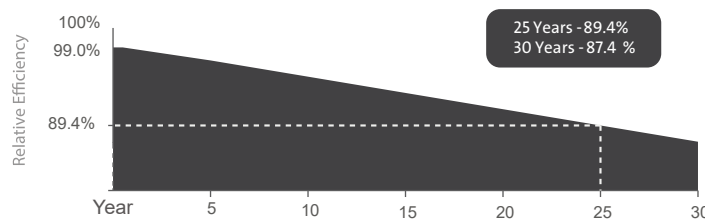


Better temperature coefficients come from half-cell design.



Made In Jordan

LINEAR PERFORMANCE WARRANTY



25 Year Product Warranty



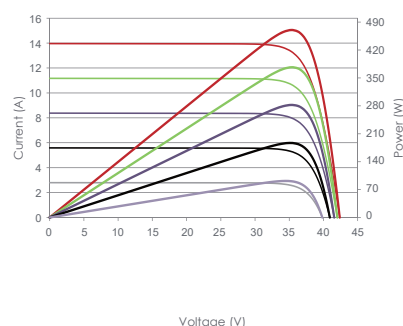
30 Year Linear Power Warranty



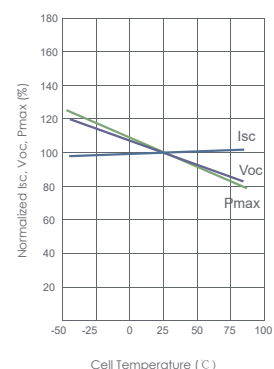
Only -0.4% Annual Degradation

Electrical Performance & Temperature Dependence

Current-Voltage & Power-Voltage Curves (430W)



Temperature Dependence of Isc, Voc, Pmax



ELECTRICAL CHARACTERISTICS

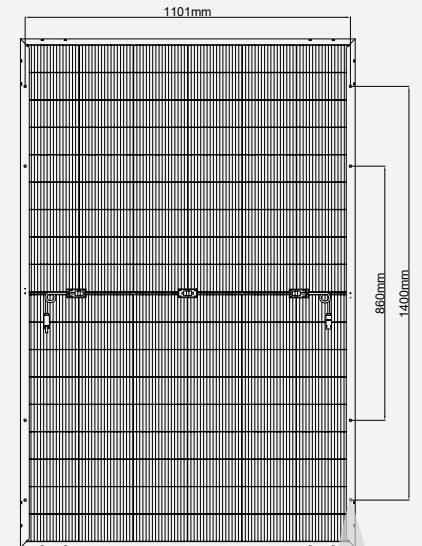
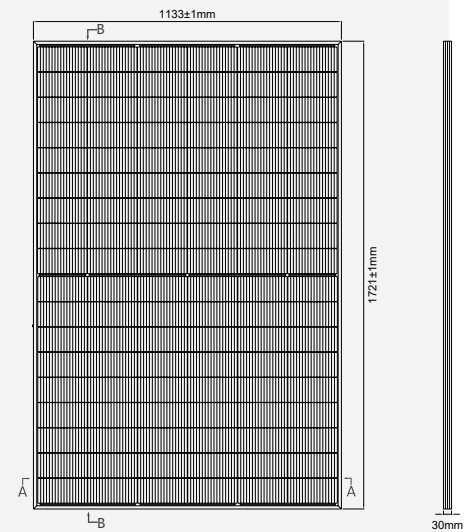
POWER AT STC	425 W	430 W	435 W	440 W
Short Circuit Current - Isc (A)	14.05	14.13	14.22	14.30
Maximum Power Current - Impp (A)	13.23	13.28	13.32	13.36
Open Circuit Voltage - Voc (V)	38.29	38.42	38.50	38.63
Maximum Power Voltage - Vmpp (V)	32.23	32.49	32.76	32.98
Module Efficiency - η' (%)	21.80%	22.05%	22.31%	22.57%
Bifaciality Ratio (%)	%80 $\pm$ 5			
Power tolerance (%)	0~+ %3			

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

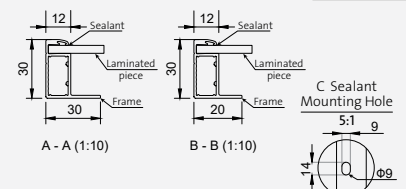
MATERIAL CHARACTERISTICS

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 $\pm$ 2

OPERATING CONDITIONS

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

PHYSICAL CHARACTERISTICS

Characteristics	Value
Module Dimensions (mm)	1721 x 1133 x 30
Module Weight (kg)	20.5 $\pm$ 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) $\pm$ 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