



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

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



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 (2400 Pascal)



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

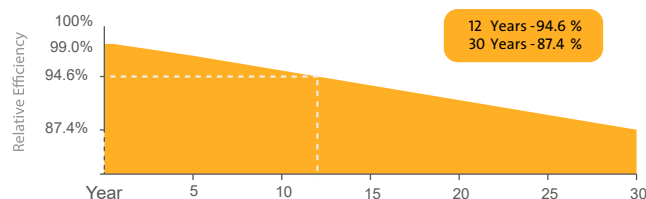


Better temperature coefficients come from half-cell design.



Made In Jordan

LINEAR PERFORMANCE WARRANTY



12 Year Product Warranty



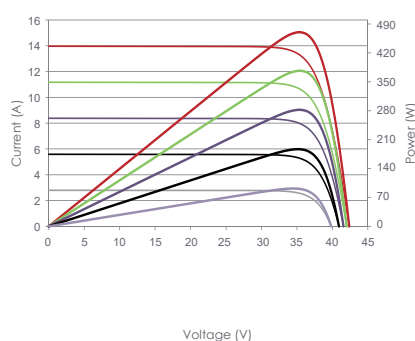
30 Year Linear Power Warranty



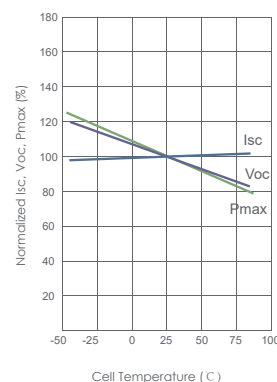
Only -0.4% Annual Degradation

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	14.3
Maximum Power Current - Impp (A)	13.23	13.28	13.32	13.36
Open Circuit Voltage - Voc (V)	38.29	38.42	38.5	38.63
Maximum Power Voltage - Vmpp (V)	32.23	32.49	32.76	32.98
Module Efficiency - η' (%)	21.8%	22.05%	22.3%	22.57%
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).

ELECTRICAL CHARACTERIS TICS WITH DIFFERENT REAR SIDE POWER GAIN (REFER TO 530W FRONT)																
	425				430				435				440			
	5%	10%	15%	20%	5%	10%	15%	20%	5%	10%	15%	20%	5%	10%	15%	20%
Pmax	446	468	489	510	452	473	495	516	457	479	500	522	462	484	506	528
Impp/A	13.89	14.55	15.21	15.88	13.94	14.61	15.27	15.94	13.99	14.65	15.32	15.98	14.03	14.70	15.36	16.03
Isc/A	14.75	15.46	16.16	16.86	14.84	15.54	16.25	16.96	14.93	15.64	16.35	17.06	15.02	15.73	16.45	17.16
Vmpp/V	32.23	32.23	32.23	32.23	32.49	32.49	32.49	32.49	32.76	32.76	32.76	32.76	32.98	32.98	32.98	32.98
Voc/V	38.29	38.29	38.29	38.29	38.42	38.42	38.42	38.42	38.50	38.50	38.50	38.50	38.63	38.63	38.63	38.63

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

THERMAL CHARACTERISTICS		PHYSICAL CHARACTERISTICS	
Characteristics	Value	Characteristics	Value
Open Voltage Temperature Coefficient VOC (%/C°)	-0.25	Module Dimensions (mm)	1721 x 1133 x 35
Short Circuit Current Temperature Coefficient ISC (%/C°)	+0.046	Module Weight (kg)	20.5 ± 1kg
Power Temperature Coefficient PMP (%/C°)	-0.30	Packaging	Value
NOCT (°C)	45±2	Modules per Pallet	37
OPERATING CONDITIONS		40 Feet High-Cube Container	962 Modules
Maximum Sytem Voltage - Vmax (V)	1500	Mechanical Load**	Value
Maximum Series Fuse (A)	30	Max Static load (Front)	5400 Pa
Operating Temperature Range (°C)	IEC: -40 to +85 UL: -40 to +90	Max Static load (Back)	2400 Pa
		Dynamic load	1000 Pa

- ◆ Tolerance of power Current and Voltage (ISC,VOC)±5 %
- ◆ 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

MODULE DRAWINGS

Cross Section A-A&B-B

Updated Dec 2023