



PHILADELPHIA SOLAR
DELIVERING CLEAN ENERGY SOLUTIONS

NEXUS

PS-MNB108(HCBF)-xxxW

Half-Cell N-Type 16BB Bifacial Module

425 - 440Watt

Positive power tolerance of 0 ~+3%



Philadelphia Solar's Mono-Crystalline N-type modules with power up to **440Wp** are reproduced 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 61705 Salt Mist Resistance
Bankability Report
EN ISO 9001: 2015
Quality Management System

EN ISO 14001: 2015

Environmental Management System

EN ISO 45001: 2018



APPLICATIONS



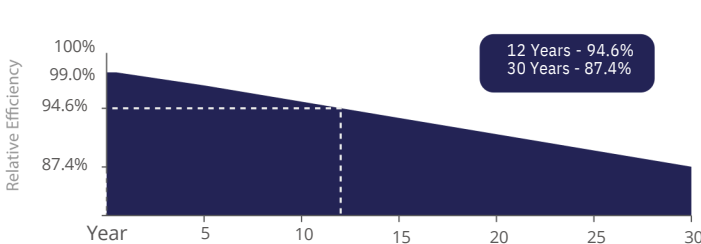
FEATURES

- 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.



Made In Jordan

LINEAR PERFORMANCE WARRANTY

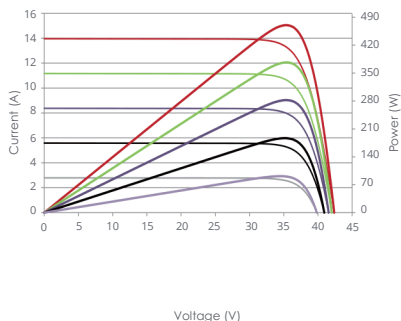


12 Years - 94.6%
30 Years - 87.4%

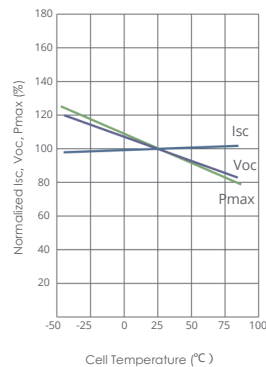
- 12 Year Product Warranty
- 30 Year Linear Power Warranty
- Only **-0.4%** Annual Degradation

Electrical Performance & Temperature Dependence

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



Temperature Dependence of Isc, Voc, Pmax



ELECTRICAL CHARACTERISTICS POWER AT STC

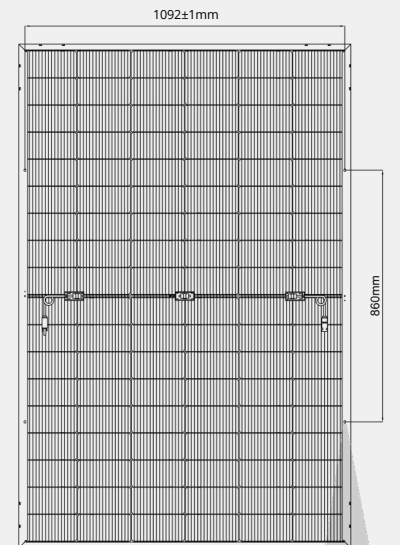
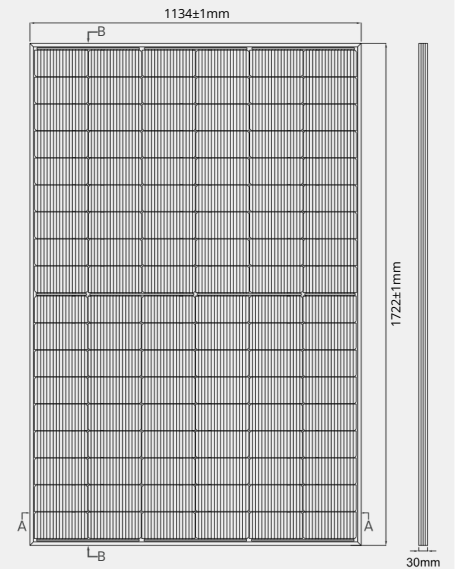
	425 W	430 W	435 W	440 W
Short Circuit Current - I _{sc} (A)	14.05	14.13	14.22	14.30
Maximum Power Current - I _{mpp} (A)	13.23	13.28	13.32	13.36
Open Circuit Voltage - Voc (V)	38.29	38.42	38.50	38.63
Maximum Power Voltage - V _{mpp} (V)	32.23	32.49	32.76	32.98
Module Efficiency - η' (%)	21.80%	22.05%	22.31%	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 25o C).

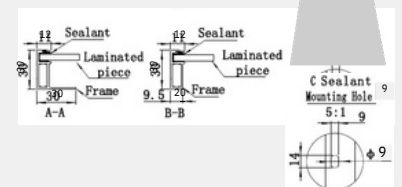
MATERIAL CHARACTERISTICS

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°)	-0.30
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

Characteristics	Value
Module Dimensions (mm)	1722 x 1134 x 30
Module Weight (kg)	20.5± 1K g

Packaging

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

Mechanical Load**

Characteristics	Value
Max Static load (Front)	5400P
Max Static load (Back)	a
Dynamic load	5400P

- ◆ 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

SGProFw 4a0t0t0 S~P1F2 040000T0

- Low frequency inverter 120/240Vac Split Phase output
- Integrated MPPT charge controller
- Optional WIFI/ GPRS remote monitoring
- Built-in pure copper low frequency transformer
- Configurable grid or solar input priority



P O W E R
- I N G O
T O M O -
R R O W O

GROWATT

www.ginverter.com

Datasheet	SPF 4000T DVM-MPV	SPF 5000T DVM-MPV	SPF 6000T DVM-MPV	SPF 8000T DVM-MPV	SPF 10000T DVM-MPV	SPF 12000T DVM-MPV
Battery Voltage	48VDC					
Battery Type	Lithium/Lead-acid					
INVERTER OUTPUT						
Rated Power	4KW	5KW	6KW	8KW	10KW	12KW
Surge Rating	12KW	15KW	18KW 24KW		30KW	36KW
Waveform	Pure sine wave/ same as input (bypass mode)					
Nominal Output Voltage RMS	104-110-115-120/208-220-230-240VAC(optional)					
Output Frequency	50Hz/60Hz +/-0.3 Hz					
Inverter Efficiency(Peak)	>85%					
Transfer Time	10ms(max)					
SOLAR CHARGER						
Maximum PV Charge Current	80A			120A		
Maximum PV Array Power	5000W			7000W		
Number of independent MPP trackers/ strings per MPP tracker	1/1			2/1		
MPPT Range @ Operating Voltage(VDC)	60~245VDC			60~245VDC		
Maximum PV Array Open Circuit Voltage	250VDC			250VDC		
Maximum Efficiency	>97.5%			>97.5%		
AC INPUT						
Voltage	240VAC					
Selectable Voltage Range	184~272VAC(UPS);154~272VAC(APL)					
Frequency Range	50Hz/60Hz (Auto sensing)					
Max. Charging Current	40A	50A	60A	70A	80A	100A
MECHANICAL SPECIFICATIONS						
Protection Degree	IP20					
Dimensions (W/H/D)	360/540/218mm	360/540/218mm	360/540/218mm	380/650/225mm	380/650/225mm	380/650/225mm
Weight	42kg	47kg	52kg	64kg	66kg	75kg
OPERATING ENVIRONMENT						
Operation Temperature Range	0°C to 45°C					