



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 61701 Salt Mist Resistance
Bankability Report
EN ISO 9001: 2015
Quality Management System

EN ISO 14001: 2015

Environmental Management System

EN ISO 45001: 2018



APPLICATIONS



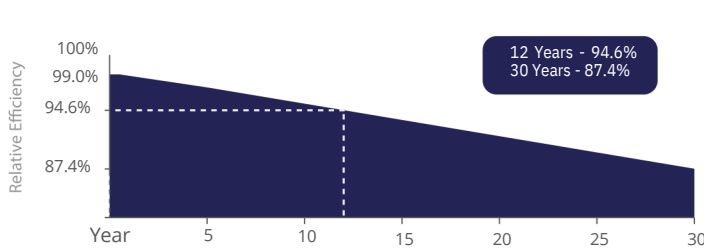
FEATURES

- 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

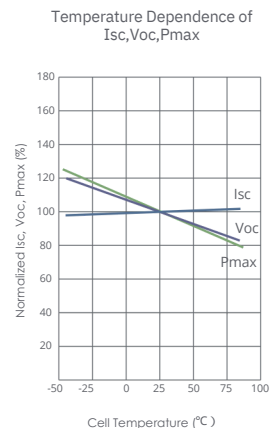
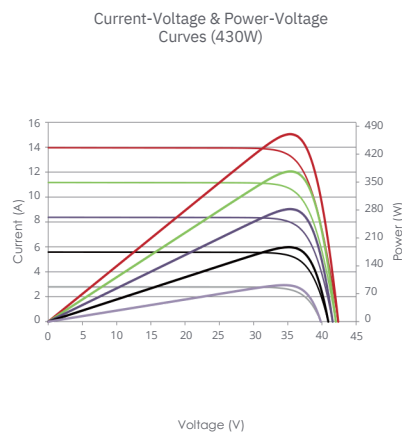
LINEAR PERFORMANCE WARRANTY



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



ELECTRICAL CHARACTERISTICS POWER AT STC

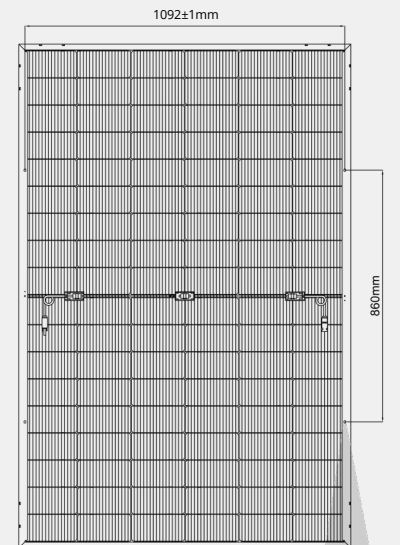
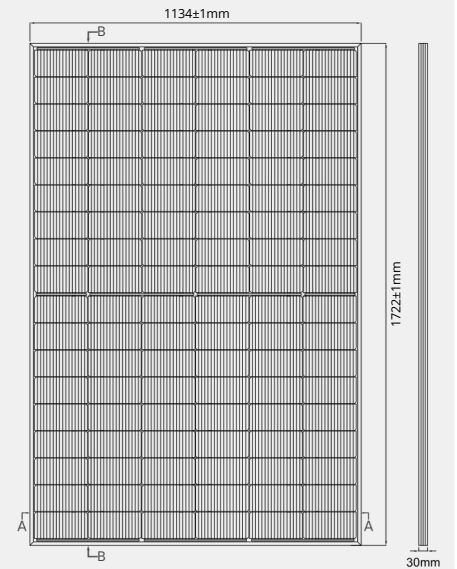
	425 W	430 W	435 W	440 W
Short Circuit Current - Isc (A)	14.05	14.13	14.22	14.30
Maximum Power Current - Imp (A)	13.23	13.28	13.32	13.36
Open Circuit Voltage - Voc (V)	38.29	38.42	38.50	38.63
Maximum Power Voltage - Vmpp (V)	32.23	32.49	32.76	32.98
Module Efficiency - η (%)	21.80%	22.05%	22.31%	22.57%
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 25o C).

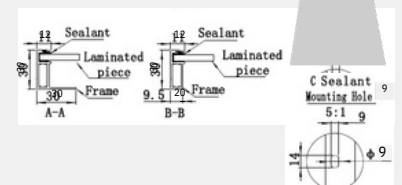
MATERIAL CHARACTERISTICS

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 \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)	1722 x 1134 x 30
Module Weight (kg)	20.5 \pm 1K g

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

Mechanical Load**	Value
Max Static load (Front)	5400P
Max Static load (Back)	a
Dynamic load	5400P

- ◆ 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

SPF 3000~3500TL LVM-US

- Integrated MPPT charge controller.
- Equalization charging function.
- Work with or without battery
- PV input voltage up to 280VDC.
- Generator connection available
- Configurable grid or solar input priority.
- Optional WIFI/GPRS remote monitoring
- Support parallel operation for capacity expansion up to 21kW.
- PV and grid power the load jointly if PV energy is insufficient.
- Flexibly schedule the Inverter charging and discharging time.



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

GROWATT

<https://us.growatt.com>

Datasheet	SPF 3000TL LVM-US	SPF 3500TL LVM-US
Battery voltage	48VDC	
Battery type	Lithium/Lead-acid	
Inverter output		
Rated power		
Parallel capability	3000VA/3000W	3500VA/3500W
AC voltage regulation (battery mode)	Yes, 6 units maximum	
Surge power	100Vac/110Vac/120Vac @ 50/60Hz	
	6000VA	7000VA
Efficiency (peak)	90%	
Waveform	Pure sine wave	
Transfer time	10ms typical, 20ms Max	
Solar charging		
Maximum PV array power	4000W	4500W
Startup voltage	150V	
MPPT range @ operating voltage	120~225VDC (Startup Voltage 150±10VDC)	
Number of independent MPP trackers/ strings per MPP tracker	1/1	
Maximum PV array open circuit voltage	280VDC	
Maximum solar charge current	80A	
AC charger		
Charge current	40A	
AC input voltage	120VAC	
Selectable voltage range	95-140VAC (For Personal Computers) ; 65-140VAC (For Home Appliances)	
Frequency range	50Hz/60Hz (Auto sensing)	
Physical		
Protection degree	IP 20/NEMA Type1	
Dimension (W/H/D)	330/485/135mm(13/19.1/5.3in)	
Net weight	12kg(26.5lb)	
Operating environment		
Humidity	5% to 95% Relative Humidity(Non-condensing)	
Operating temperature	0°C - 50°C(32°F - 122°F)	
Storage temperature	-15°C - 60°C(5°F - 140°F)	
Warranty	2 Years	
	UL 1741	

Split-phase parallel application

