



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



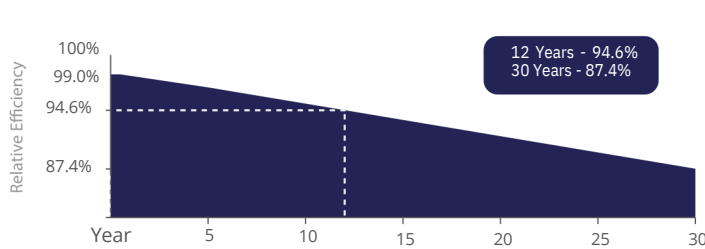
FEATURES

- 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

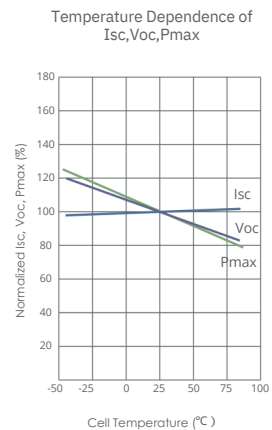
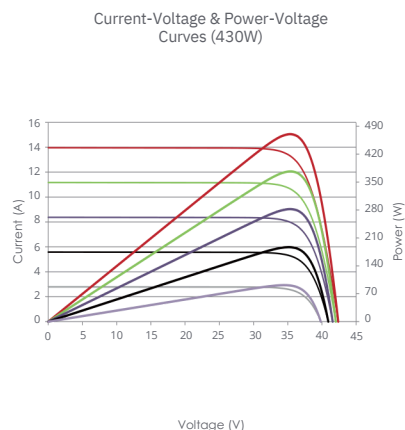
LINEAR PERFORMANCE WARRANTY



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

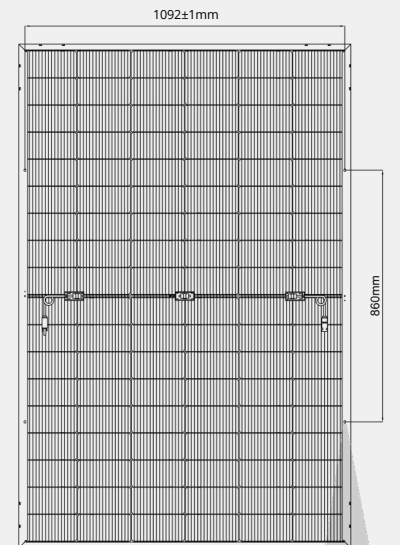
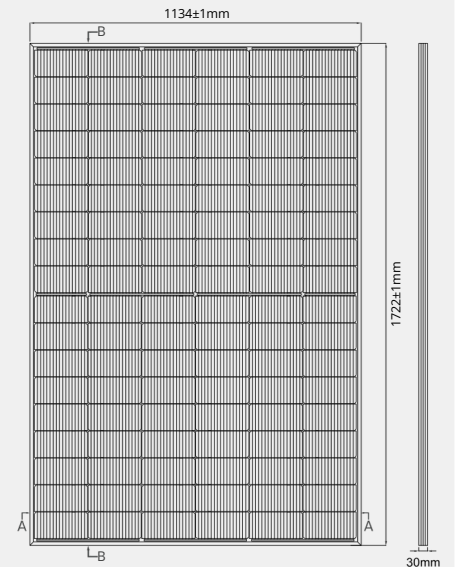
	425 W	430 W	435 W	440 W
Short Circuit Current - Isc (A)	14.05	14.13	14.22	14.30
Maximum Power Current - Imp (A)	13.23	13.28	13.32	13.36
Open Circuit Voltage - Voc (V)	38.29	38.42	38.50	38.63
Maximum Power Voltage - Vmpp (V)	32.23	32.49	32.76	32.98
Module Efficiency - η (%)	21.80%	22.05%	22.31%	22.57%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

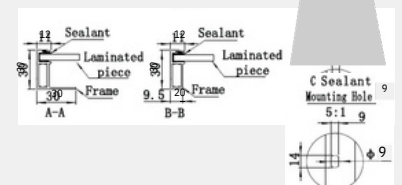
MATERIAL CHARACTERISTICS

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

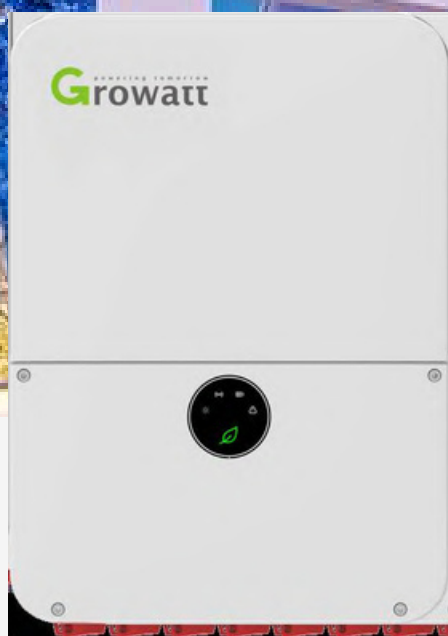
Packaging	Value
Modules per Pallet	37
40 Feet High-Cube Container	962 Modules

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

MIN 8200~11400TL-XH-US

- Battery Ready for DC Coupled and AC coupled system
- Support backup power and dark start operations
- With Rapid shutdown solution & AFCI integrated
- Integrated EMS, support multiple energy management modes: self-consumption, zero export, TOU and off-grid
- UL1741SA, CA Rule 21 & HECO compliant
- Built-in 4G/Wi-Fi Comm. with APP. IoT integrated Cloud and monitoring



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

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Datasheet	MIN 8200TL-XH-US	MIN 9000TL-XH-US	MIN 10000TL-XH-US	MIN 11400TL-XH-US
Input Data (PV)				
Max. Recommended PV Power(STC)	16400W	18000W	20000W	22800W
DC/AC Ratio			2	
Max. DC Voltage			600V	
Startup Voltage			50V	
Nominal Voltage			360V	
Operating MPPT Range			50~550V	
No. of MPP Trackers			4	
No. of PV Strings per MPP Trackers			2	
Max. Input Current per MPP Trackers			13.5A	
Max. Short-circuit current per MPP trackers			16.9A	
Input/Output Data (DC)				
Battery Voltage Range			360V~550V	
Nominal DC Voltage			400V	
I/O DC Current			14.3A	
I/O DC Power			5000W	
Battery Technology			LFP	
Battery Capacity per Module			9.9kWh	
Scalability			Up to 2	
Output Data (AC)				
AC Nominal Power @240V AC				
Max. AC Apparent Power	8200W	9000W	10000W	10000W
Nominal AC Voltage	8200VA	9000VA	10000VA	11400VA
AC Voltage Range @208V AC @240V AC			208V/240V	
AC Grid Frequency			183V~229V/211V~264V	
AC Grid Frequency Range			50/60Hz	
Max. Output Current			45~65Hz	
Power Factor(@Nominal Power)	42A	45A	47A	47A
Adjustable Power Factor			>0.99	
THDi			0.8 leading~0.8 lagging	
AC Grid Connection Type			<3%	
Output Data (Backup)			L1/L2/N/PE	
AC Nominal Power			10000W	
Max. AC Power Output			11400VA	
Nominal AC Voltage			240V	
Max. Output Current			47A	
THD			5%	
Efficiency				
Max. Efficiency			98.50%	
CEC Efficiency			98.00%	
Protection Devices				
DC Reverse-polarity Protection			Yes	
DC Switch			Yes	
DC Surge Protection			Type II	
Insulation Resistance Monitoring			Yes	
AC Surge Protection			Type III	
AC short-circuit Protection			Yes	
Ground Fault Monitoring			Yes	
Grid Monitoring			Yes	
Anti-islanding Protection			Yes	
Residual-current Monitoring Unit			Yes	
AFCI Protection			Yes	
General Data			Yes	
Dimensions (W / H / D)			15.8/25.2/7.4inch(400/638/187mm)	
Weight			45.2 lbs /20.5kg	
Operating Temperature Range			-13°F~+140°F (-25 °C ~ +60 °C)de-rating above 113°F	
Altitude			9843ft (3000m)	
Internal Consumption at Night			<1W (for PV inverter)/ <5W (for storage inverter)	
Cooling			Natural Convection	
Electronics Protection Degree			NEMA4X (IP65)	
Relative Humidity			0~95%	
Inter faces				
RS 485			Yes	
WIFI/4G Communication			Optional	
Warranty: 10 Years			Yes(optional for extended 15 and 20 years warranty)	
Revenue Grade Meter			ANSI C12.20 (meet 0.5% accuracy)	
IEEE1547, CA Rule21, Rule14(HECO Compliant),FCC Part15 Class B,UL1741,UL1741SA,CSA C22.2, UL1699B, UL1741 CRD				