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%

EUPD RESEARCH TOP BRAND PV MODULES 2024

Made In Jordan

Philadelphia Solar's Mono-Crystalline N-typemoduleswith powerupto**440Wp** areproduced using the state-of-the-art (automated)roboticproduction lines. These modules are suitable tobeusedformostelectrical powerapplicationsandhave excellentdurabilitytoprevailing 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 61853PAN File
IEC TS 62804 PID Resistance
IEC 60068 Dust and Sand Resistance
IEC 62716Ammonia Resistance
IEC 61701Salt 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

APPLICATIONS

On-Grid Commercial/ Industrial Roof-Tops

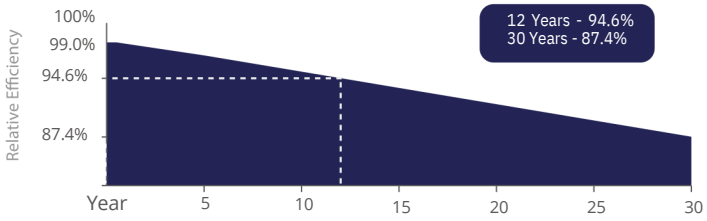
O -Grid Systems (Including Lighting Systems)

Solar Power Plants

FEATURES

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

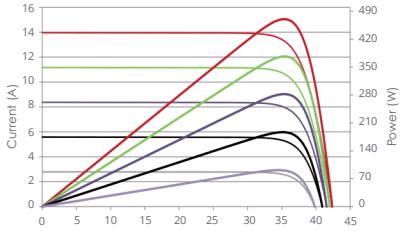
LINEAR PERFORMANCE WARRANTY



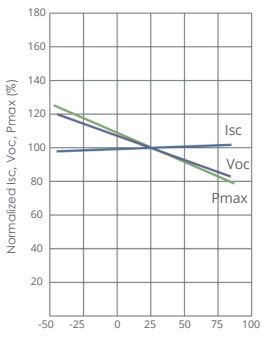
- **12** Year Product Warranty
- **30** Year Linear Power Warranty
- Only **-0.4%** Annual Degradation

Electrical Performance & Temperature Dependence

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



Temperature Dependence of Isc,Voc,Pmax



ELECTRICAL CHARACTERISTICS
POWER AT STC

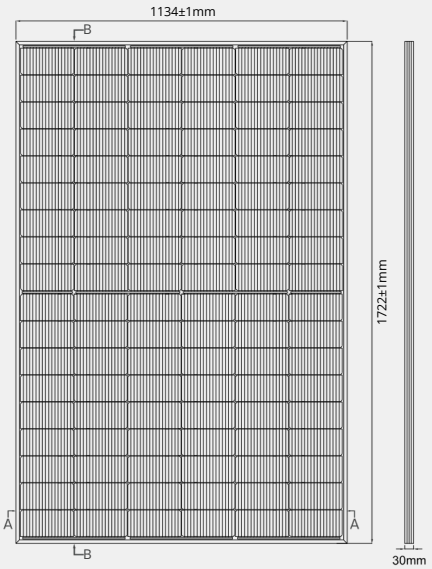
	425 W	430 W	435 W	440 W
Short Circuit Current - Isc (A)	14.05	14.13	14.22	14.30
Maximum Power Current - Impp (A)	13.23	13.28	13.32	13.36
Open Circuit Voltage - Voc (V)	38.29	38.42	38.50	38.63
Maximum Power Voltage - Vmpp (V)	32.23	32.49	32.76	32.98
Module E€ciency - η' (%)	21.80%	22.05%	22.31%	22.57%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



THERMAL CHARACTERISTICS

Characteristics	Value
Open Voltage Temperature Coe€cient VOC (%/C°)	-0.25
Short Circuit Current Temperature Coe€cient ISC (%/C°)	+0.046
Power Temperature Coe€cient PMP (%/C°)	-0.30
NOCT (°C)	45±2

OPERATING CONDITIONS

Maximum Sytem 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± 1K g

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

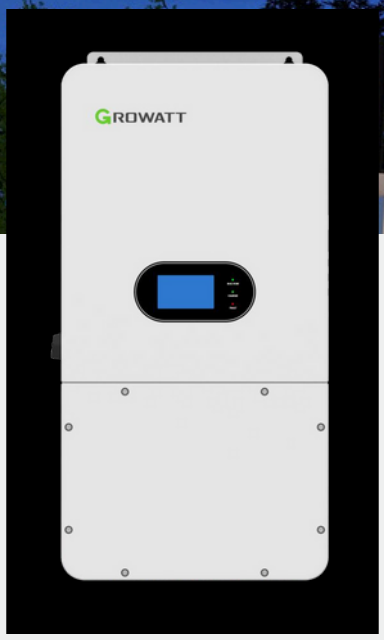
Mechanical Load**	Value
Max Static load (Front)	5400P
Max Static load (Back)	a
Dynamic load	5400P
	a
	1000P
	a

- 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

Updated 2 Sep 2024

SPH 10000TL-HU-US

- UPS function, 10ms transition
- 1.5 DC/AC Ratio with 3 MPPTs
- Up to 200A charging/discharging current
- Support DC-coupled, AC-coupled, AC-retrofit applications
- Type II Surge protection for DC and AC sides
- Support charge from diesel generator
- Support up to 6 units in parallel
- S upport form a 220V or 208V three-phase system



POWER-ING TOMORROW

https://us.growatt.com

Datasheet	SPH 10000TL- HU - US	SPH 10000TL-HU-US (B)
Input data (DC)		
Max. recommended PV power (for module STC)	15000W	
Max. input power for single MPPT	10000W	
Max. DC voltage	525V	
Startup voltage	150V	
MPPT voltage range	150V-450V/370V	
No. of MPP trackers	3	
No. of PV strings per MPP tracker	2	
Max. input current per MPP tracker	22A	
Max. short-circuit current per MPP tracker	27A	
AC input data (AC)		
Nominal AC input power	10000W	
Nominal input voltage	240V	
Nominal input current	41.67A	
Max. grid passthrough current	62.5A	
Max. generator input power	10000W	
Output data (AC)		
AC nominal power	10000W	
Max. AC apparent power	10000VA	
Nominal AC voltage (range*)	120V/208V, 120V/240V Split (180Vac - 280Vac)	
AC grid frequency (range*)	50Hz/60Hz	
Max. output current	50A	
Adjustable power factor	1.0leading...1.0lagging	
THDi	<3%	
AC grid connection type	L1/L2/N/PE	
Battery data (DC)		
Battery voltage range	40~60V	
Max charging and discharging current	200A	
Continuous charging and discharging power	10000W	
Communication protocol	CAN/RS485	
Type of battery	Lithium/ Lead-acid (Check third-party battery compatibility in the Approved Battery List)	
Backup power (AC)		
AC nominal output power	10000W	
Nominal AC output voltage	120/208V, 120V/240V Split	
Nominal AC output frequency	50/60Hz	
Switch time	<10ms	
Overload capability	13000W for 5 s	
Efficiency		
Peak efficiency	97.50%	
CEC weighted efficiency	97%	
MPPT efficiency	≥99 .5%	
Protection devices		
PV switch	Yes	
AC over current protection	Yes	
AC over voltage protection	Yes	
Ground fault monitoring	Yes	
Grid monitoring	Yes	
Anti-islanding protection	Yes	
Residual-current monitoring unit	Yes	
Insulation resistance monitoring	Yes	
AFCI Protection	Yes	
Surge protection	DC Type II/AC Type II	
General data		
Max stackable number	6	
Dimensions (W / H / D)	440/855/256mm (17.32/28.34/9.44) inches	
Weight	48.84kg/107.8lbs	
Operating temperature range	–25°C ... +60°C(-13...+140°F) with derating above 45°C /113°F	
Noise emission (typical)	≤ 30 dB(A)	
RSD transmitter	Tigo/APsmart	
Built-in breaker spec	/	BAT side: 80V/250A, Grid side: 400V/100A, GEN side: 400V/63A, LOAD side: 400V/100A.
Self-consumption	< 60 W	
Topology	Tranformerless	
Cooling	Smart cooling	
Protection degree	IP65/NEMA 4	
Relative humidity	0~100%	
Altitude	2000m	
Display	LCD	
Interfaces: RS485/CAN/USB	Yes	
Communication	WIFI/4G cellular (Opt)	
Warranty	10 years	

IEEE1547, CA RULE21, RULE14(HECO Compliant), UL1741, UL1741SA/SB, CSA C22.2, PREPA, UL1699B, UL1741 CRD, FCC Part15 Class B, Sunspec

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