PHILADELPHIA SOLAR
DELIVERING CLEAN ENERGY SOLUTIONS



GENUX-G

PS-MNG96(HCBF)12R2-xxxW

Half-Cell N-Type 16BB Bifacial Module

450 - 480 Watt

Positive power tolerance of 0 ~+3%

Philadelphia Solar's monocrystalline N-type solar modules, with power ratings of up to **480Wp**, are manufactured using advanced, fully automated robotic production lines. Engineered for high performance and reliability, these modules are ideal for a wide range of electrical power applications. They offer outstanding durability and are well-suited to withstand diverse and challenging environmental 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
Occupational health and safety management systems

APPLICATIONS

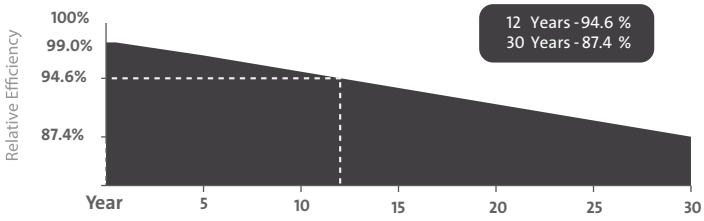
On-Grid Commercial/ Industrial Roof-Tops

Off-Grid Systems (Including Lighting Systems)

Solar Power Plants

EUPD RESEARCH TOP BRAND PV MODULES MIDDLE EAST & NORTH AFRICA 2026
EUPD RESEARCH TOP BRAND PV MODULES USA 2026
EUPD RESEARCH TOP BRAND STEEL MOUNTING SYSTEMS MIDDLE EAST & NORTH AFRICA 2026

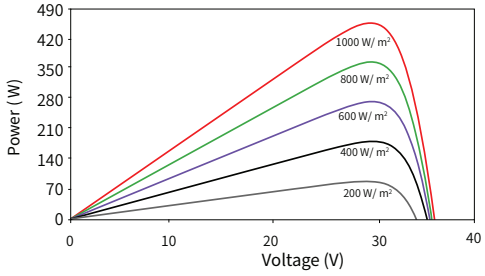
- Power output increases by 5-25% from the backside resulting in significantly reduced LCOE and (IRR).
- Withstand High Mechincal load : Front (5400 Pascal) Back (2400 Pascal)
- Exceptional Anti-PID performance through the use of optimized mass-production processes and strict materials control.
- Improved 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.



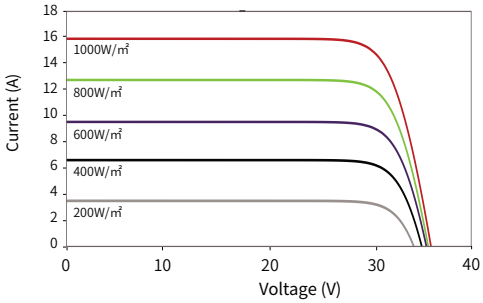
- **25** Year Product Warranty
- **30** Year Linear Power Warranty
- Only **-0.4%** Annual Degradation

Curves Of PV Moudule

Power-Voltage Curves (460W)



Current-Voltage Curves (460W)



June 25, 2026

ELECTRICAL CHARACTERISTICS

POWER AT STC	450W	455W	460W	465W	470W	475W	480W
Short Circuit Current - Isc (A)	15.73	15.78	15.83	15.88	15.93	15.98	16.03
Maximum Power Current - Impp (A)	14.98	15.03	15.08	15.13	15.18	15.23	15.28
Open Circuit Voltage - Voc (V)	35.91	36.08	36.25	36.42	36.59	36.76	36.93
Maximum Power Voltage - Vmpp (V)	30.05	30.28	30.51	30.74	30.97	31.19	31.42
Module Efficiency - n (%)	22.71%	22.97%	23.22%	23.47%	23.72%	23.98%	24.23%
Bifaciality Ratio (%)	80% ± 10%						
Power tolerance (%)	0~+3%						

Values at Standard Test Conditions STC (Air Mass AM 1.5, Irradiance 1000 W/m², Cell Temperature 25°C).

Specifications (BNPI)

POWER AT STC	450W	455W	460W	465W	470W	475W	480W
Power at BNPI	495W	500W	505W	510W	515W	520W	525W
Open Circuit Voltage - Voc (V)	35.91	36.08	36.25	36.42	36.59	36.76	36.93
Short Circuit Current - Isc (A)	17.44	17.51	17.58	17.65	17.72	17.79	17.86

Values at BNPI: Irradiance 1000 W/m² rear 135 W/m², Air Mass AM 1.5, Cell Temperature 25°C.

Specifications (BSI)

POWER AT STC	450W	455W	460W	465W	470W	475W	480W
Short Circuit Current - Isc (A)	19.51	19.57	19.64	19.72	19.80	19.87	19.94

Values at BSI: Irradiance front 1000 W/m , rear 300 W/m², Air Mass AM 1.5, Irradiance 1000 W/m², Cell Temperature 25°C.

MATERIAL CHARACTERISTICS

Characteristics	Value
Cells per Module	96 (48 x 2)
Cell Type	N Type Mono-Crystalline
Front Surface	2mm Semi-Tempered Pattern Coated Glass
Back Cover	2mm Semi-Tempered / Porcelain Glass
Frame	Anodized Aluminum (Black/Silver)
Junction Box	IP 68 With Original MC4
Cable Length	1200mm (customizable)
Fire Classification	UL Type 29

THERMAL CHARACTERISTICS

Characteristics	Value
Open Voltage Temp Coeff VOC (%/C)	-0.25
Short Circuit Current Temperature Coefficient ISC (%/C)	+0.045
Power Temp Coeff PMP (%/C)	-0.29
NOCT (C)	45 ± 2

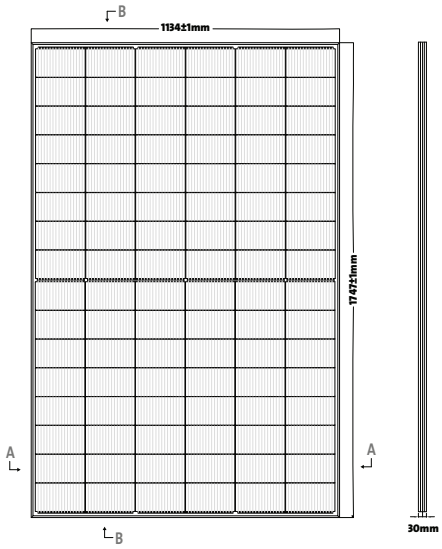
OPERATING CONDITIONS

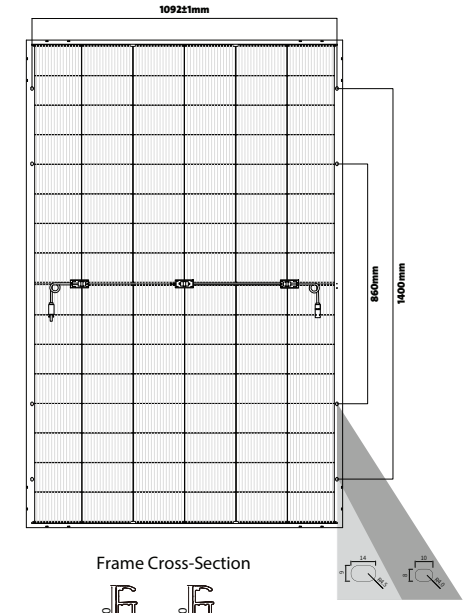
Maximum System Voltage - Vmax (V)	1500
Maximum Series Fuse (A)	35
Operating Temp Range (C)	IEC: -40 to +85 UL: -40 to +90

PHYSICAL CHARACTERISTICS

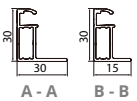
Characteristics	Value
Module Dimensions (mm)	1747 x 1134 x 30
Module Weight (kg)	23 ±1 kg
Packaging	**Value**
Modules per Pallet	37
40 Feet High-Cube Container	962 Modules
Mechanical Load**	**Value**
Max Static load (Front)	5400 Pa
Max Static load (Back)	2400 Pa
Dynamic load	1000 Pa

MODULE DRAWING





Frame Cross-Section



- 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

صنع في الأردن
MADE IN JORDAN

June 25, 2026