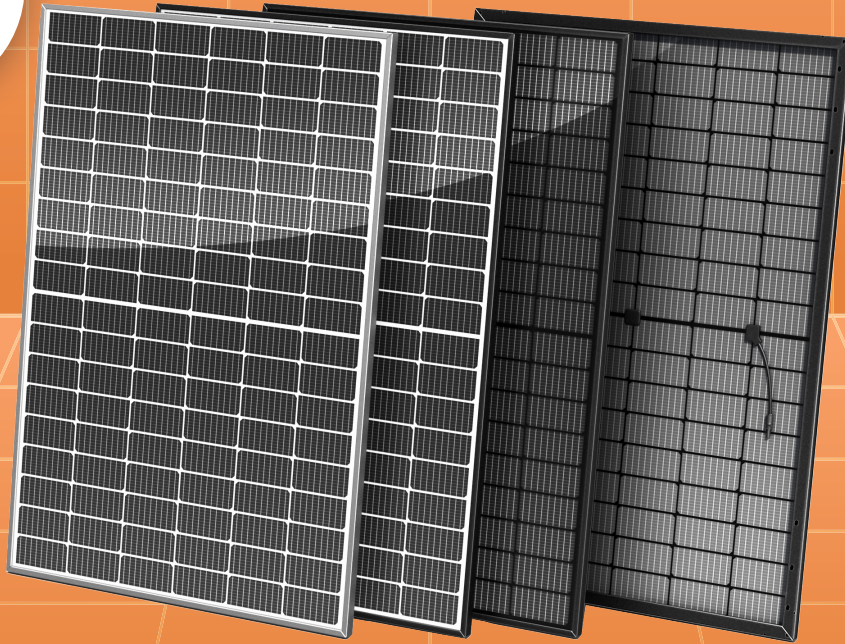


STANDARD SOLAR PANELS

GermanSolar's standard solar panels are high efficiency, convenient, and easy to use



GermanSolar
The Partner For Your Solar Lifetime®



BIFACIAL HELIOSLINE MAX M10 108 MONO CELL SOLAR PANELS German Solar Asia PTE. Ltd.

GSA-N16A/108HG450W 455W 460W

GermanSolar is a specialist in customization, introducing colored glass, frames, and back-sheet material and shapes to aesthetically match your ideas with the prospective application. With innovative technology and design, GermanSolar offers high quality modules with enhanced aesthetic appearance for building structures and facades. By providing outstanding customization options, GermanSolar supports your required project needs with colored and shaped panels of your choice, and consults with you in choosing the right size, thickness, shape, and color to complement the design of your application and your building.

FEATURES



Best price-
performance ratio

30
years

30-year linear
performance
warranty



EL tested and micro
cracks inspected



Fully automated
production line with
German quality
engineering and design
standards



Better
performance
in diffused
sunlight and high
temperature

Withstands Rear
loads up to 2400Pa
/Front loads up to
5400Pa



15-year limited
product warranty



Power Binning
Tolerance: 0 to +5
W



IEC 61215-1:2021/EN IEC 61215-1:2021;
IEC 61215-1-1:2021/EN IEC 61215-1-1:2021;
IEC 61215-2:2021/EN IEC 61215-2:2021;
IEC 61730-1:2023;
IEC 61730-2:2023.

STANDARD SOLAR PANELS

ELECTRICAL DATA

Model	GSA-N16A/120BHG450W	GSA-N16A/120BHG455W	GSA-N16A/120BHG460W
Power (P _{max}) * (W) tolerance ±3%	450	455	460
Open Circuit Voltage (V _{oc}) (V) tolerance ±3%	38.85	39.05	39.25
Short Circuit Current (I _{sc}) (A) tolerance ±4%	14.55	14.61	14.67
Max. Power Voltage (V _{mpp}) (V)	33	33.2	33.4
Max. Power Current (I _{mp}) (A)	13.64	13.71	13.77
aBSI (A) tolerance ±4%	18.04	18.12	18.19
Module Efficiency (%)	22.05%	22.29%	22.54%
P _{max} Temperature Coefficient γ	-0.24 % / °C		
I _{sc} Temperature Coefficient α	+0.04 % / °C		
V _{oc} Temperature Coefficient β	-0.24 % / °C		
Module(T98)Max	70 °C		

*STC: Irradiance 1000 W / m², cell temperature 25 °C, AM = 1.5, Tolerance of P_{max} is within + / - 3 %.

BNPI* **

Power (P _{max}) * (W) tolerance ±3%	495	500	505
Open Circuit Voltage (V _{oc}) (V) tolerance ±3%	38.85	39.05	39.25
Short Circuit Current (I _{sc}) (A) tolerance ±4%	16.01	16.07	16.14
Max. Power Voltage (V _{mpp}) (V)	33	33.2	33.4
Max. Power Current (I _{mp}) (A)	15	15.06	15.12
NMOT (Nominal Module Operating Temperature) (°C)	41 ± 3		
Bifaciality coefficient with tolerance	φIsc=80% ±5% , φVoc=100% ±5% , φPmax=80% ±5%		

**BNPI: Front side irradiation 1000 W / m², back side reflection irradiation 135 W / m², AM = 1.5, ambient temperature 25 °C.

Performance at low irradiance* **

Power (P _{max}) * (W) tolerance ±3%	86.08	87.04	87.99
Open Circuit Voltage (V _{oc}) (V) tolerance ±3%	36.69	36.88	37.07
Short Circuit Current (I _{sc}) (A) tolerance ±4%	2.85	2.92	2.93
Max. Power Voltage (V _{mpp}) (V)	31.89	32.08	32.28
Max. Power Current (I _{mp}) (A)	2.70	2.71	2.73

***low irradiance: Data corrected to a 25°C cell temperature and 200 W/m²

MECHANICAL DATA

Dimensions (mm)	1800 × 1134 × 30
Weight (kg)	24.9 (2.0 mm glass)
Solar Cells (mm)	N-TOPCon 182.2*95.8
Front Glass	2.0 mm glass
Back Glass	2.0 mm glass
Frame	Anodised aluminum alloy
Junction Box	IP68, 3 diodes
Cables	4 mm ² , 300 mm in length, length can be customized / UV resistant
Connectors	RHC2 ,by Zhejiang Renhe Photovoltaic Technology

PACKAGING

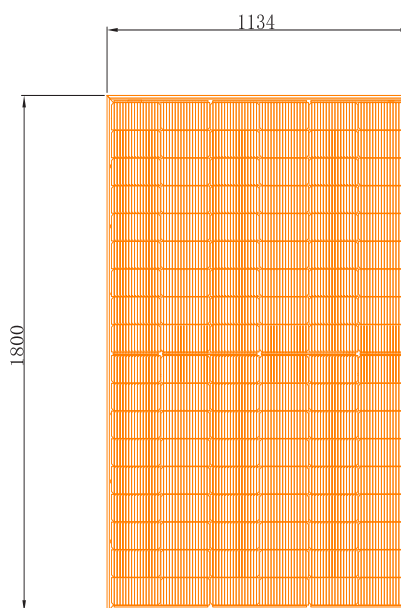
Modules Per Pallet (pcs)	36
Pallets Per Container (pcs)	24
Module quantity per 40' container (pcs)	864

OPERATING CONDITIONS

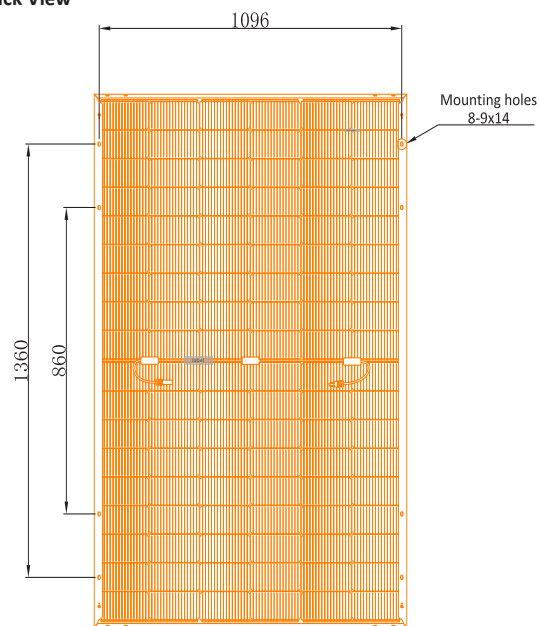
Max. System Voltage (V)	1500
Fire safety class	Class C according to ANSI/UL 1703-2018(as per ANSI/UL 790-2018)
Operating Temperature (°C)	-40 ~ +85
Maximum overcurrent protection rating(A)	30
Front Side Maximum Static Loading/Rear Side Maximum Static Loading (Pa)	5400 / 2400

Design (mm)

Front View

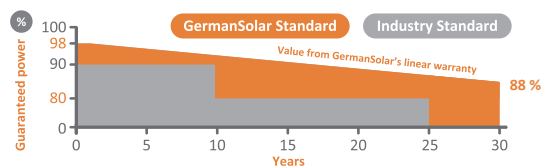


Back View



LINEAR PERFORMANCE WARRANTY

15-Year Product Warranty | 30-Year Performance Warranty



Manufactured in China

02