



**GREEN ENERGY  
SOLUTIONS**



**GES-S144/M6H-BG**

**430-450W**

**BIFACIAL DUAL GLASS 144 LAYOUT MODULE**

**Artikel-Nr.: 450-1.2023-C30-350**

**20.7%**

Module Efficiency

**450W**

Highest Power Output

**12 YEARS**

Material & Workmanship Warranty

**25 YEARS**

Linear Power Warranty

**-2.00% First year power degradation**

**-0.45% Annual degradation**

## PRODUCT ADVANTAGES



### High power

- Up to 450W front power and 20.7% module efficiency with half-cut and MBB (Multi Busbar) technology bringing more BOS savings
- Lower resistance of half-cut and good reflection effect of MBB ensure high power



### High reliability

- Ensured PID resistance through cell process and module material control
- Resistant to salt, acid and ammonia
- Proven to be reliable in high temperature and humidity areas
- Certificated to fire class A
- Minimizes micro-crack and snail trails
- Mechanical performance: Up to 5400 Pa positive load and 2400 Pa negative load



### High energy generation

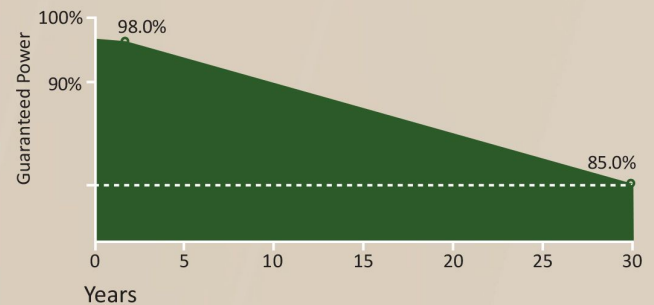
- Up to 25% additional power gain from back side depending on the albedo
- Excellent IAM and low light performance validated by 3rd party with cell process and module material optimization
- Lower temp coefficient (-0.35%) and NMOT bring more energy leading to lower LCOE
- Better anti-shading performance and lower operating temperature



### Easy to install

- Frame design makes module compatible with all racking and installation methods
- Easy to handle and install as normal framed module during transportation

## PERFORMANCE WARRANTY



## Certifications of Product and Manufacturer



**Green Energy Solutions B.V.**

The Hague, The Netherlands

# GES-S144/M6H-BG

## ELECTRICAL DATA (STC)

Peak Power Watts-P <sub>MAX</sub> (Wp)*	430	435	440	445	450
Maximum Power Voltage-V <sub>MP</sub> (V)	40.5	40.8	41.1	41.4	41.7
Maximum Power Current-I <sub>MP</sub> (A)	10.62	10.67	10.71	10.75	10.80
Open Circuit Voltage-V <sub>oc</sub> (V)	48.7	48.9	49.1	49.3	49.5
Short Circuit Current-I <sub>sc</sub> (A)	11.20	11.29	11.37	11.45	11.53
Module Efficiency η <sub>m</sub> (%)	19.7	20.0	20.2	20.4	20.6
Power Tolerance-P <sub>MAX</sub> (W)	0~+5				

STC: Irradiance 1000W/m<sup>2</sup>, module temperature 25°C, AM=1.5; \*Measuring tolerance: ±3%

## Electrical characteristics with different rear side power gain (reference to 435 Wp front)

Peak Power-P <sub>MAX</sub> (Wp)*	457	479	500	522	544
Maximum Power Voltage-V <sub>MP</sub> (V)	40.8	40.8	40.8	40.8	40.8
Maximum Power Current-I <sub>MP</sub> (A)	11.20	11.74	12.27	12.80	13.34
Open Circuit Voltage-V <sub>oc</sub> (V)	49.0	49.1	49.2	49.3	49.4
Short Circuit Current-I <sub>sc</sub> (A)	11.80	12.36	12.93	13.49	14.05
P <sub>max</sub> gain	5%	10%	15%	20%	25%

STC: Power Bifaciality: 70±5%

## ELECTRICAL DATA (NMOT)

Maximum Power-P <sub>MAX</sub> (Wp)*	325	329	333	337	341
Maximum Power Voltage-V <sub>MP</sub> (V)	38.2	38.5	38.8	39.0	39.1
Maximum Power Current-I <sub>MP</sub> (A)	8.51	8.55	8.58	8.63	8.71
Open Circuit Voltage-V <sub>oc</sub> (V)	46.0	46.2	46.4	46.6	46.7
Short Circuit Current-I <sub>sc</sub> (A)	9.02	9.05	9.08	9.12	9.15

NMOT: Irradiance 800W/m<sup>2</sup>, module temperature 20°C, AM=1.5, wind speed 1m/s

## MECHANICAL DATA

Solar Cells	Monocrystalline silicon 166 mm (9BB)
Cell Orientation	144 cells (6 x 24)
Module Dimensions	2095x1039x30 mm
Weight	28.5 kg
Front Glass	2.0 mm, High Transmission, AR Coated Heat Strengthened Glass
Encapsulant Material	POE/EVA
Back Glass	2.0 mm, Heat Strengthened Glass (White Grid Glass)
Frame	30 mm Anodized Aluminium Alloy
Junction Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0 mm <sup>2</sup> Cable length 350 mm or customized length

\*Please refer to regional datasheet for specied connector.

## TEMPERATURE RATINGS

NMOT (Nominal Module Operating Temperature)	41°C (±3°C)
Temperature Coefficient of P <sub>MAX</sub>	-0.34%/°C
Temperature Coefficient of V <sub>oc</sub>	-0.25%/°C
Temperature Coefficient of I <sub>sc</sub>	0.040%/°C

(Do not connect Fuse in Combiner Box with two or more strings in parallel connection)

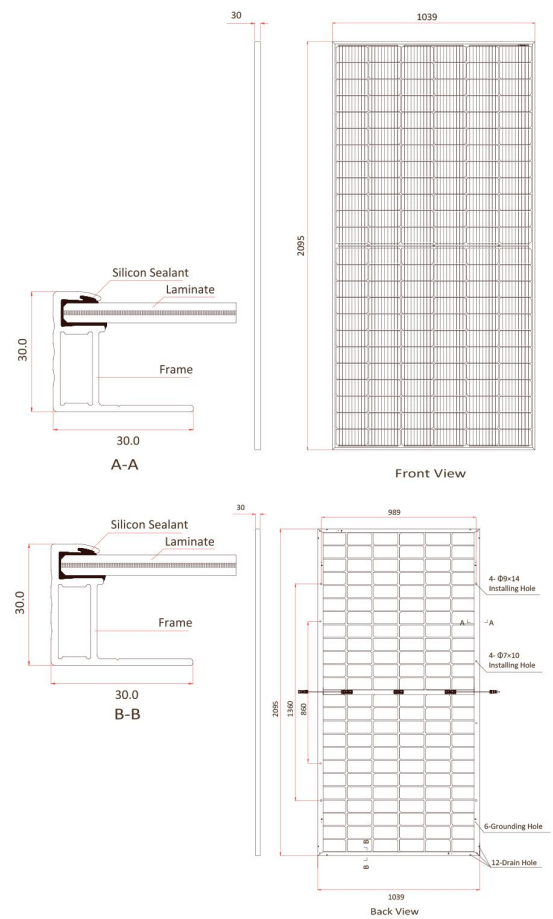
## MAXIMUM RATINGS

Operational Temperature	-40~+85°C
Maximum System Voltage	1500V DC (IEC)
Max Series Fuse Rating	20A

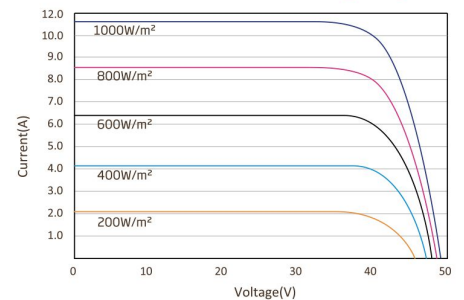
## PACKAGING CONFIGURATION

Modules per box	35 pieces
Modules per 40' container	770 pieces

## DIMENSIONS OF PV MODULE (mm)



## I-V CURVES OF PV MODULE (440W)



## P-V CURVES OF PV MODULE (440W)

