



GREEN ENERGY SOLUTIONS



GES-S132/M12H-xxx

650-670W

210mm cells half cut cell technology

Artikel-Nr.: 670-1.2023-R35-C350

21.6%

Module Efficiency

670W

Highest Power Output

12 YEARS

Material & Workmanship Warranty

25 YEARS

Linear Power Warranty

-2.00% First year power degradation

-0.55% Annual degradation

PRODUCT ADVANTAGES



High customer value

- Lower LCOE (Levelized Cost Of Energy), reduced BOS (Balance Of System) cost, shorter payback time
- Designed for compatibility with existing mainstream system components
- Lower guaranteed first year and annual degradation
- Higher return on Investment



High power up to 670W

- Large area cells based on 210 mm silicon wafers and half-cut cell technology
- Up to 21.6% module efficiency with high density interconnect technology
- Multi-busbar technology for better light trapping effect, lower series resistance and improved current collection



High reliability

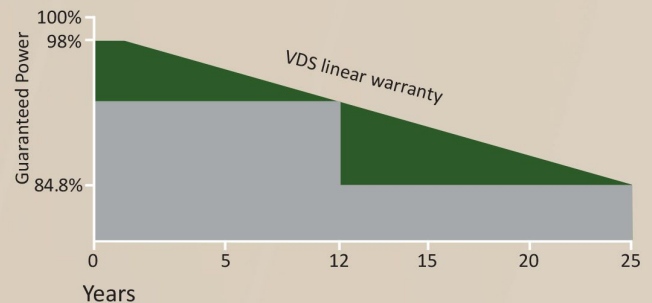
- Minimized micro-cracks with innovative non-destructive cutting technology
- Ensured PID resistance through cell process and module material control
- Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity areas
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load



High energy yield

- Excellent IAM (Incident Angle Modifier) and low irradiation performance, validated by 3rd party certifications
- The unique design provides optimized energy production under inter-row shading conditions

PERFORMANCE WARRANTY



- Standard linear power guarantee
- VDS linear power guarantee

Certifications of Product and Manufacturer



Green Energy Solutions B.V.

The Hague, The Netherlands

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ELECTRICAL DATA (STC)

Peak Power Watts- P_{MAX} (Wp)*	650	655	660	665	670
Maximum Power Voltage- V_{MPP} (V)	37.6	37.8	38.0	38.2	38.4
Maximum Power Current- I_{MPP} (A)	17.29	17.33	17.37	17.41	17.45
Open Circuit Voltage- V_{oc} (V)	44.9	45.1	45.3	45.5	45.7
Short Circuit Current- I_{sc} (A)	18.27	18.33	18.39	18.45	18.50
Module Efficiency η_m (%)	20.9	21.1	21.2	21.4	21.6
Power Tolerance (W)	0~+5				

STC: Irradiance 1000W/m², module temperature 25°C, AM=1.5; *Measuring tolerance: ±3%

ELECTRICAL DATA (NMOT)

Maximum Power- P_{MAX} (Wp)	492	496	500	504	508
Maximum Power Voltage- V_{MPP} (V)	34.9	35.1	35.3	35.4	35.6
Maximum Power Current- I_{MPP} (A)	14.09	14.13	14.17	14.22	14.26
Open Circuit Voltage- V_{oc} (V)	42.7	42.9	43.0	43.2	43.4
Short Circuit Current- I_{sc} (A)	14.86	14.89	14.93	14.96	15.01

NMOT: Irradiance 800W/m², ambient temperature 20°C, AM=1.5, wind speed 1m/s

MECHANICAL DATA

Solar Cells	Monocrystalline
No. of Cells	210x105 mm 132 pcs
Module Dimensions	2384x1303x35 mm
Weight	33.9 kg
Glass	3.2 mm, High Transmission, AR Coated Heat Strengthened Glass
Encapsulant Material	EVA
Backsheet	White
Frame	35 mm Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0 mm ² Cable length 350 mm or customized length
Connector	MC4 Compatible

TEMPERATURE RATINGS

NMOT (Nominal Module Operating Temperature)	43°C (±2°C)
Temperature Coefficient of P_{MAX}	-0.34%/°C
Temperature Coefficient of V_{oc}	-0.25%/°C
Temperature Coefficient of I_{sc}	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	30A

PACKAGING CONFIGURATION

Modules per box	31 pieces
Modules per 40' container	558 pieces

DIMENSIONS OF PV MODULE(mm)

