



GreensunSolar



N-Type TOPCON

GSM-MN12R/132HBD 625-650W

**N-Type TOPCON
Bifacial Dual Glass
Mono Silicon PV Module**

650W

Maximum Power
Output

24.06%

Maximum Module
Efficiency

0~+5W

Power Output
Guarantee



N-type Topcon technology for lower LCOE

The lower temperature coefficient and better low irradiance performance of Topcon technology can effectively reduce LCOE.



Double-sided power generation, higher yield

The dual-glass module has a double-sided ratio of up to 80% and a power generation gain of 7%-25% on the back side.



Ultra-low Degradation, longer warranty, higher output

- First-year degradation 1% and annual degradation at 0.4%
- Up to 12 years product warranty and 30 years power warranty



Universal solution for residential and C&I application

- Easy for integration, designed for compatibility with existing mainstream inverters and diverse mounting systems
- Perfect size and low weight for handling and installation
- Most valuable solution on low load capacity rooftops (weight similar to backsheet version)



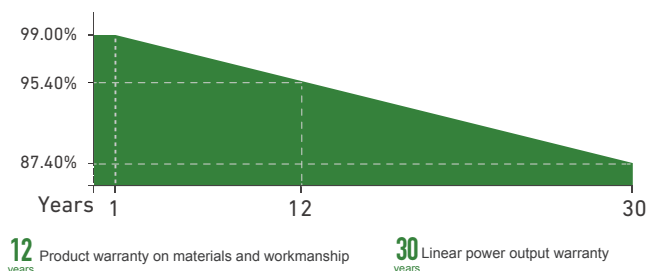
PID Resistance

Excellent Anti-PID performance guarantee via optimized mass-production process and materials control.

Delivers Reliable Performance Over Time

- manufacturer of crystalline silicon photovoltaic modules
- Fully automatic facility and world-class technology
- Rigorous quality control to meet the highest standard: ISO9001:2015, ISO14001: 2015 and OHSAS: 18001 2007
- Tested for harsh environments (salt mist, ammonia corrosion and sand blowing test: IEC 61701, IEC 62716, DIN EN 60068-2- 68)
- Long term reliability tests
- 2x100% EL inspection ensuring defect-free modules

Linear Performance Warranty



Electrical Specification (STC*)

Maximum Power	P _{max} (W)	625	630	635	640	645	650
Maximum Power Voltage	V _{mp} (V)	41.31	41.51	41.71	41.91	42.11	42.31
Maximum Power Current	I _{mp} (A)	15.14	15.19	15.24	15.29	15.34	15.39
Open Circuit Voltage	V _{oc} (V)	49.52	49.72	49.92	50.12	50.32	50.52
Short Circuit Current	I _{sc} (A)	16.02	16.07	16.12	16.17	16.22	16.27
Module Efficiency	(%)	23.13	23.32	23.50	23.69	23.87	24.06
Power Output Tolerance	(W)	0~+5					

* Irradiance 1000W/m², Module Temperature 25°C, Air Mass 1.5

Electrical Specification (NOCT*)

Maximum Power	P _{max} (W)	469	473	477	481	485	489
Maximum Power Voltage	V _{mp} (V)	38.71	38.90	39.09	39.28	39.47	39.66
Maximum Power Current	I _{mp} (A)	12.11	12.15	12.19	12.23	12.27	12.31
Open Circuit Voltage	V _{oc} (V)	47.04	47.23	47.42	47.61	47.80	47.99
Short Circuit Current	I _{sc} (A)	12.82	12.86	12.90	12.94	12.98	13.02

* Irradiance 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s

Mechanical Data

Number of Cells	132Cells(6x22)
Dimensions of Module L*W*H (mm)	2382x1134x30mm
Weight (kg)	33.7 kg
Front Side Glass	2.0mm, Anti-reflection coating glass
Back Side Glass	2.0mm, High transparency solar glass
Frame	Alloy Steel Frame
J-Box	IP68 Rated
Cable	4.0mm, 300mm
Number of diodes	3
Wind/ Snow Load	2400Pa/5400Pa*
Connector	MC Compatible

* For more details please check the installation manual

Temperature Ratings

Nominal Operating Cell Temperature [NOCT]	44±2°C
Temperature Coefficient of I _{sc}	+0.040%/°C
Temperature Coefficient of V _{oc}	-0.240%/°C
Temperature Coefficient of P _{MAX}	-0.300%/°C

Maximum Ratings

Operational Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Max Series Fuse Rating	30A

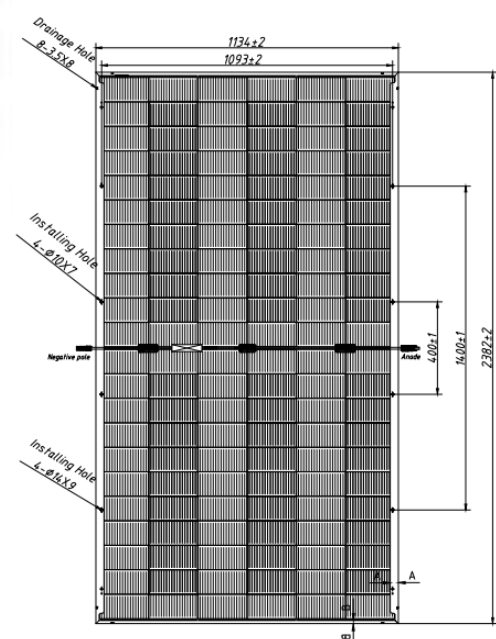
Packaging Configuration

Module per box	37 pieces
Module per 40' container	740 pieces

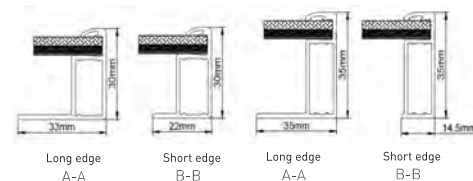
Optional

Connector	MC Original
-----------	-------------

Module Dimension



Back View



I-V Curve at Different Temperature (625W)

