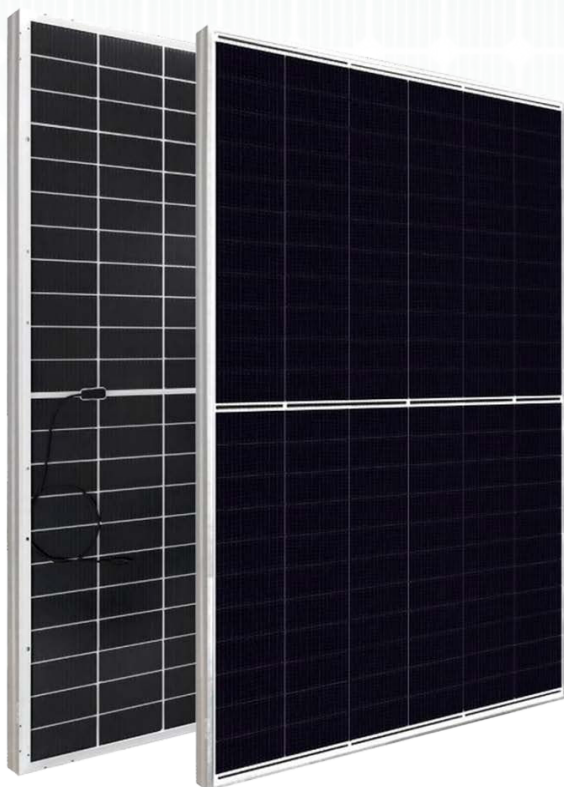




GreensunSolar



N-Type TOPCON

GSM-MN12R/132HBD 630-650W

**N-Type TOPCON
Bifacial Dual Glass
MonoSilicon 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)



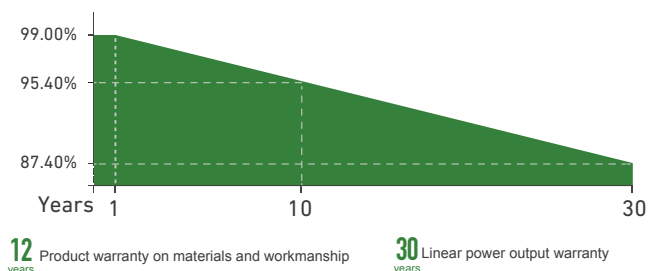
PID Resistance

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



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Electrical Specification (STC*)

Maximum Power	Pmax[W]	630	635	640	645	650
Maximum Power Voltage	Vmp[V]	41.51	41.71	41.91	42.11	42.31
Maximum Power Current	Imp[A]	15.19	15.24	15.29	15.34	15.39
Open Circuit Voltage	Voc[V]	49.72	49.92	50.12	50.32	50.52
Short Circuit Current	Isc[A]	16.07	16.12	16.17	16.22	16.27
Module Efficiency	[%]	23.32	23.50	23.70	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)	473	477	481	485	489
Maximum Power Voltage	V _{mp} (V)	38.90	39.09	39.28	39.47	39.66
Maximum Power Current	I _{mp} (A)	12.15	12.19	12.23	12.27	12.31
Open Circuit Voltage	V _{oc} (V)	47.23	47.42	47.61	47.80	47.99
Short Circuit Current	I _{sc} (A)	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	Anodized aluminium alloy
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

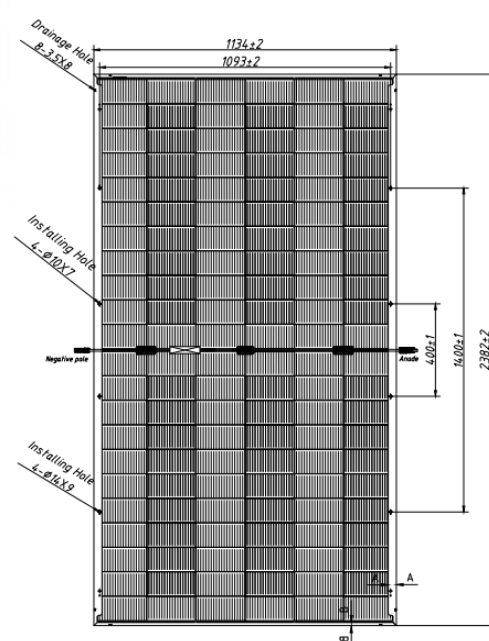
Packaging Configuration

Module per box	36 pieces
Module per 40' container	720 pieces

Optional

Connector MC Original

Module Dimension



Back View

I-V Curve at Different Temperature (630W)

Current

Voltage(V)



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Specifications included in this datasheet are subject to change without notice.