



Goosun Energy Construction Group Co., Ltd

435W~460W

N-type monocrystalline silicon
single-sided half-chip solar modules

► Product Characteristics

N-Type Technology

The N-Type module has lower LID/LeTID attenuation and better low light performance.

multi-master grid technology

Better light utilization and current harvesting capability. Effectively improves product power output and reliability.

load capacity

Integral assembly passes frontal maximum test static at 6000 Pa. load certification.

Anti PID Guarantee

Through the optimization of battery production technology and material control to minimize the chance of degradation caused by PID phenomenon.

Adaptability to harsh environments

Third party certified to pass high salt spray and high ammonia corrosion tests.

HOT 3.0 Technology

HOT3.0 technology N-type modules offer better reliability and power generation efficiency.

12 Year

Material Workmanship Warranties

30 Year

The nature of the year line protects

1 %

First year power degradation

0.4 %

Linear power attenuation

► certification

EC61215、IEC61730、CE、CQC

· ISO9001:2015 Quality Management System

· ISO14001:2015 Environmental Management System

· ISO45001:2018 Occupational Health and safety management



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N-Type Monocrystalline Bifacial Solar Modules

Mechanical Characteristics

Cell Type	N -type Mono-crystalline
No. of cells	108 (54×2)
Dimensions	1762×1134×30 mm
Weight	21.0 kg
Front Glass	3.2mm, Anti-reflection Coating, High Transmission, Low Iron, Tempered Glass
Frame	Anodized Aluminium Alloy
Junction Box	IP68 Rated
Protection Class	Class II
IEC Fire Type	Class C
Connector Type	JK03M/MC4/Others
Output Cables	4.0 mm ² (+): 400 mm , (-): 200 mm or Customized Length

Packaging Configuration

Pallet Dimensions	1792×1140×1249 mm
Packing detail (Two pallets=One stack)	13m flatbed:37pcs/pallet,28pcs/carriage,1036pcs/ carriage 17.5mflatbed:37pcs/pallet,36pcs/carriage, 1332pcs/carriage

Specifications(STC)

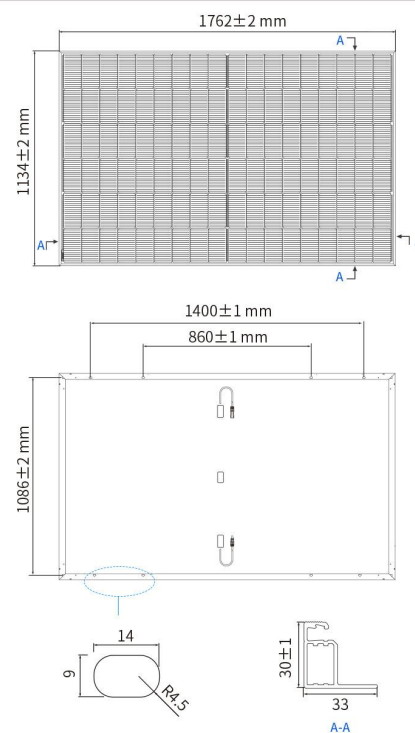
Maximum Power – Pmax [Wp]	435	440	445	450	455	460
Maximum Power Voltage – Vmp [V]	32.59	32.81	33.02	33.21	33.41	33.60
Maximum Power Current – Imp [A]	13.35	13.41	13.48	13.55	13.62	13.69
Open-circuit Voltage – Voc [V]	39.16	39.38	39.59	39.78	39.98	40.17
Short-circuit Current – Isc [A]	13.80	13.86	13.93	14.00	14.07	14.14
Module Efficiency STC [%]	21.8	22.0	22.3	22.5	22.8	23.0
Power Tolerance	0 ~ + 3 %					
Temperature Coefficients of Pmax	-0.29 %/°C					
Temperature Coefficients of Voc	-0.25 %/°C					
Temperature Coefficients of Isc	0.045 %/°C					

STC: Irradiance 1000W/m², Cell Temperature 25°C, AM=1.5

Application Conditions

Operating Temperature	-40 °C ~ +70°C
Maximum System Voltage	1000/1500 VDC (IEC)
Maximum Series Fuse Rating	25 A

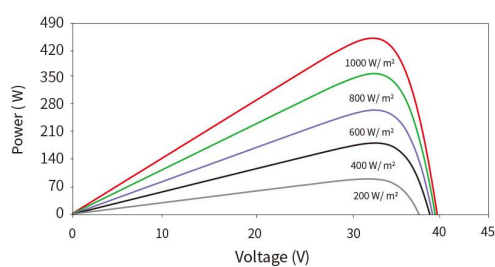
Engineering Drawings



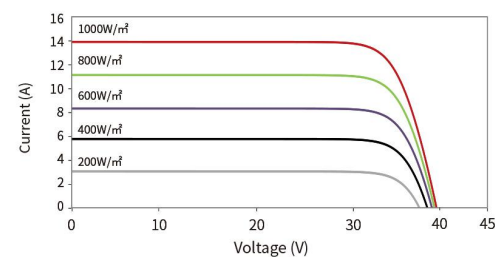
*Note: For specific dimensions and tolerance ranges, please refer to the corresponding detailed module drawings.

Electrical Performance

Power-Voltage Curves 450W



Current-Voltage Curves 450W



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