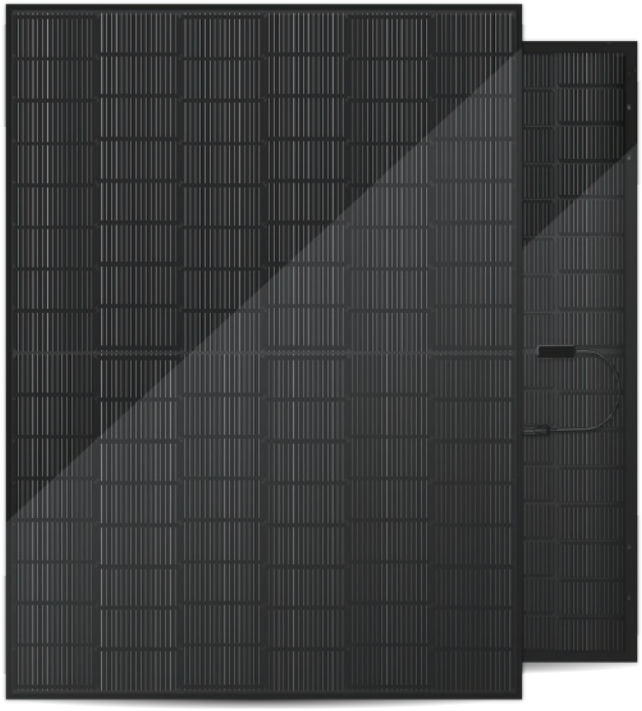
Sunhorn
Creating a Sustainable Future With Green Energy

HiSEER 4N

SH21R-48H-D 435-455W



435-455W / Max. Power Output

1762*1134mm / Size

22.8% / Module Efficiency

30 30-year linear power output warranty with over-performance.

15 15-year product material and workmanship warranty.

Product Advantages

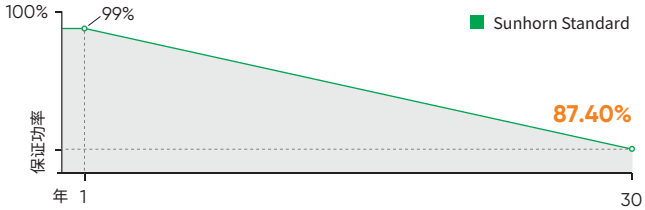
Half-cut technology for enhanced power output.
Compared to full-cell modules, half-cut cells reduce current by half, lower thermal losses, and decrease hot spot temperatures, effectively improving power output.

Parallel-series structure reduces shading losses.
With its special parallel-series configuration, half-cut modules allow for vertical arrangement, improving racking and land utilization while minimizing power loss caused by shading.

Lower heat generation and reduced temperature-related losses.
Under outdoor operating conditions, the temperature of half-cut modules is approximately 1.6°C lower than that of conventional full-cell modules.

Low current design reduces packaging losses.
By utilizing the low-current characteristics of half-cut cells, the packaging loss is reduced to within 0.2%.

Power Output Warranty



1%first-year degradation, 0.4%annual power degradation thereafter.

Quality System & Certifications

IEC61215(2016) / IEC61730(2018)
IEC61701 / IEC62716 / IEC60068
ISO9001:2015 / ISO14001:2015 / ISO45001:2018

*As certification requirements vary by market, please consult the SUNHORN sales department for the appropriate certifications.

NOTE: Please read the safety and installation instructions before using this product.

© 2026 Shanhong New Energy Development Co., Ltd. All rights reserved. The specifications in this datasheet are subject to change without prior notice. Sunhorn New Energy Development Co., Ltd. reserves the right of final interpretation. Version: SH-2026-A

Sunhorn
Creating a Sustainable Future With Green Energy

All-black N-type TOPCon double-glass PV module

Electrical Characteristics (STC)

Maximum Power (Pmax)	435	440	445	450	455
Maximum Power Voltage (Vmp)	29.40	29.58	29.76	29.94	30.12
Maximum Power Current (Imp)	14.80	14.87	14.95	15.03	15.11
Open-circuit Voltage (Voc)	34.80	34.98	35.16	35.34	35.52
Short-circuit Current (Isc)	15.85	15.90	15.95	16.00	16.05
Module Efficiency【%】	21.8	22	22.3	22.5	22.8
Measuring tolerance 【%】	0~+5%	0~+5%	0~+5%	0~+5%	0~+5%

Measured under Standard Test Conditions (STC): AM1.5, 1000 W/m², cell temperature 25°C.

Electrical Characteristics(NOCT)

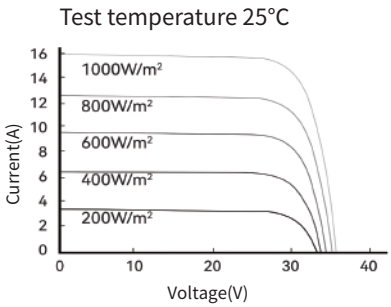
Maximum Power (Pmax)	328	332	336	340	344
Maximum Power Voltage (Vmp)	27.48	27.66	27.84	28.02	28.20
Maximum Power Current (Imp)	11.93	12.00	12.07	12.13	12.20
Open-circuit Voltage (Voc)	32.86	33.04	33.22	33.40	33.58
Short-circuit Current (Isc)	12.86	12.91	12.96	13.01	13.06

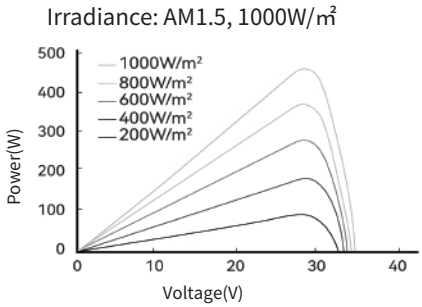
NOCT: Irradiance 800 W/m², ambient temperature 20°C, wind speed 1 m/s.

Mechanical Data

Module Dimensions	1762*1134*30mm
Solar Cells	Monocrystalline (182*210)
No. of Cells	96 [2 x (8 x 6)]
Glass	2*1.6mm,Heat Strengthened Glass
Frame	Black Anodized Aluminium Alloy
Encapsulant Material	EPE/EVA
J-Box	IP68
Connector	MC4 Compatible
Output Cable	4.0mm² , 300/300mm
Weight	21kg

IV Curve and PV Curve





Operating Data

Operational Temperature	-40°C~+85°C
Maximum System Voltage	1500V DC(IEC)
Maximum Series Fuse Rating	30A
Bifacility	80±5%

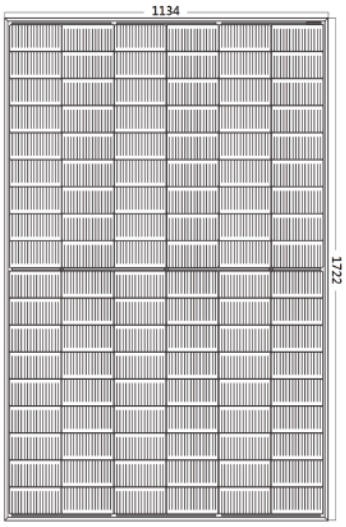
Temperature Ratings

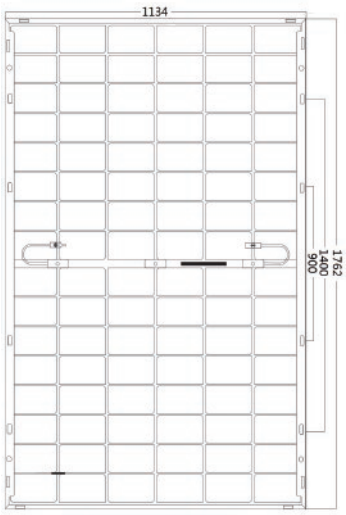
Nominal operating cell temperature	45°C(±2°C)
Temperature Coefficient of Pmax	-0.290%/°C
Temperature Coefficient of Voc	-0.250%/°C
Temperature Coefficient of Isc	+0.040%/°C

Packaging

Pallet Dimensions	1792×1130×1250 mm
Information	36Pcs per Pallet，936Pcs per 40HQ

Structural Diagram(mm)





Yangzhou Sunhron New Energy Development Co., Ltd.
Address: No. 8 Jianye Road, Industrial Zone, Dayi Town, Northern Suburb, Yangzhou City, Jiangsu Province, China
Tel: 0514-83882288 84223238 Fax: 0514-83862288 84228277 Website: www.sunhorn.com

Sunhorn
Creating a Sustainable Future With Green Energy