

NIWA

Black Series

solago®

JW-HD96N-R2

n-type Bifacial Dual-Glass **Transparent Black** Module

435-460W

J-TOpCon
Technology

460W

Maximum Power
Output

23.0%

Maximum Module
Efficiency

0~+3%

Power Output
Tolerance



10-30% Additional Power Generation

30 years lifespan brings 10-30% additional power generation comparing with conventional P-type module.



ZERO LID (Light Induced Degradation)

n-type solar cell has no LID naturally which can increase power generation.



Higher Reliability

New generation TOPCon technology for the cell. No polysilicon wrap around, no current leakage, and greater resistance to hot spots.



Better Weak Illumination Response

Higher power output even under low-light environments like on cloudy or foggy days.



Better Temperature Coefficient

Lower temperature coefficient (-0.28%) and lower working temperature, resulting in more power.



Wider Applicability

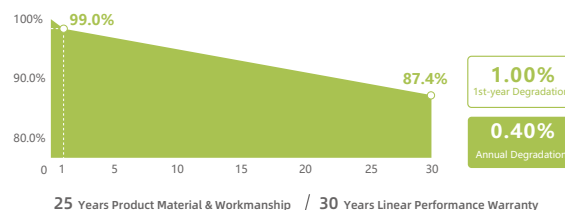
More application scenes like BIPV, vertical installation, snowfield, high-humid, windy and dusty area.

Munich RE   



IEC 61215(2021)/IEC 61730(2023)/IEC 61701/IEC 62716
ISO 9001:2015: Quality Management System
ISO 14001:2015: Environment Management System
ISO 45001:2018: Occupational health and safety
IEC 62941:2019: Quality system for PV module manufacturing

Linear Performance Warranty



Version 2025.01 ©Jolywood (Taizhou) Solar Technology Co., Ltd. All rights reserved.



JOLYWOOD (TAIZHOU) SOLAR
TECHNOLOGY CO.,LTD.
www.jolywood.cn



Official Distributor : solago GmbH
www.solago.de
www.solarhandel24.de



JW-HD96N Series | n-type Bifacial Dual-Glass Transparent Black Module

SEN

Electrical Properties | STC*

Testing Condition	Front Side	Front Side	Front Side	Front Side	Front Side	Front Side
Peak Power (P _{max}) (W)	435	440	445	450	455	460
MPP Voltage (V _{mp}) (V)	29.44	29.62	29.80	29.98	30.16	30.34
MPP Current (I _{mp}) (A)	14.78	14.85	14.93	15.01	15.09	15.16
Open Circuit Voltage (V _{oc}) (V)	34.31	34.51	34.71	34.91	35.11	35.31
Short Circuit Current (I _{sc}) (A)	15.65	15.72	15.79	15.86	15.93	16.00
Module Efficiency (%)	21.8	22.0	22.3	22.5	22.8	23.0

*STC: Irradiance 1000 W/m², Cell Temperature 25°C, AM1.5

The data above is for reference only and the actual data is in accordance with the practical testing Power Measurement Tolerance ±3%

Electrical Properties | NMOT*

Testing Condition	Front Side	Front Side	Front Side	Front Side	Front Side	Front Side
Peak Power (P _{max}) (W)	326	330	333	337	341	345
MPP Voltage (V _{mp}) (V)	28.19	28.36	28.53	28.71	28.88	29.05
MPP Current (I _{mp}) (A)	11.56	11.62	11.68	11.74	11.80	11.86
Open Circuit Voltage (V _{oc}) (V)	32.86	33.05	33.24	33.43	33.62	33.81
Short Circuit Current (I _{sc}) (A)	12.64	12.70	12.76	12.81	12.87	12.92

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

Electrical Properties Under Different Rear Gain | JW-HD96N-R2-450

Power Gain (%)	Peak Power (P _{max}) (W)	MPP Voltage (V _{mp}) (V)	MPP Current (I _{mp}) (A)	Open Circuit Voltage (V _{oc}) (V)	Short Circuit Current (I _{sc}) (A)
10	495.00	29.80	16.61	34.91	17.55
15	517.50	29.80	17.37	34.91	18.35
20	540.00	29.80	18.12	34.91	19.15
25	562.50	29.90	18.81	35.01	19.89
30	585.00	29.90	19.57	35.01	20.68

Operating Properties

Operating Temperature (°C)	-40°C~+85°C
Maximum System Voltage (V)	1500V DC (IEC)
Maximum Series Fuse Rating (A)	35
Bifaciality*	80%

Static Load Front side 5400Pa, Rear side 2400Pa

*Bifaciality=P_{max}rear (STC) /P_{max}front (STC) , Bifaciality tolerance:±5%

Temperature Coefficient

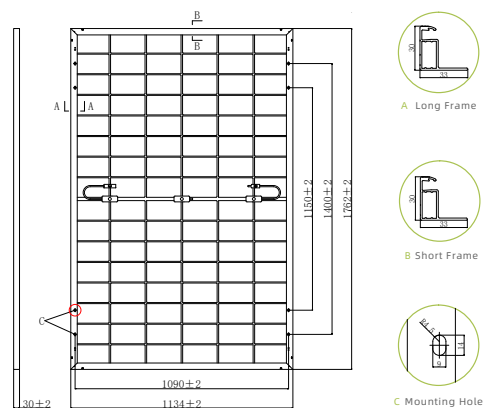
Temperature Coefficient of P _{max}	-0.280%/°C
Temperature Coefficient of V _{oc}	-0.250%/°C
Temperature Coefficient of I _{sc}	+0.045%/°C
Nominal Operating Cell Temperature	45±2°C

Mechanical Properties

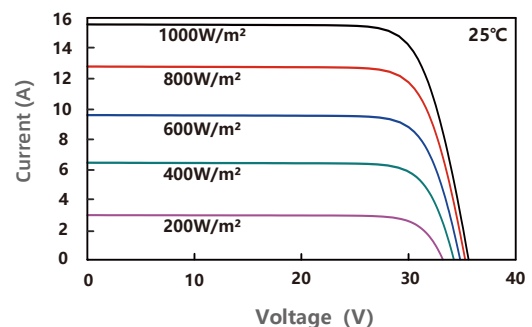
Number of Cells	96pcs
Module Dimension	1762mm*1134mm*30mm
Weight	24.6kg
Front / Rear Glass	2.0mm/2.0mm Heat-strengthened glass
Frame	Anodized Aluminium Alloy
Junction Box	IP68 (3 diodes)
Length of Cable	4.0mm ² , +1200mm/-1200mm (Cable length can be customized)
Packaging Configuration	37pcs/Pallet, 962pcs/40'HQ

*The specification and key features described in this datasheet may deviate slightly and are not guaranteed. Due to ongoing innovation, R&D enhancement, Jolywood (Taizhou) Solar Technology Co., Ltd. reserves the right to make any adjustment to the information described herein at any time without notice. Please always obtain the most recent version of the datasheet which shall be duly incorporated into the binding contract made by the parties governing all transactions related to the purchase and sale of the products described herein.

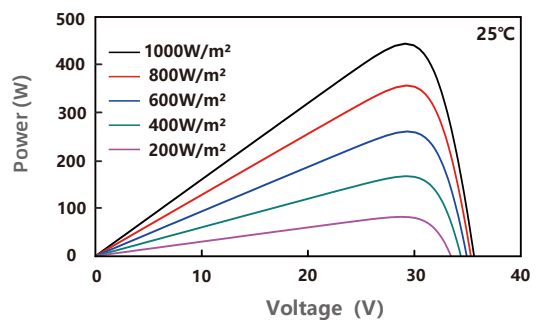
Engineering Drawing (unit: mm)



Characteristic Curves | JW-HD96N-R2-450



I-V Characteristics At Different Irradiations



P-V Characteristics At Different Irradiations



JOLYWOOD (TAIZHOU) SOLAR
TECHNOLOGY CO., LTD.
www.jolywood.cn



Official Distributor : solago GmbH
www.solago.de
www.solarhandel24.de

