NIWA Black Series

JOLYWOOD

JW-HD96N-R2

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

445-470W

470W	23.5%	0~+3%
Maximum Power Output	Maximum Module Efficiency	Power Output Tolerance

Aesthetic Design
Framed in pure black with ultra-thin busbars for seamless visual integration.

Better Low-light Performance
Higher power output even under low-light conditions such as cloudy or foggy days.

Zero LID (Light-Induced Degradation)
n-type cells are naturally LID-free, ensuring stable power output.

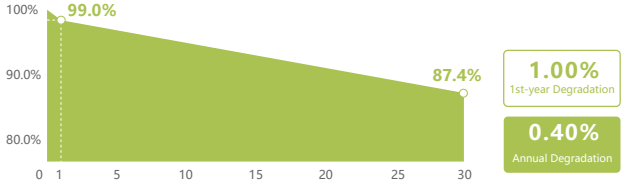
Ultra-High Reliability
J-TOPCon New technology, greater resistance to hot-spot.

Optimized Temperature Coefficient
Lower operating temperature and optimized temperature coefficient (-0.28%/℃) brings more power generation.

Wider Application Scenarios
Bifacial and dual-glass design enables broader applications like BIPV, vertical installation, snow/sand/high-humidity regions.

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



25 Years Product Material & Workmanship / 30 Years Linear Performance Warranty

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

Electrical Properties | STC*

Testing Condition	Front Side	Front Side	Front Side	Front Side	Front Side	Front Side
Peak Power (Pmax) (W)	445	450	455	460	465	470
MPP Voltage (Vmp) (V)	29.80	29.98	30.16	30.34	30.52	30.70
MPP Current (Imp) (A)	14.93	15.01	15.09	15.16	15.24	15.31
Open Circuit Voltage (Voc) (V)	34.71	34.91	35.11	35.31	35.51	35.71
Short Circuit Current (Isc) (A)	15.79	15.86	15.93	16.00	16.07	16.14
Module Efficiency (%)	22.3	22.5	22.8	23.0	23.3	23.5

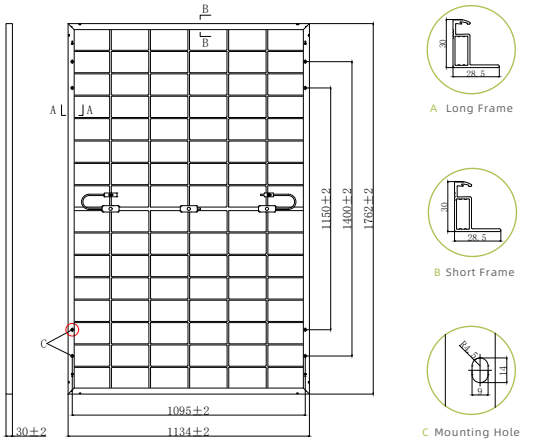
*STC: Irradiance 1000 W/m², Cell Temperature 25℃, AM1.5
The data above is for reference only and the actual data is in accordance with the pratical testing Power Measurement Tolerance ±3%

Electrical Properties | NMOT*

Testing Condition	Front Side	Front Side	Front Side	Front Side	Front Side	Front Side
Peak Power (Pmax) (W)	333	337	341	345	348	352
MPP Voltage (Vmp) (V)	28.53	28.71	28.88	29.05	29.22	29.40
MPP Current (Imp) (A)	11.68	11.74	11.80	11.86	11.92	11.98
Open Circuit Voltage (Voc) (V)	33.24	33.43	33.62	33.81	34.00	34.20
Short Circuit Current (Isc) (A)	12.76	12.81	12.87	12.92	12.98	13.04

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

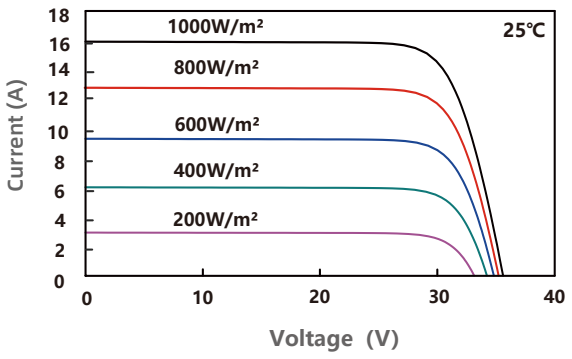
Engineering Drawing (unit: mm)



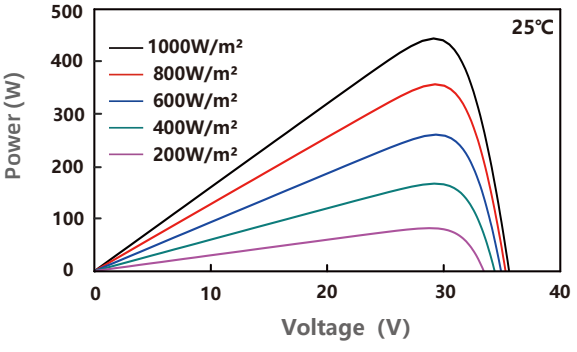
Electrical PropertiesUnder Different Rear Gain |JW-HD96N-R2-460

Power Gain (%)	Peak Power (Pmax) (W)	MPP Voltage (Vmp) (V)	MPP Current (Imp) (A)	Open Circuit Voltage (Voc) (V)	Short Circuit Current (Isc) (A)
10	506.00	30.34	16.68	35.31	17.60
15	529.00	30.34	17.44	35.31	18.40
20	552.00	30.34	18.19	35.31	19.20
25	575.00	30.44	18.89	35.41	19.95
30	598.00	30.44	19.65	35.41	20.75

Characteristic Curves | JW-HD96N-R2-460



I-V Characteristics At Different Irradiations



P-V Characteristics At Different Irradiations

Operating Properties

Operating Temperature (℃)	-40℃~+85℃
Maximum System Voltage (V)	1500V DC (IEC)
Maximum Series Fuse Rating (A)	35
Bifaciality*	80%
Static Load	Front side 5400Pa, Rear side 2400Pa

*Bifaciality=Pmaxrear (STC) /Pmaxfront (STC) , Bifaciality tolerance:±5%

Temperature Coefficient

Temperature Coefficient of Pmax	-0.280%/℃
Temperature Coefficient of Voc	-0.250%/℃
Temperature Coefficient of Isc	+0.045%/℃
Nominal Operating Cell Temperature	45±2℃

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	4.0mm², +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 arenot guaranteed. Due to ongoing innovation, R&D enhancement,Jolywood (Taizhou) SolarTechnology Co., Ltd. reserves the right to make any adjustment to the information describedherein at any time without notice. Please always obtain the most recent version of the datasheetwhich shallbe duly incorporated into the binding contract made by the parties governing alltransactions related to the purchase and sale ofthe products descri-bed herein.

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