

# JW-HD156N

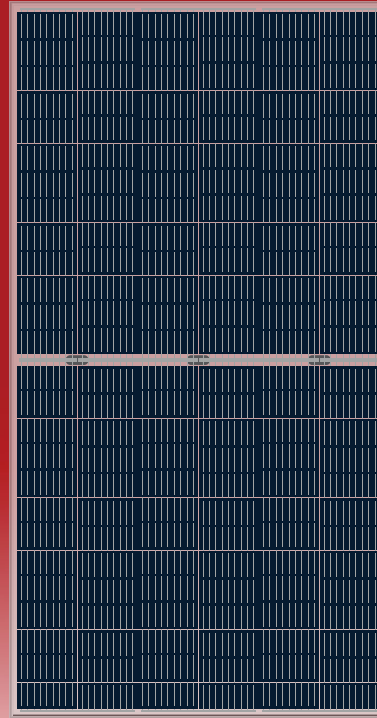
N-type Bifacial High Efficiency  
Mono Silicon Half-Cell Double Glass Module

**430-455W**

Cell Type



9BB



**455W**

Maximum Power Output

**20.96%**

Maximum Module Efficiency

**0~+5W**

Power Output Guarantee



### Additional Power Generation Gain

At least 30-year product life, more than 10%- 30% additional power gain comparing with conventional module



### ZERO LID (Light Induced Degradation)

N-type solar cell has no LID naturally, can increase power generation



### Lower LCOE

High power and 1500V system voltage, saving BOS cost



### Better Weak Illumination Response

Wide spectral response, higher power output even under low-light settings like smog or cloudy days



### Better Temperature Coefficient

Higher power generation under working conditions, thanks to passivating contact cell technology



### Wider Applicability

BIPV, vertical installation, snowfield, high-humid area, windy and dusty area

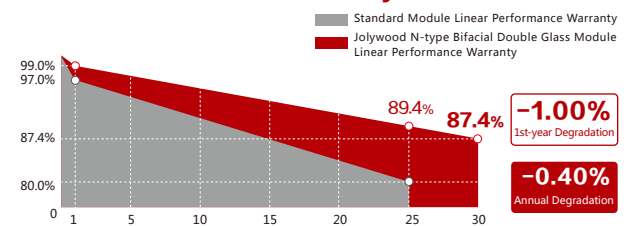
## Jolywood Delivers Reliable Performance Over Time

- Leader of n-type bifacial technology
- Fully automatic facility and world-class technology
- Long term reliability tests
- 100% EL inspection ensuring defect-free modules

## Additional Insurance Backed by Munich Re



## Linear Performance Warranty



12 Years Product Material & Workmanship 30 Years Linear Performance Warranty

# JW-HD156N Series | N-type Bifacial High Efficiency Mono Silicon Half-Cell Double Glass Module

## Electrical Properties | STC\*

| Testing Condition                 | Front Side | Front Side | Front Side | Front Side | Front Side | Front Side |
|-----------------------------------|------------|------------|------------|------------|------------|------------|
| Peak Power ( Pmax ) (W)           | 430        | 435        | 440        | 445        | 450        | 455        |
| MPP Voltage ( Vmp ) (V)           | 44.8       | 45.2       | 45.5       | 45.8       | 46.1       | 46.3       |
| MPP Current ( Imp ) (A)           | 9.60       | 9.64       | 9.68       | 9.72       | 9.77       | 9.83       |
| Open Circuit Voltage ( Voc ) (V)  | 53.5       | 53.8       | 54.1       | 54.4       | 54.7       | 54.9       |
| Short Circuit Current ( Isc ) (A) | 10.06      | 10.12      | 10.17      | 10.22      | 10.28      | 10.34      |
| Module Efficiency ( % )           | 19.80      | 20.03      | 20.26      | 20.49      | 20.73      | 20.96      |

\*STC: Irradiance 1000 W/m<sup>2</sup>, Cell Temperature 25°C, AM1.5  
The data above is for reference only and the actual data is in accordance with the practical testing

## Electrical Properties | NOCT\*

| Testing Condition                 | Front Side | Front Side | Front Side | Front Side | Front Side | Front Side |
|-----------------------------------|------------|------------|------------|------------|------------|------------|
| Peak Power ( Pmax ) (W)           | 325        | 329        | 333        | 337        | 340        | 344        |
| MPP Voltage ( Vmp ) (V)           | 42.0       | 42.3       | 42.6       | 43.0       | 43.2       | 43.4       |
| MPP Current ( Imp ) (A)           | 7.74       | 7.77       | 7.80       | 7.84       | 7.88       | 7.93       |
| Open Circuit Voltage ( Voc ) (V)  | 51.1       | 51.4       | 51.7       | 52.0       | 52.3       | 52.5       |
| Short Circuit Current ( Isc ) (A) | 8.11       | 8.16       | 8.20       | 8.24       | 8.29       | 8.34       |

\*NOCT: Irradiance at 800 W/m<sup>2</sup>, Ambient Temperature 20°C, Wind Speed 1 m/s

## Operating Properties

|                               |               |
|-------------------------------|---------------|
| Operating Temperature ( °C )  | -40°C~+85°C   |
| Maximum System Voltage ( V )  | 1500V ( IEC ) |
| Maximum Series Fuse Rating(A) | 20            |
| Power Tolerance               | 0~+5W         |
| Bifaciality*                  | 80%           |

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

## Temperature Coefficient

|   |            |
|---|------------|
| Temperature Coefficient of Pmax*            | -0.320%/°C |
| Temperature Coefficient of Voc              | -0.260%/°C |
| Temperature Coefficient of Isc              | +0.046%/°C |
| Nominal Operating Cell Temperature ( NOCT ) | 42±2°C     |

\*Temperature Coefficient of Pmax±0.03%/°C

## Mechanical Properties

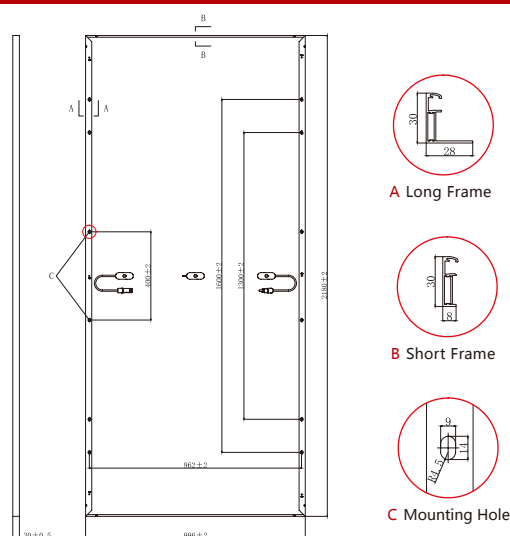
|                    |                            |
|--------------------|----------------------------|
| Cell Type          | 158.75mm*79.375mm          |
| Number of Cells    | 156pcs(12*13)              |
| Dimension          | 2180mm*996mm*30mm          |
| Weight             | 32.5Kg                     |
| Front /Rear Glass* | 2.5mm/2.5mm                |
| Frame              | Anodized Aluminium         |
| Junction Box       | IP67 ( 3 diodes )          |
| Length of Cable*   | 4.0mm <sup>2</sup> , 300mm |
| Connector          | MC4 Compatible             |

\*Heat strengthened glass  
\*Cable length can be customized

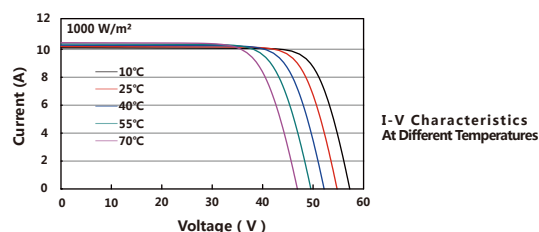
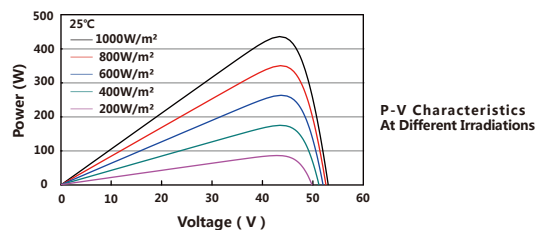
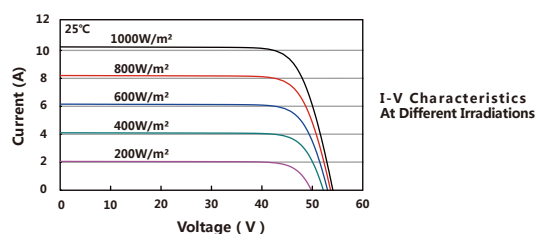
## With Different Power Generation Gain ( regarding 440W as an example )

| 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             | 475                     | 45.5                    | 10.44                   | 54.1                             | 10.97                             |
| 15             | 493                     | 45.5                    | 10.82                   | 54.1                             | 11.37                             |
| 20             | 510                     | 45.6                    | 11.20                   | 54.2                             | 11.77                             |
| 25             | 528                     | 45.6                    | 11.58                   | 54.2                             | 12.17                             |
| 30             | 546                     | 45.6                    | 11.96                   | 54.2                             | 12.57                             |

## Engineering Drawing ( unit : mm )



## Characteristic Curves | HD144N-440



## Packaging Configuration

| Packing Type     | 20'GP | 40'GP | 40'HQ |
|------------------|-------|-------|-------|
| Piece/Pallet     |       | 35    |       |
| Pallet/Container | 5     | 10    | 20    |
| Piece/Container  | 175   | 350   | 700   |

\*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.

