TWMND-54HB410-430W
N-type Half-cell Monofacial Full-black Module (54)

PRODUCT FEATURES

- High Power Output
- Low LCOE
- Maximum Power 430W+
- High Reliability
- Low LID

POWER WARRANTY

1st year <1%, 0.4% power degradation per year from 2 to 30 years

12-year Warranty for Materials
30-year Warranty for Linear Power Output

MANAGEMENT SYSTEM AND PRODUCT CERTIFICATION

ISO9001: 2015/Quality Management System
ISO14001: 2015/Environment Management System
**Electrical Characteristics (STC)**

Module Type: TW-MND-546+IBXXX

<table>
<thead>
<tr>
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<th>410</th>
<th>415</th>
<th>420</th>
<th>425</th>
<th>430</th>
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</thead>
<tbody>
<tr>
<td>Maximum Power: Pmax [W]</td>
<td></td>
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<tr>
<td>Open Circuit Voltage: Voc [V]</td>
<td>37.85</td>
<td>38.01</td>
<td>38.17</td>
<td>38.33</td>
<td>38.49</td>
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<tr>
<td>Voltage at Maximum Power: Vmp [V]</td>
<td>31.20</td>
<td>31.36</td>
<td>31.52</td>
<td>31.68</td>
<td>31.84</td>
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<tr>
<td>Module Efficiency: η [%]</td>
<td>21.0</td>
<td>21.3</td>
<td>21.5</td>
<td>21.8</td>
<td>22.0</td>
</tr>
</tbody>
</table>

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass 1.5, Measuring Tolerance: ±3%

**Electrical Characteristics (NMOT)**

<table>
<thead>
<tr>
<th></th>
<th>308.0</th>
<th>312.0</th>
<th>316.0</th>
<th>320.0</th>
<th>324.0</th>
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<tbody>
<tr>
<td>Maximum Power: Pmax [W]</td>
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<tr>
<td>Open Circuit Voltage: Voc [V]</td>
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<td>Voltage at Maximum Power: Vmp [V]</td>
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<td>29.18</td>
<td>29.34</td>
<td>29.50</td>
<td>29.66</td>
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</tbody>
</table>

NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass 1.5, Wind Speed 1m/s

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**Mechanical Parameters**

- Cells: TNC
- Cell Orientation: 108[6x18]
- Dimension: 1122x2 X1134x2X30mm
- Weight: 20.5kg
- Front Glass: 3.2mm high transmittance, AR coated tempered glass
- Backsheet: Black inside and white outside
- Frame: Anodized aluminum alloy black frame
- Junction Box: IP68, 3 diodes
- Output Cable: 4.0 mm²
- Cable Length: <400mm, >200mm or >1200mm, length can be customized
- Wind/Snow Load: 2400Pa/5400Pa
- Packaging: 36pcs per pallet, 936pcs per 40HC

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**Operating Parameters**

- Operational Temperature: -40°C~68°C
- Maximum System Voltage: 1500V DC
- Maximum Series Fuse Rating: 25A
- Power Output Tolerance: 0~5W

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**Temperature Ratings**

- Temperature Coefficient (Pmax): -0.25%/°C
- Temperature Coefficient (Voc): -0.30%/°C
- Temperature Coefficient (Isc): +0.04%/°C
- NMOT: 45x2°C

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**Drawings (Unit: mm)**

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*With technological progress and product updates, there may be deviations between the technical parameters of Tongwei’s module products and the technical parameters contained in this specification, and Tongwei Solar has the right to adjust the technical parameters at any time without notifying the customer, the final interpretation of the technical specification is vested in Tongwei Solar.*