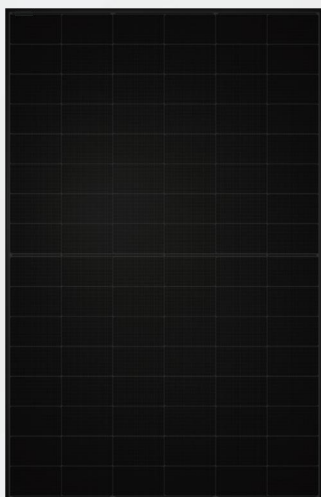


# TNC 2.0

## N-type Half-cell Monofacial Dual Glass Full-black Module (48)

TWMNH-48HE



Higher power output, higher conversion efficiency



Passed hail resistance test for higher reliability

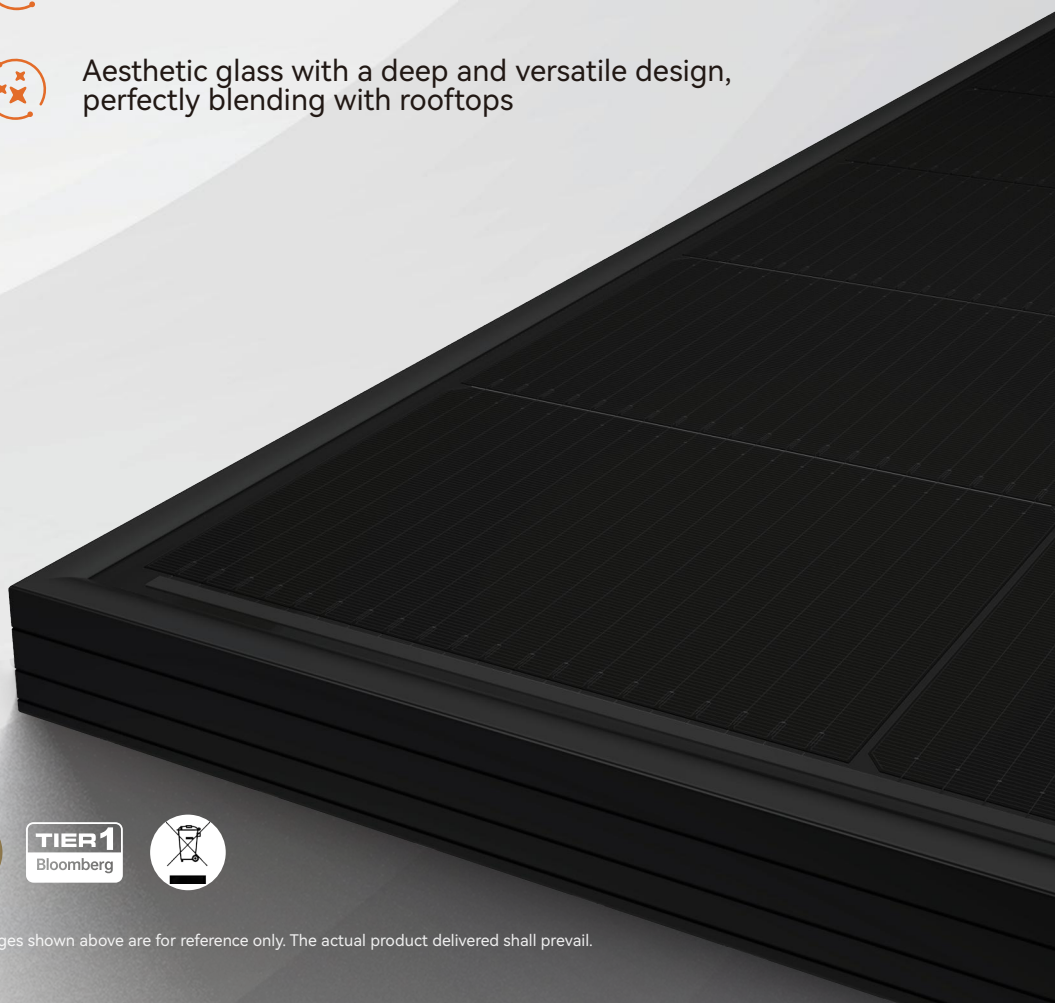


Compact size and lightweight, making installation easier

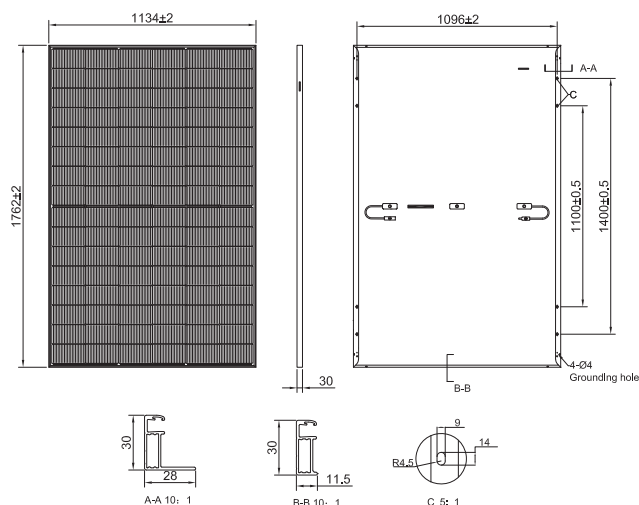


Aesthetic glass with a deep and versatile design, perfectly blending with rooftops

450-470W



## Drawing (Unit: mm)



## Mechanical Parameters

|                          |                                          |
|--------------------------|------------------------------------------|
| Cell Type                | TNC                                      |
| Cell Orientation         | 96[6×16]                                 |
| Dimension                | 1762±2×1134±2×30mm                       |
| Weight                   | 24.3kg                                   |
| Front Glass              | 2.0 mm AR coating semi tempered glass    |
| Rear Glass               | 2.0 mm semi tempered glass               |
| Frame                    | Anodized aluminum alloy black frame      |
| Junction Box             | IP68, 3 diodes                           |
| Cable                    | 4.0 mm <sup>2</sup>                      |
| Cable Length             | +1200mm,-1200mm,length can be customized |
| Maximum Static Test Load | 6,000 Pa (front) / 4,000 Pa (rear)       |
| Packaging (Per pallet)   | 36 pcs                                   |
| Packaging                | 936 pcs per 40'HC                        |

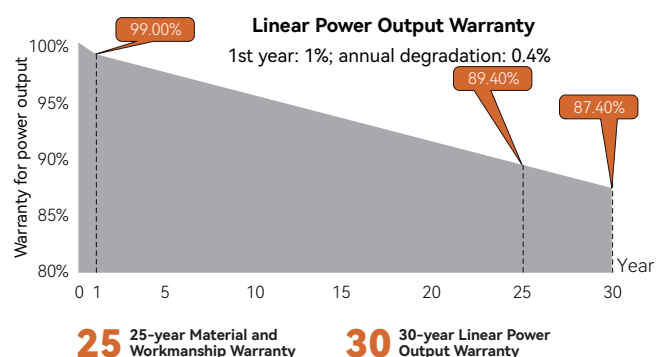
## Electrical Characteristics (STC)

Module type: TWMNH-48HEXXX

|                                               |       |       |       |       |       |
|-----------------------------------------------|-------|-------|-------|-------|-------|
| Maximum Power: P <sub>max</sub> [W]           | 450   | 455   | 460   | 465   | 470   |
| Open Circuit Voltage: V <sub>oc</sub> [V]     | 35.95 | 36.10 | 36.25 | 36.40 | 36.55 |
| Short Circuit Current: I <sub>sc</sub> [A]    | 15.81 | 15.85 | 15.89 | 15.92 | 15.95 |
| Voltage at Maximum Power: V <sub>mp</sub> [V] | 29.81 | 30.06 | 30.31 | 30.56 | 30.80 |
| Current at Maximum Power: I <sub>mp</sub> [A] | 15.10 | 15.14 | 15.18 | 15.22 | 15.26 |
| Module Efficiency: η [%]                      | 22.5  | 22.8  | 23.0  | 23.3  | 23.5  |

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, AM=1.5, Power measurement tolerance:±3%

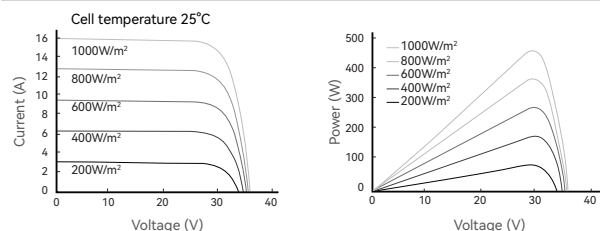
## Warranty



## Temperature Rating

|                                             |            |
|---------------------------------------------|------------|
| Temperature Coefficient of P <sub>max</sub> | -0.28%/°C  |
| Temperature Coefficient of V <sub>oc</sub>  | -0.24%/°C  |
| Temperature Coefficient of I <sub>sc</sub>  | +0.046%/°C |

## Curve



## Operating Parameters

|                            |                        |
|----------------------------|------------------------|
| Operating Temperature*     | [T <sub>g</sub> ]≤70°C |
| Maximum System Voltage     | 1500V DC               |
| Maximum Series Fuse Rating | 30A                    |
| Power Output Tolerance     | 0~+3%                  |

\*The module operating temperature can reach up to 85°C for short term.

## Certifications

### Quality Management System and Product Certification

ISO 9001: 2015 / Quality Management System  
ISO 14001: 2015 / Environmental Management System  
ISO 45001: 2018 / Occupational Health and Safety Management System  
ISO 50001: 2018 / Energy Management System  
IEC 62941: 2019 / Quality System for PV Module Manufacturing  
IEC 61215 (2021) / IEC 61730 (2023), IEC TS 62804,  
IEC 61701, IEC 62716, IEC 60068-2-68



Scan the code for more information