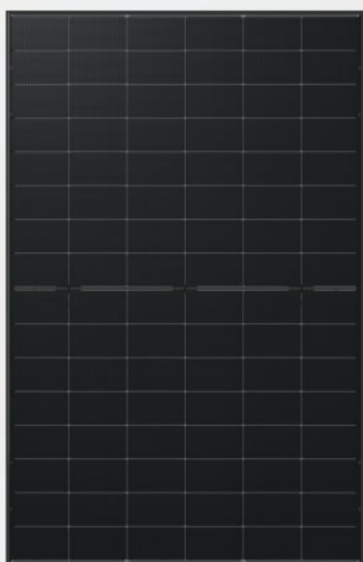


TNC 2.0

**N-type Half-cell Bifacial Dual glass
Black Frame and Transparent Module (48)**
TWMNH-48HD



High light transmittance, suitable for carports and balcony scenarios



Compact size and lightweight, hassle-free operation and low maintenance

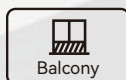


Increased power, lower transportation cost

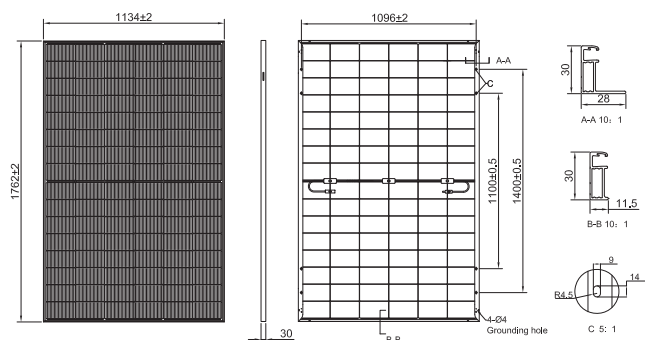


Integrated design, perfectly blending with architectural aesthetics

455-475W



Drawings (Unit: mm)



Electrical Characteristics (STC)

Module type: TWMNH-48HDXXX

Maximum Power: P _{max} [W]	455	460	465	470	475
Open Circuit Voltage: V _{oc} [V]	35.95	36.15	36.35	36.50	36.65
Short Circuit Current: I _{sc} [A]	15.98	16.05	16.12	16.20	16.28
Voltage at Maximum Power: V _{mp} [V]	30.44	30.69	30.94	31.13	31.32
Current at Maximum Power: I _{mp} [A]	14.95	14.99	15.03	15.10	15.17
Module Efficiency: η [%]	22.8	23.0	23.3	23.5	23.8

* STC: Irradiance 1000W/m², Cell temperature 25°C, AM=1.5, Power measurement tolerance: ±3%.
The above electrical parameters are for module grading only, not for individual modules.

Electrical Characteristics (BNPI)

Maximum Power: P _{max} [W]	502.3	507.9	513.3	518.9	524.6
Open Circuit Voltage: V _{oc} [V]	35.95	36.15	36.35	36.50	36.65
Short Circuit Current: I _{sc} [A]	17.64	17.72	17.80	17.88	17.97
Voltage at Maximum Power: V _{mp} [V]	30.44	30.69	30.94	31.13	31.32
Current at Maximum Power: I _{mp} [A]	16.50	16.55	16.59	16.67	16.75

* BNPI: Front side irradiance 1000W/m², Rear side irradiance 135W/m², Cell Temperature=25°C, AM=1.5, Power measurement tolerance: ±3%.
The above electrical parameters are for module grading only, not for individual modules.

Electrical characteristics with different rear side power gain

Maximum Power: P _{max} [W]	523	529	534	540	546
Module Efficiency: η [%]	26.2	26.5	26.7	27.0	27.3

Temperature Rating

Temperature Coefficient of P _{max}	-0.28%/°C
Temperature Coefficient of V _{oc}	-0.24%/°C
Temperature Coefficient of I _{sc}	+0.046%/°C

* Due to differences in test methods and equipment, actual measured values may deviate slightly from the above nominal values.

Operating Parameters

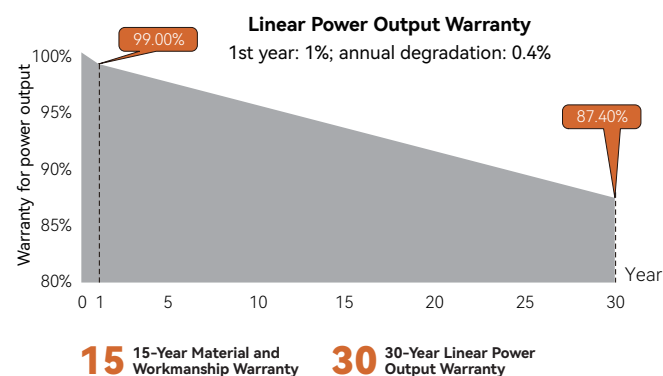
Operating Temperature*	[T ₉₈] ≤ 70°C
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	30A
Power Output Tolerance	0~+3%
Bifaciality coefficient of P _{max}	80±10%
Bifaciality coefficient of V _{oc}	98±5%
Bifaciality coefficient of I _{sc}	80±10%

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

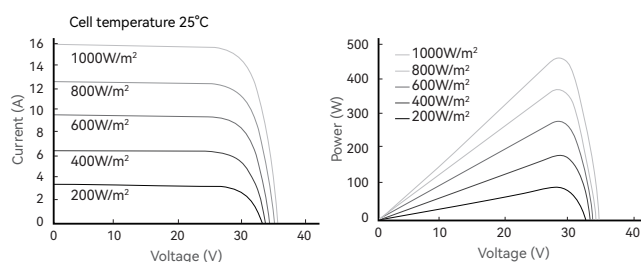
Mechanical Parameters

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	4.0mm ²
Cable Length	±1,200 mm, length can be customized
Maximum Static Test Load	5,400 Pa (Positive) / 2,400 Pa (Negative)
Packaging (Per pallet)	36 pcs
Packaging	936 pcs per 40'HC

Warranty



Curve



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