

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

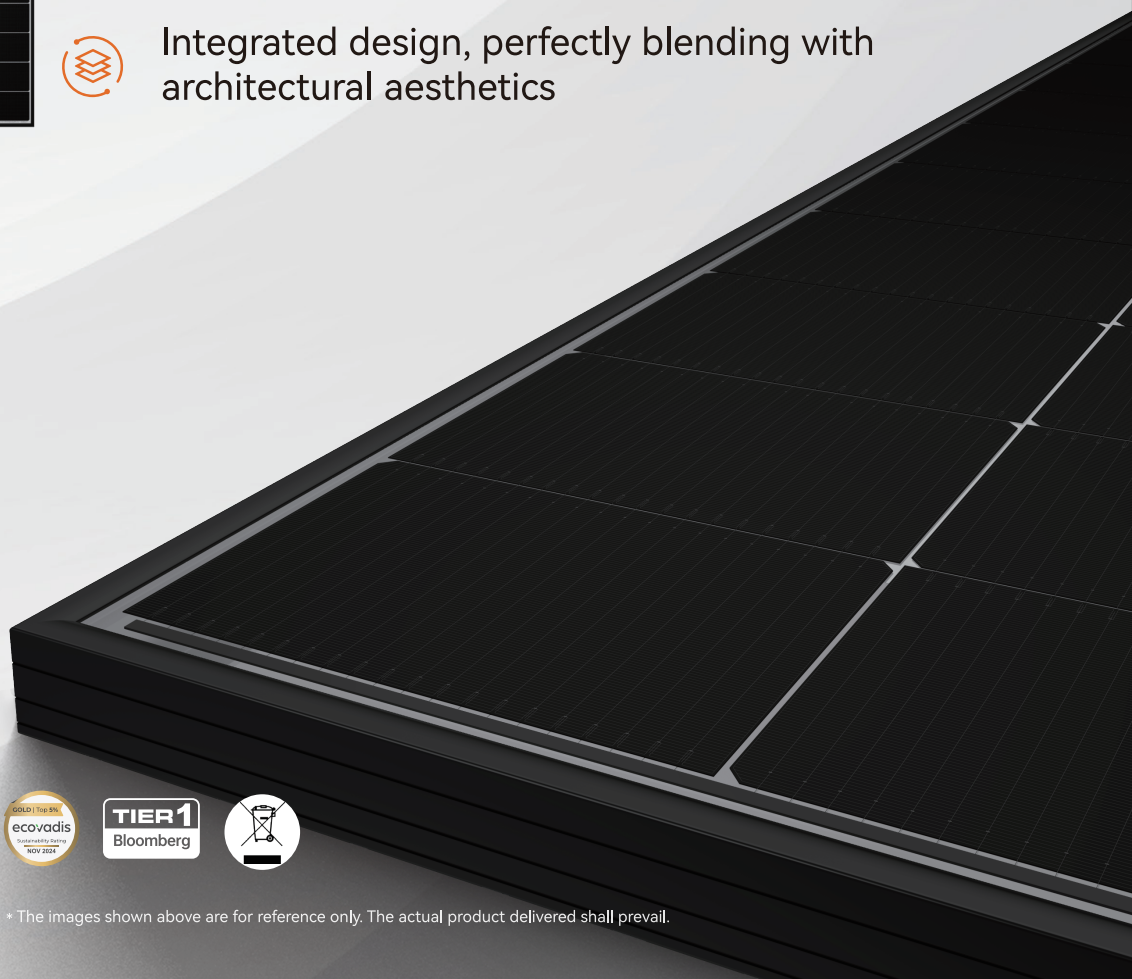


Increased power, lower transportation cost

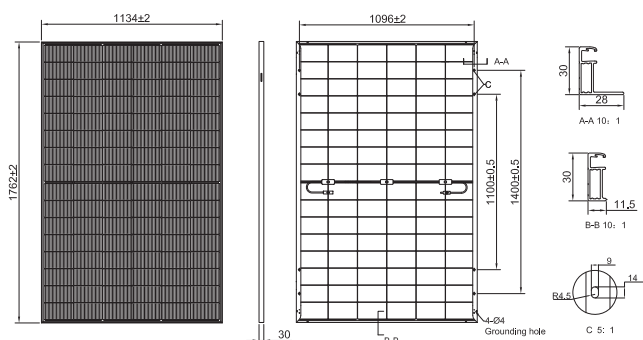


Integrated design, perfectly blending with architectural aesthetics

445-465W



Drawings (Unit: mm)



Electrical Characteristics (STC)

Module type: TWMNH-48HDXXX

Maximum Power: P _{max} [W]	445	450	455	460	465
Open Circuit Voltage: V _{oc} [V]	35.55	35.75	35.95	36.15	36.35
Short Circuit Current: I _{sc} [A]	15.92	15.95	15.98	16.05	16.12
Voltage at Maximum Power: V _{mp} [V]	29.93	30.19	30.44	30.69	30.94
Current at Maximum Power: I _{mp} [A]	14.87	14.91	14.95	14.99	15.03
Module Efficiency: η [%]	22.3	22.5	22.8	23.0	23.3

* STC: Irradiance 1000W/m², Cell temperature 25°C, AM=1.5, Power measurement tolerance: ±3%

Electrical Characteristics (BNPI)

Maximum Power: P _{max} [W]	491.5	496.9	502.3	507.9	513.3
Open Circuit Voltage: V _{oc} [V]	35.55	35.75	35.95	36.15	36.35
Short Circuit Current: I _{sc} [A]	17.57	17.61	17.64	17.72	17.80
Voltage at Maximum Power: V _{mp} [V]	29.93	30.19	30.44	30.69	30.94
Current at Maximum Power: I _{mp} [A]	16.42	16.46	16.50	16.55	16.59

* BNPI: Front side irradiance 1000W/m², Rear side irradiance 135W/m², Cell Temperature=25°C, AM=1.5
Power measurement tolerance: ±3%

Electrical characteristics with different rear side power gain

5%	Maximum Power: P _{max} [W]	467	472	477	483	488
	Module Efficiency: η [%]	23.4	23.6	23.9	24.2	24.4
15%	Maximum Power: P _{max} [W]	511	517	523	529	534
	Module Efficiency: η [%]	25.6	25.9	26.2	26.5	26.7
25%	Maximum Power: P _{max} [W]	556	562	568	575	581
	Module Efficiency: η [%]	27.8	28.1	28.4	28.8	29.1

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

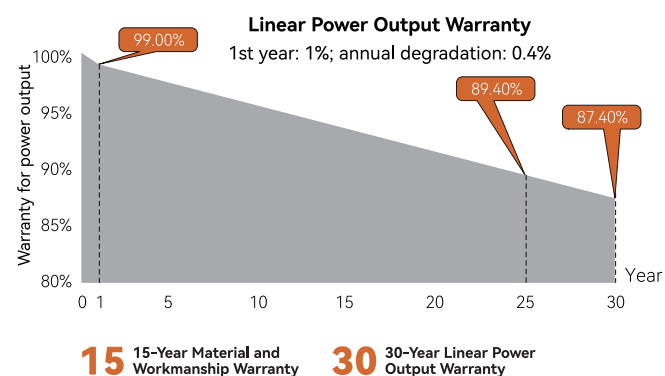
Operating Parameters

Operating Temperature	-40°C~+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%

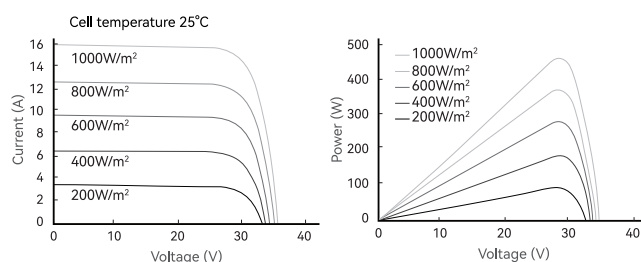
Mechanical Parameters

Cell Type	TNC
Cell Orientation	96[6×16]
Dimension	1762±2×1134±2×30mm
Weight	23.7kg
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 (front) / 2,400 Pa (rear)
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

