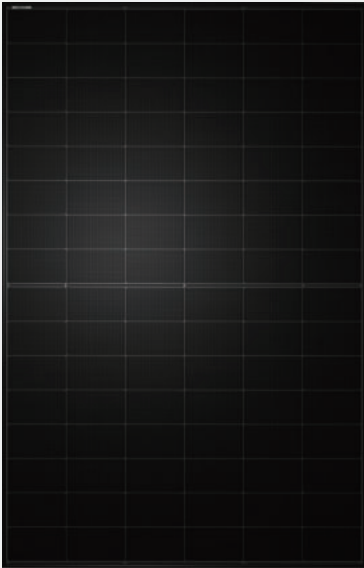


TNC

N-type Half-cell Bifacial Dual glass Full Black Module (48)

TWMNH-48HC



High light transmittance, suitable for carports and balcony scenarios



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

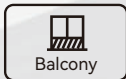


Increased power, lower transportation cost

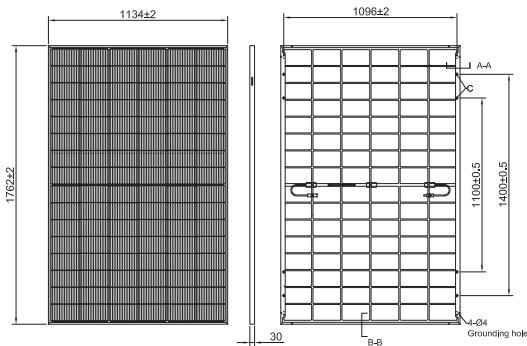


Integrated design, perfectly blending with architectural aesthetics

440-460W



Drawings (Unit: mm)



Electrical Characteristics (STC)

Module type:	TWMNH-48 HC440	TWMNH-48 HC445	TWMNH-48 HC450	TWMNH-48 HC455	TWMNH-48 HC460
Maximum Power: Pmax [W]	440	445	450	455	460
Open Circuit Voltage: Voc [V]	35.35	35.55	35.75	35.95	36.15
Short Circuit Current: Isc [A]	15.89	15.92	15.95	15.98	16.05
Voltage at Maximum Power: Vmp [V]	29.67	29.93	30.19	30.44	30.69
Current at Maximum Power: Imp [A]	14.83	14.87	14.91	14.95	14.99
Module Efficiency: η [%]	22.02	22.27	22.52	22.77	23.02

* STC: Irradiance 1000W/m², Cell temperature 25°C, AM=1.5, Power measurement tolerance: ±3%, Voc measurement tolerance: ±5%, Isc measurement tolerance: ±5%

Electrical Characteristics (BNPI)

Maximum Power: Pmax [W]	485.7	491.5	496.9	502.3	507.9
Open Circuit Voltage: Voc [V]	35.35	35.55	35.75	35.95	36.15
Short Circuit Current: Isc [A]	17.54	17.57	17.61	17.64	17.72
Voltage at Maximum Power: Vmp [V]	29.67	29.93	30.19	30.44	30.69
Current at Maximum Power: Imp [A]	16.37	16.42	16.46	16.50	16.55

* BNPI: Front side irradiance 1000W/m², Rear side irradiance 135W/m², Cell Temperature=25°C, AM=1.5, Power measurement tolerance: ±3%, Voc measurement tolerance: ±5%, Isc measurement tolerance: ±5%

Electrical Characteristics (BSI)

Short Circuit Current: Isc [A]	19.56	19.60	19.63	19.67	19.76	19.84
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* BSI: Front side irradiance 1000W/m², Rear side irradiance 300W/m², Cell Temperature=25°C, AM=1.5, Isc measurement tolerance: ±5%

Electrical characteristics with different rear side power gain

5%	Maximum Power: Pmax[W]	462	467	472	477	483
	Module Efficiency: η [%]	23.12	23.37	23.62	23.87	24.17
15%	Maximum Power: Pmax[W]	506	511	517	523	529
	Module Efficiency: η [%]	25.32	25.57	25.87	26.17	26.48
25%	Maximum Power: Pmax[W]	550	556	562	568	575
	Module Efficiency: η [%]	27.53	27.83	28.13	28.43	28.78

Temperature Rating

Temperature Coefficient of Pmax	-0.28%/°C
Temperature Coefficient of Voc	-0.24%/°C
Temperature Coefficient of Isc	+0.046%/°C

Operating Parameters

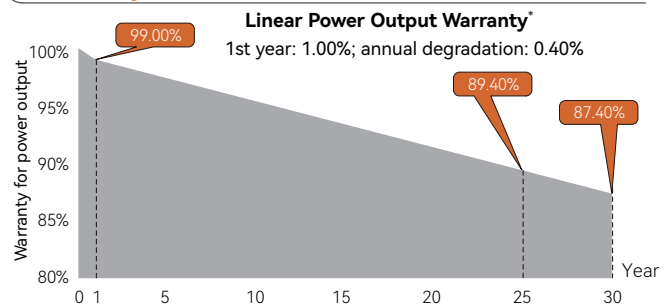
Operating Temperature*	[T ₉₈]≤70°C
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	30A
Power Output Tolerance	0~+3%
Bifaciality coefficient of Pmax	80±10%
Bifaciality coefficient of Voc	98±5%
Bifaciality coefficient of Isc	80±10%
Fire Class Rating	Class C

*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	22.8 kg
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 ²
Cable Length	+1200mm,-1200mm,length can be customized
Connector	TW-PVCON-01,TW-PVCON-02(Tongwei Solar) PV-KST4-EVO2/xy_UR, PV-KBT4-EVO2/xy_UR(Staubli) PV-KST4-EVO2A/xy, PV-KBT4-EVO2A/xy(Staubli) PV-ZH202B(Zhejiang Zhonghuan Sunter)
Maximum Static Test Load	5400Pa (positive) / 2400Pa (negative)
Packaging (Per pallet)	36 pcs
Packaging	936 pcs per 40'HC

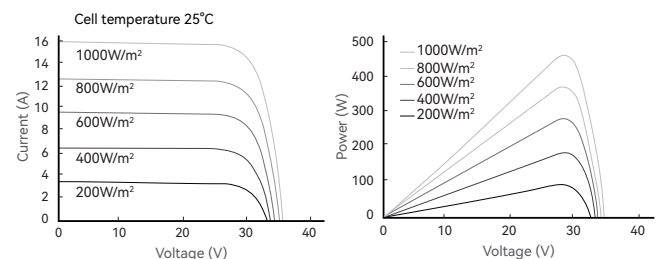
Warranty



25 25-Year Material and Workmanship Warranty **30** 30-Year Linear Power Output Warranty

*The warranty is applicable under STC.

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