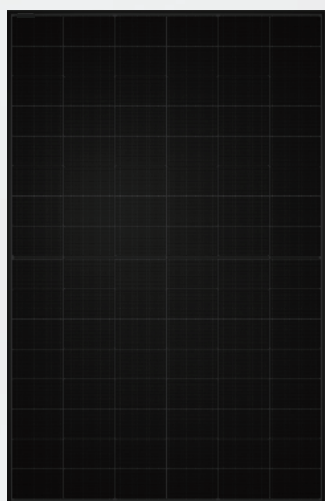


TNC 2.0

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

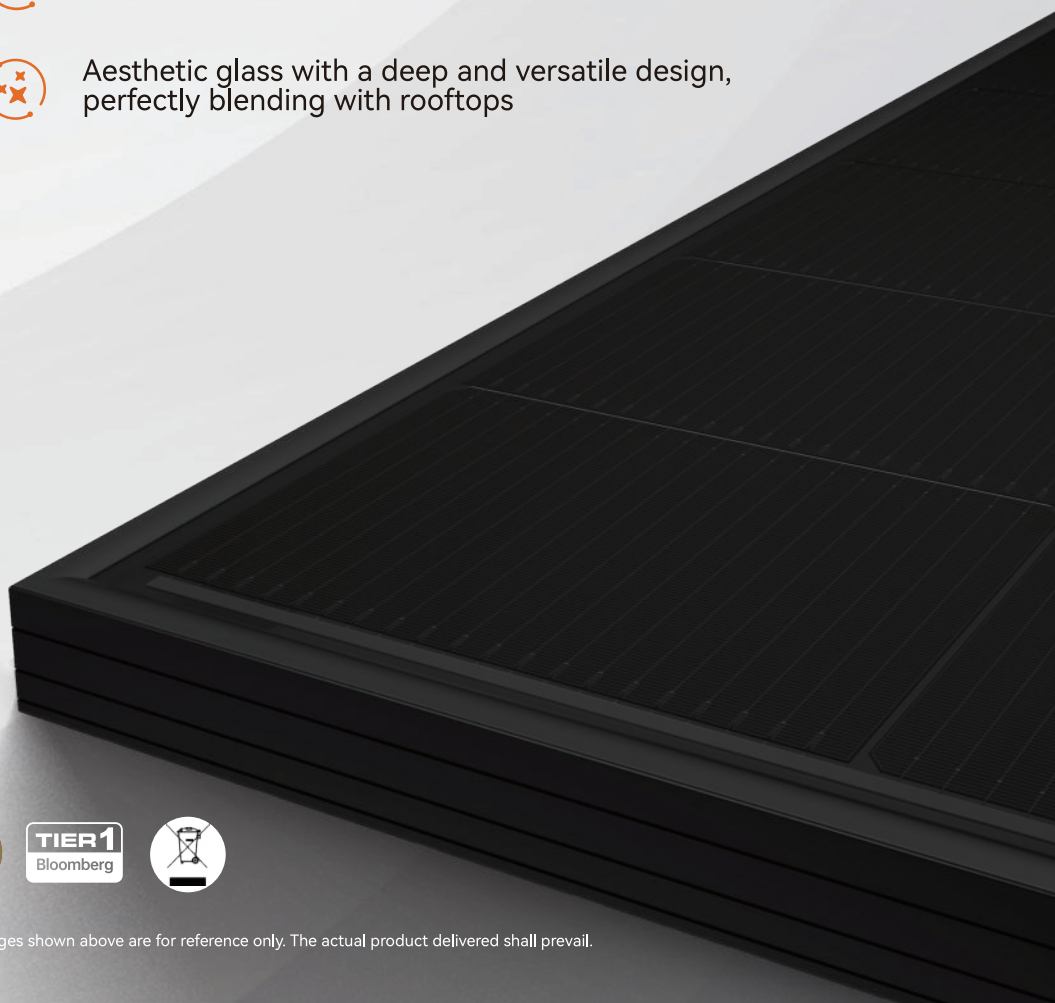


Aesthetic glass with a deep and versatile design, perfectly blending with rooftops

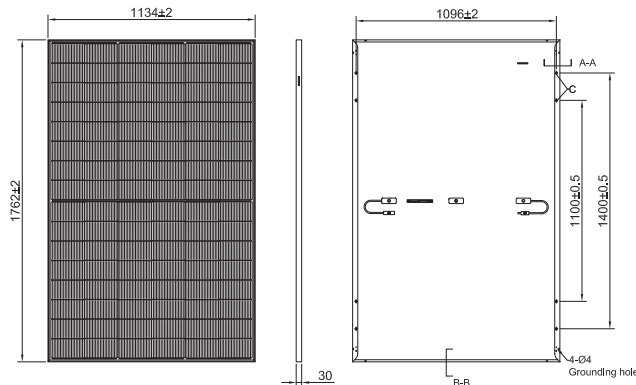
440-475W



Residential Rooftop



Drawing (Unit: mm)



Mechanical Parameters

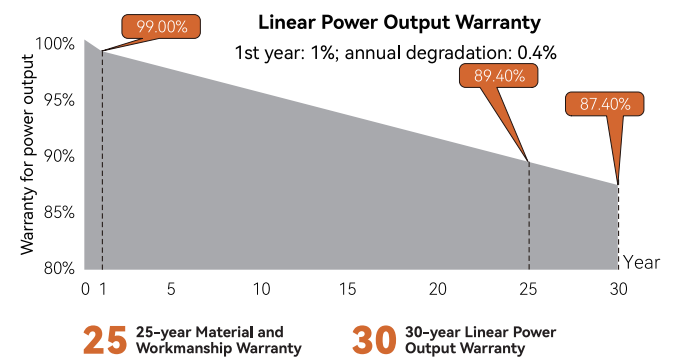
Cell Type	TNC
Cell Orientation	96[6×16]
Dimension	1762±2×1134±2×30mm
Weight	22.8 kg
Front Glass	2.0 mm AR coating semi tempered glass
Rear Glass	2.0 mm semi tempered glass
Frame	Anodized aluminum alloy black frame
Junction Box	IP68, 3 diodes
Cable	4.0 mm ²
Cable Length	+1200mm,-1200mm,length can be customized
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

Electrical Characteristics (STC)

Module type:	TWMNH-48 HE440	TWMNH-48 HE445	TWMNH-48 HE450	TWMNH-48 HE455	TWMNH-48 HE460
Maximum Power: P _{max} [W]	440	445	450	455	460
Open Circuit Voltage: V _{oc} [V]	35.65	35.80	35.95	36.10	36.25
Short Circuit Current: I _{sc} [A]	15.72	15.76	15.81	15.85	15.89
Voltage at Maximum Power: V _{mp} [V]	29.30	29.56	29.81	30.06	30.31
Current at Maximum Power: I _{mp} [A]	15.02	15.06	15.10	15.14	15.18
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%
V_{oc} measurement tolerance: ±5%, I_{sc} measurement tolerance: ±5%

Warranty

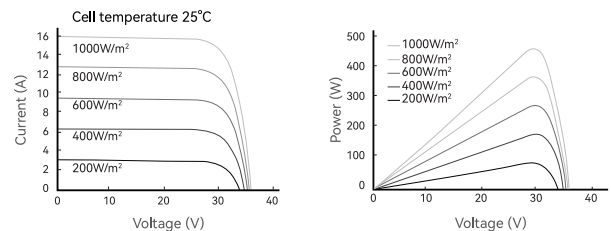


*The warranty is applicable under STC.

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

Curve



Operating Parameters

Operating Temperature*	[T _g] ≤ 70°C
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	30A
Power Output Tolerance	0~+3%
Fire Class Rating	Class C

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

Certifications

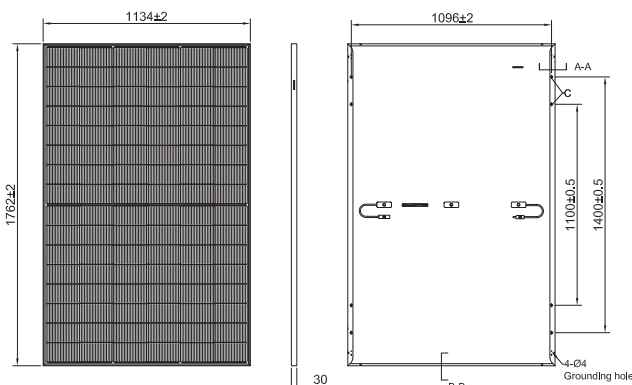
Quality Management System and Product Certification

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 60068-2-68



Scan the code for more information

Drawing (Unit: mm)



Mechanical Parameters

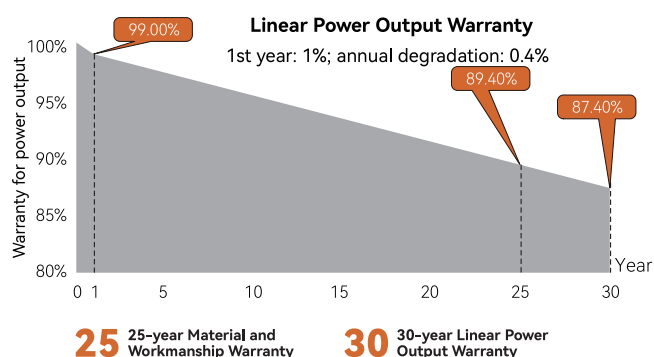
Cell Type	TNC
Cell Orientation	96[6×16]
Dimension	1762±2×1134±2×30mm
Weight	22.8 kg
Front Glass	2.0 mm AR coating semi tempered glass
Rear Glass	2.0 mm semi tempered glass
Frame	Anodized aluminum alloy black frame
Junction Box	IP68, 3 diodes
Cable	4.0 mm ²
Cable Length	+1200mm,-1200mm,length can be customized
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

Electrical Characteristics (STC)

Module type:	TWMNH-48 HE465	TWMNH-48 HE470	TWMNH-48 HE475
Maximum Power: P _{max} [W]	465	470	475
Open Circuit Voltage: V _{oc} [V]	36.40	36.55	36.70
Short Circuit Current: I _{sc} [A]	15.92	15.95	15.97
Voltage at Maximum Power: V _{mp} [V]	30.56	30.80	31.05
Current at Maximum Power: I _{mp} [A]	15.22	15.26	15.30
Module Efficiency: η [%]	23.27	23.52	23.77

* STC: Irradiance 1000W/m², Cell Temperature 25°C, AM=1.5, Power measurement tolerance: ±3%
V_{oc} measurement tolerance: ±5%, I_{sc} measurement tolerance: ±5%

Warranty



25 25-year Material and Workmanship Warranty

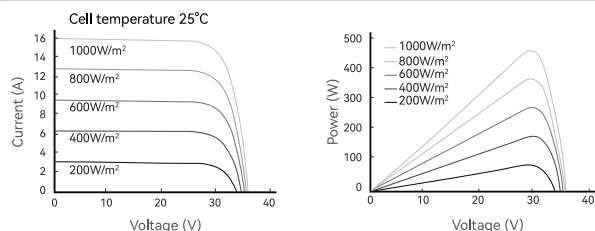
30 30-year Linear Power Output Warranty

*The warranty is applicable under STC.

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

Curve



Operating Parameters

Operating Temperature*	[T _g] ≤ 70°C
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	30A
Power Output Tolerance	0~+3%
Fire Class Rating	Class C

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Certifications

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IEC 60068-2-68



Scan the code for more information