



High Power Output
Low LCOE



Maximum Power
470W



TWMNH

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

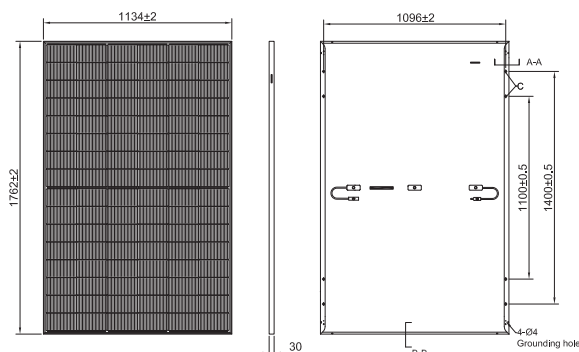
48HE440-470W

Tongwei Co.,Ltd.
<https://en.tongwei.cn/>



Learn More

Drawing (Unit: mm)



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 [%]	22.0	22.3	22.5	22.8	23.0

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

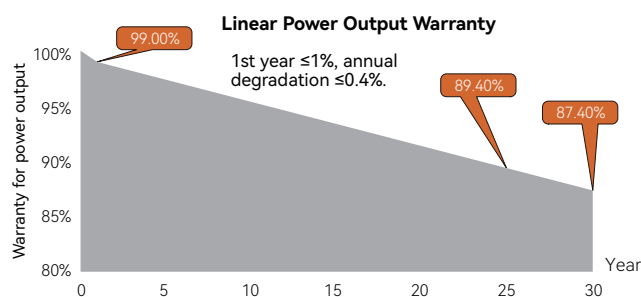
Operating Parameters

Operating Temperature	-40°C~+70°C
Module [T ₉₈] max	70°C
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	30A
Power Selection Tolerance	0~+3%
Fire Class Rating	Class C

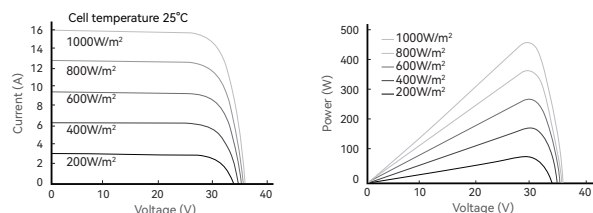
Mechanical Parameters

Cell Type	TNC (N Type Monocrystalline Cell)
Cell Orientation	96[6×16]
Dimensions	1762±2×1134±2×30mm
Weight	22.8kg
Front Glass	2.0mm AR coating semi tempered glass
Rear Glass	2.0mm semi tempered glass
Frame	Anodized aluminum alloy black frame
Junction Box	IP68, 3diodes
Cable	4.0mm ²
Cable length	+1200mm, -1200mm, length can be customized
Connector	TW-PVCON-01(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)
Max static test load	Front side 5400Pa, Rear side 2400Pa
Per pallet	36pcs
Packaging	936pcs per 40'HC

Linear Warranty



I-V Curve



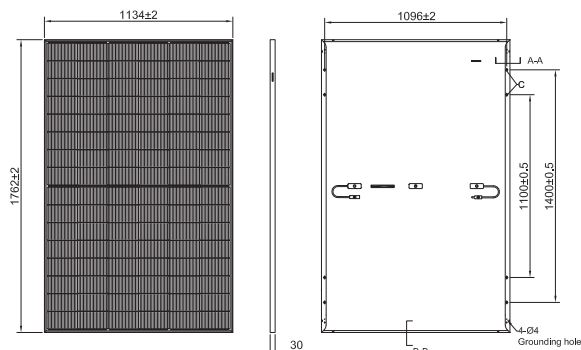
Certifications

Quality Management System and Product Certification

ISO 9001: 2015 / Quality management systems
ISO 14001: 2015 / Environmental management systems
ISO 45001: 2018 / Occupational health and safety management systems
ISO 50001: 2018 / Energy management systems
IEC 62941: 2019 / Quality system for PV module manufacturing
IEC 61215(2021) / IEC 61730(2023)



Drawing (Unit: mm)



Electrical Characteristics (STC)

Module type:	TWMNH-48 HE465	TWMNH-48 HE470
Maximum Power: Pmax [W]	465	470
Open Circuit Voltage: Voc [V]	36.40	36.55
Short Circuit Current: Isc [A]	15.92	15.95
Voltage at Maximum Power: Vmp [V]	30.56	30.80
Current at Maximum Power: Imp [A]	15.22	15.26
Module Efficiency: η [%]	23.3	23.5

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

Temperature Rating

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

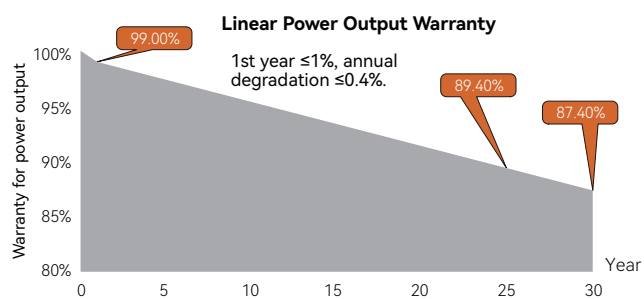
Operating Parameters

Operating Temperature	-40°C~+70°C
Module [T98] max	70°C
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	30A
Power Selection Tolerance	0~+3%
Fire Class Rating	Class C

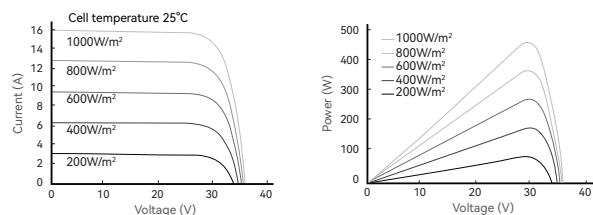
Mechanical Parameters

Cell Type	TNC (N Type Monocrystalline Cell)
Cell Orientation	96[6×16]
Dimensions	1762±2×1134±2×30mm
Weight	22.8kg
Front Glass	2.0mm AR coating semi tempered glass
Rear Glass	2.0mm semi tempered glass
Frame	Anodized aluminum alloy black frame
Junction Box	IP68, 3diodes
Cable	4.0mm ²
Cable length	+1200mm, -1200mm, length can be customized
Connector	TW-PVCON-01(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)
Max static test load	Front side 5400Pa,Rear side 2400Pa
Per pallet	36pcs
Packaging	936pcs per 40'HC

Linear Warranty



I-V Curve



Certifications

Quality Management System and Product Certification

ISO 9001: 2015 / Quality management systems
ISO 14001: 2015 / Environmental management systems
ISO 45001: 2018 / Occupational health and safety management systems
ISO 50001: 2018 / Energy management systems
IEC 62941: 2019 / Quality system for PV module manufacturing
IEC 61215(2021) / IEC 61730(2023)

