



TWMNH

N-type Half-cell
Bifacial Module (48)

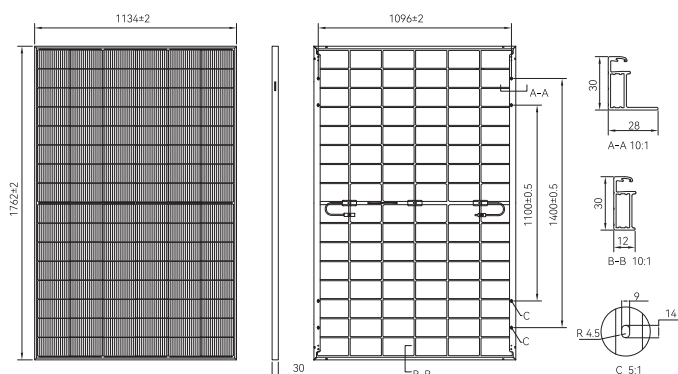
48HD435-455W

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



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Drawings (Unit: mm)



Electrical characteristics (STC)

Model type:	TWMNH-48 HD435	TWMNH-48 HD440	TWMNH-48 HD445	TWMNH-48 HD450	TWMNH-48 HD455
Maximum Power: Pmax [W]	435	440	445	450	455
Open Circuit Voltage: Voc [V]	35.15	35.35	35.55	35.75	35.95
Short Circuit Current: Isc [A]	15.86	15.89	15.92	15.95	15.98
Voltage at Maximum Power: Vmp [V]	29.42	29.67	29.93	30.19	30.44
Current at Maximum Power: Imp [A]	14.79	14.83	14.87	14.91	14.95
Module Efficiency: η [%]	21.8	22.0	22.3	22.5	22.8

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

Electrical characteristics (BNPI)

Maximum Power: Pmax [W]	480.4	485.7	491.5	496.9	502.3
Open Circuit Voltage: Voc [V]	35.15	35.35	35.55	35.75	35.95
Short Circuit Current: Isc [A]	17.51	17.54	17.57	17.61	17.64
Voltage at Maximum Power: Vmp [V]	29.42	29.67	29.93	30.19	30.44
Current at Maximum Power: Imp [A]	16.33	16.37	16.42	16.46	16.50

* BNPI: Front side Irradiance 1000W/m², Back 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: Pmax[W]	456	462	467	472	477
	Module Efficiency: η [%]	22.8	23.1	23.4	23.6	23.9
15%	Maximum Power: Pmax[W]	500	506	511	517	523
	Module Efficiency: η [%]	25.0	25.3	25.6	25.9	26.2
25%	Maximum Power: Pmax[W]	543	550	556	562	568
	Module Efficiency: η [%]	27.2	27.5	27.8	28.1	28.4

Temperature rating

Temperature Coefficient of Pmax	-0.28%/°C
Temperature Coefficient of Voc	-0.24%/°C
Temperature Coefficient of Isc	+0.046%/°C
NMOT	45±2°C

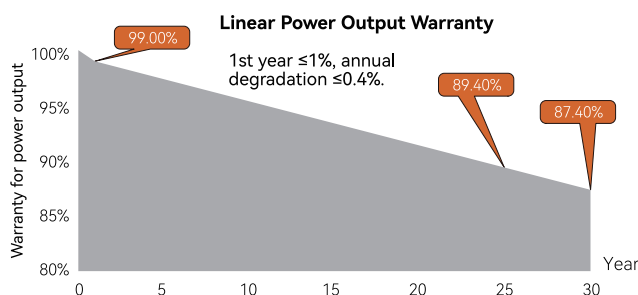
Operating parameters

Operating Temperature	-40°C~+70°C
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	30A
Power Selection 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

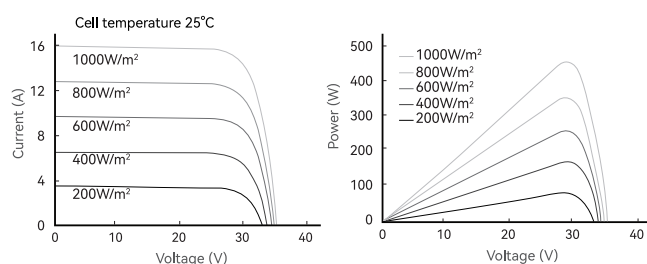
Mechanical parameters

Cell Type	TNC (N Type Monocrystalline Cell)
Cell Orientation	96[6×16]
Dimensions	1762±2×1134±2×30mm
Weight	20.9kg
Front Glass	1.6mm AR coated heat strengthened glass
Rear Glass	1.6mm heat strengthened glass
Frame	Anodized aluminum alloy 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(Stäubli) PV-KST4-EVO2A/xy, PV-KBT4-EVO2A/xy(Stäubli) PV-ZH202B(Zhonghuan), PV-JK03M2/xy(Jinko)
Wind/Snow load	2400Pa/5400Pa
Per pallet	36pcs
Packaging	936pcs per 40'HC

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)

