TW SOLAR

TWMNH

N-type Half-cell Bifacial Module (48)

48HD435-455W

Certisolis

TIER 1 Bloomberg NEW ENERGY FINANCE

Residential Rooftop

25 YEAR Materials Warranty

30 YEAR Power Warranty

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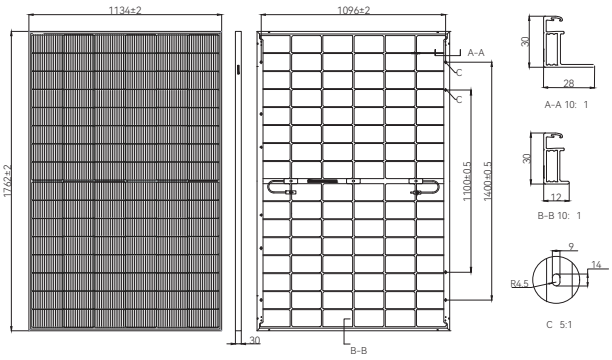
DRAWINGS (Unit: mm)



MECHANICAL PARAMETERS

Cells	TNC (N Type Monocrystalline Cell)
Cell Orientation	96[6×16]
Dimension	1762±2×1134±2×30mm
Weight	20.9kg
Front Glass	1.6mm high transmittance, AR tempered glass
Rear Glass	1.6mm semi-tempered glass
Frame	Anodized aluminum alloy frame
Junction Box	IP68, 3 diodes
Output Cable	4.0mm²
Cable Length	±1200mm, length can be customized
Wind/Snow Load	2400Pa/5400Pa
Packaging	36pcs per pallet, 936pcs per 40'HC

ELECTRICAL CHARACTERISTICS (STC)

Module Type: TWMNH-48HDXXX					
Maximum Power: Pmax [W]	435	440	445	450	455
Open Circuit Voltage: Voc [V]	34.49	34.67	34.85	35.03	35.21
Short Circuit Current: Isc [A]	15.90	15.95	16.00	16.05	16.10
Voltage at Maximum Power: Vmp [V]	29.54	29.72	29.90	30.08	30.26
Current at Maximum Power: Imp [A]	14.73	14.81	14.89	14.97	15.04
Module Efficiency: η [%]	21.8	22.0	22.3	22.5	22.8

* STC: Irradiance 1000W/m², Cell Temperature 25℃, Air Mass1.5, Measuring Tolerance: ±3%

ELECTRICAL CHARACTERISTICS (NMOT)

Maximum Power: Pmax [W]	327	331	335	338	342
Open Circuit Voltage: Voc [V]	32.77	32.94	33.11	33.28	33.45
Short Circuit Current: Isc [A]	12.84	12.88	12.92	12.96	13.00
Voltage at Maximum Power: Vmp [V]	27.51	27.68	27.88	27.96	28.18
Current at Maximum Power: Imp [A]	11.89	11.96	12.02	12.09	12.14

* NMOT: Irradiance 800W/m², Ambient Temperature 20℃, Air Mass1.5, Wind Speed 1m/s

ELECTRICAL CHARACTERISTICS (Rear 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

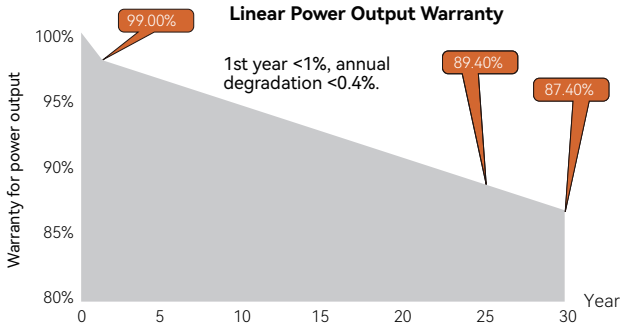
TEMPERATURE PARAMETERS

Temperature Coefficient (Pmax)	-0.30%/℃
Temperature Coefficient (Voc)	-0.25%/℃
Temperature Coefficient (Isc)	+0.046%/℃
NMOT	45±2℃

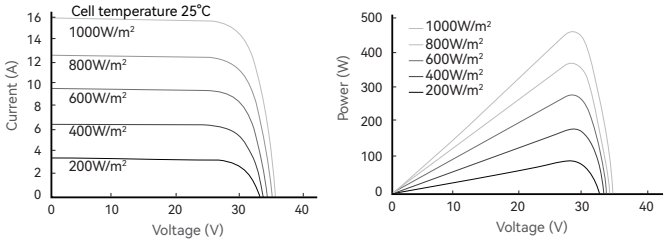
MAXIMUM RATINGS

Operational Temperature	-40℃~+85℃
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	30A
Power Output Tolerance	0~+5W
Maximum Bifaciality	80±10%

WARRANTY



I-V CURVE



CERTIFICATIONS

Quality Management System and Product Certification

ISO 9001: 2015/Quality management system
ISO 14001: 2015/Environmental management system
ISO 45001: 2018/Occupation health safety management system
ISO 50001: 2018/Energy management system
IEC 62941: 2019/Quality system for PV module manufacturing
IEC 61215/61730, IEC 62804(PID), IEC 61701(Salt),
IEC 62716 (Ammonia), IEC 60068-2-68(Sand)

CE (Europe) CQC(China) TÜV NORD MCS (UK) KS (Korea) INMETRO (Brazil) JPEA (Japan) CEC (Australia) CSI (Italy)

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Statement: With technological process and product update, there maybe deviation between the technical parameters of Tongwei's module products and the technical parameters contained in the specification, and Tongwei Solar has the right to adjust the technical parameters at any time without notifying the customer, the final interpretation of the technical specification is vested in Tongwei Solar. (Preview-20240228)