



TWMND-54HB410-430W

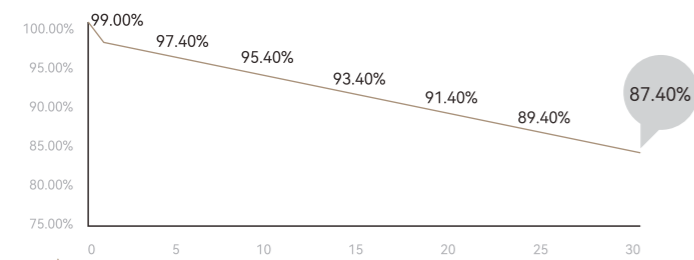
N-type Half-cell Monofacial Full-black Module (54)

PRODUCT FEATURES



POWER WARRANTY

1st year <1%, 0.4% power degradation per year from 2 to 30 years



12-year Warranty for Materials

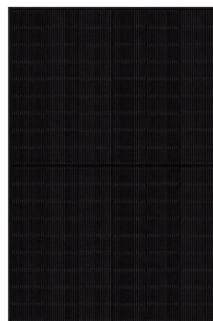
30-year Warranty for Linear Power Output

MANAGEMENT SYSTEM AND PRODUCT CERTIFICATION

ISO9001: 2015/Quality Management System
ISO14001: 2015/Environment Management System
ISO45001: 2018/Occupational Health and Safety Management System



Front



Rear



Electrical Characteristics (STC)

Module Type: TWMND-54HBXXX

Parameter	410	415	420	425	430
Maximum Power: Pmax [W]	410	415	420	425	430
Open Circuit Voltage: Voc [V]	37.85	38.01	38.17	38.33	38.49
Short Circuit Current: Isc [A]	14.05	14.10	14.15	14.20	14.25
Voltage at Maximum Power: Vmp [V]	31.20	31.36	31.52	31.68	31.84
Current at Maximum Power: Imp [A]	13.14	13.23	13.32	13.42	13.51
Module Efficiency: η [%]	21.0	21.3	21.5	21.8	22.0

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

Electrical Characteristics (NMOT)

Parameter	308.0	312.0	316.0	320.0	324.0
Maximum Power: Pmax [W]	308.0	312.0	316.0	320.0	324.0
Open Circuit Voltage: Voc [V]	35.92	36.08	36.24	36.40	36.56
Short Circuit Current: Isc [A]	11.25	11.31	11.37	11.43	11.49
Voltage at Maximum Power: Vmp [V]	29.02	29.18	29.34	29.50	29.66
Current at Maximum Power: Imp [A]	10.61	10.69	10.77	10.85	10.92

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

Mechanical Parameters

Cells	TNC
Cell Orientation	108[6X18]
Dimension	1722±2 X1134±2X30mm
Weight	20.5kg
Front Glass	3.2mm high transmittance, AR coated tempered glass
Backsheet	Black inside and white outside
Frame	Anodized aluminum alloy black frame
Junction Box	IP68, 3 diodes
Output Cable	4.0mm²
Cable Length	+400mm, -200mm or ±1200mm, length can be customized
Wind/Snow Load	2400Pa/5400Pa
Packaging	36pcs per pallet, 936pcs per 40'HC

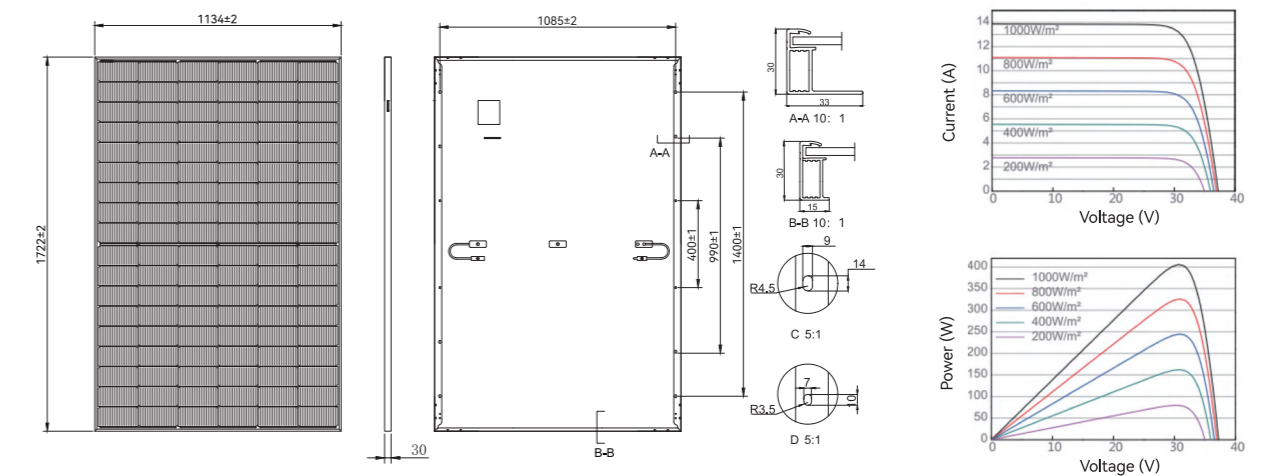
Operating Parameters

Operational Temperature	-40°C~+85°C
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	25A
Power Output Tolerance	0~+5W

Temperature Ratings

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

Drawings (Unit: mm)



With technological progress and product updates, there may be deviations between the technical parameters of Tongwei's module products and the technical parameters contained in this 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.