

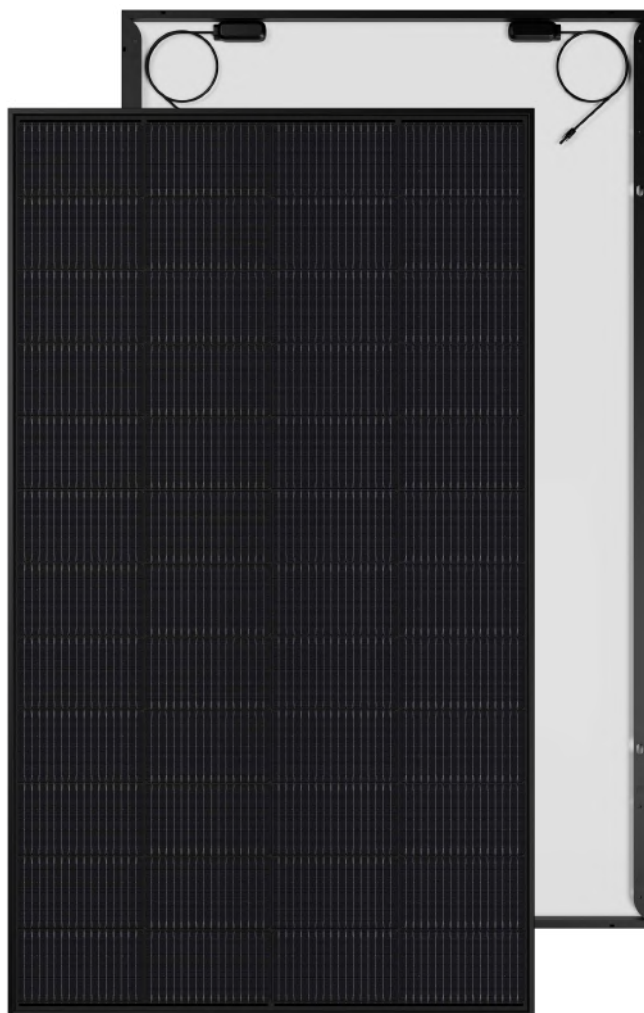
TSHNM-48HT 220-235W

N-type TOPCon Monofacial Full Black Solar Module

- Natural zero LID with N-type solar cell
- SMBB technology, better light trapping & current collection
- Excellent low-light performance & temperature coefficient
- High module quality ensures long-term reliability
- The best choice for residential project

235_W MAXIMUM POWER OUTPUT

23.5% MAXIMUM EFFICIENCY



System & Product Certifications

IEC 61215 / IEC 61730

ISO 9001: Quality Management System

ISO 14001: Environment Management System

ISO 45001: Occupational Health and Safety

amfori BSCI Corporate Social Responsibility



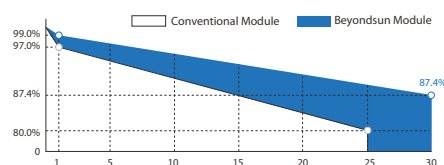
Product Warranty



15-year Warranty for Material & Workmanship



30-year Warranty for Linear Power Output



The Ideal Solution for

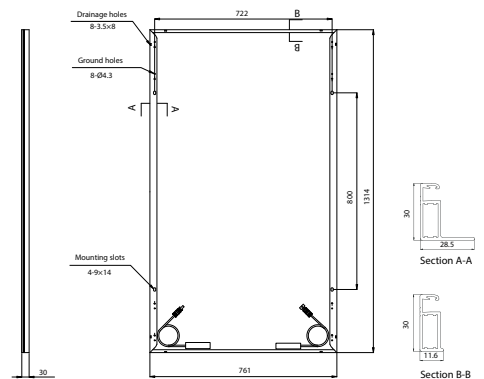


Residential rooftop projects

Mechanical Parameters

Cell Type	N Type Mono
Cell Arrangement	48pcs, 4x12
Dimension (LxWxH)	1314x761x30mm
Weight	8.6kg
Front Cover	2.8mm AR Coating Tempered Glass
Back Cover	Black White Back Sheet
Frame	Black Anodized Aluminium Alloy
Junction Box	IP68
Cable	4mm ² , +400mm, -200mm, or customizable
Connector	PV Connector

Technical Drawings (mm)



Electrical Parameters @STC

Module Type	TSHNM220-48HT	TSHNM225-48HT	TSHNM230-48HT	TSHNM235-48HT
Max. Power Output P _{max} (W)	220	225	230	235
Max. Power Voltage V _{mp} (V)	29.57	29.89	30.19	30.48
Max. Power Current I _{mp} (A)	7.44	7.53	7.62	7.71
Open Circuit Voltage V _{oc} (V)	34.93	35.23	35.53	35.83
Short Circuit Current I _{sc} (A)	7.82	7.90	7.98	8.06
Module Efficiency (%)	22.00%	22.50%	23.00%	23.50%

STC: 1000W/m², 25 °C, AM 1.5 P_{max} tolerance: 0~+3%

Electrical Parameters @NMOT

Module Type	TSHNM220-48HT	TSHNM225-48HT	TSHNM230-48HT	TSHNM235-48HT
Max. Power Output P _{max} (W)	165.8	169.6	173.3	177.1
Max. Power Voltage V _{mp} (V)	27.63	27.92	28.21	28.48
Max. Power Current I _{mp} (A)	6.00	6.07	6.14	6.22
Open Circuit Voltage V _{oc} (V)	33.32	33.61	33.90	34.18
Short Circuit Current I _{sc} (A)	6.31	6.37	6.44	6.50

NMOT: 800W/m², AM 1.5, 20 °C, 1m/s

Operating Parameters

Maximum System Voltage(V)	1500(DC)
Operating Temperature(°C) Max.	-40°C ~ +85°C
Wind Load / Snow Load(Pa)	2400/5400

Temperature Coefficients

Temperature Coefficients of P _{mp}	-0.29%/°C
Temperature Coefficients of V _{oc}	-0.23%/°C
Temperature Coefficients of I _{sc}	+0.04%/°C
NMOT	45°C±2°C

Package Information

Quantity / Pallet	36pcs/pallet, 19pcs/pallet
Container 40'HQ	1547 pcs

Partner's Notes

I-V Curves

