



MBB Half-cell Monofacial Black-frame Module (60)

TW445~465PERC M10-120-H

PRODUCT FEATURES



High Power Output
Low LCOE



Maximum Power
465W*



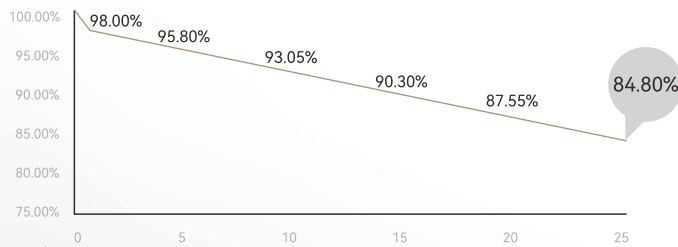
High Reliability



Low LID

POWER WARRANTY

1st year <2%, 0.55% power degradation per year from 2 to 25 years



12-year warranty for materials



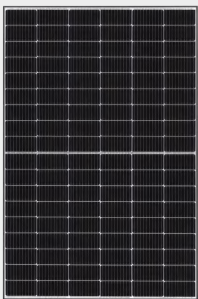
25-year warranty for linear power output

MANAGEMENT SYSTEM AND PRODUCT CERTIFICATION

ISO9001: 2015/Quality Management System

ISO14001: 2015/Environment Management System

ISO45001: 2018/Occupational Health and Safety



Front



Rear



Electrical Characteristics (STC)

Module type: TW***MAP-120-H-S

Maximum power: Pmax (W)	445	450	455	460	465
Open circuit voltage: Voc (V)	41.04	41.21	41.38	41.55	41.72
Short circuit current: Isc (A)	13.79	13.84	13.89	13.94	13.99
Voltage at maximum power point: Vmp (V)	33.67	33.83	33.99	34.15	34.31
Current at maximum power point: Imp (A)	13.22	13.30	13.39	13.47	13.55
Module efficiency: η (%)	20.6	20.8	21.0	21.3	21.5

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass1.5, Measuring tolerance: $\pm 3\%$

Electrical Characteristics (NOCT)

Maximum power: Pmax(W)	336.7	340.5	344.3	348.1	351.9
Open circuit voltage: Voc (V)	38.93	39.11	39.30	39.49	39.68
Short circuit current: Isc (A)	10.88	10.91	10.95	10.97	11.01
Voltage at maximum power point: Vmp (V)	32.15	32.37	32.59	32.81	33.02
Current at maximum power point: Imp (A)	10.47	10.52	10.56	10.61	10.65

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

Mechanical Parameters

Cells	P-TPC
Orientation	120 (6×20)
Size	1908±2×1134±2×35mm
Weight	24.2kg
Glass	3.2mm AR coated heat strengthened glass
Backsheet	White
Frame	Anodized aluminum alloy frame
Junction Box	IP68, 3 diodes
Cable	4.0mm ² , Positive: 280mm, Negative: 280mm, length can be customized
Connector	MC4 Compatible
Wind/Snow Load	2400Pa/5400Pa
Packaging	31pcs per pallet , 744pcs per 40'HC

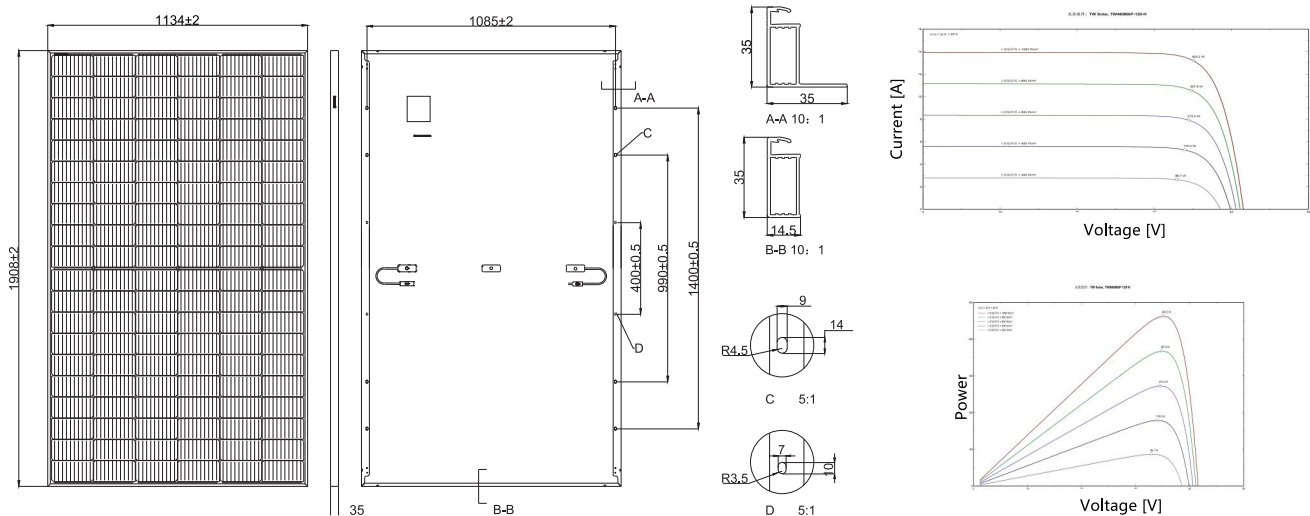
Operating Parameters

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)	-0.34%/°C
Temperature Coefficient (Voc)	-0.27%/°C
Temperature Coefficient (Isc)	+0.045%/°C
NMOT	45±2°C

Drawings (Unit: mm)



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