

TOPSUN

BIFACIAL

HIGH PERFORMANCE
MONOCRYSTALLINE
N-TYPE TECHNOLOGY

120

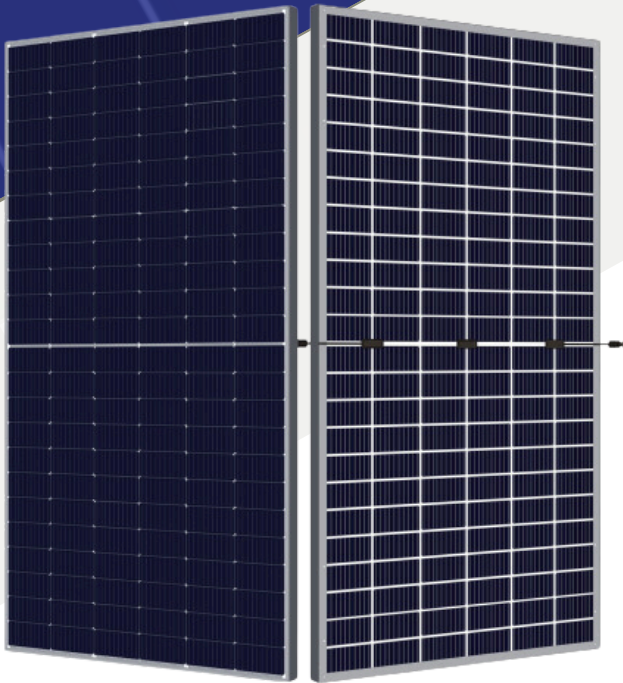
TOP - 460/480M-120BI

120 CELL
Mono N - Type Module

460 - 480Wp
Power Output Range

1500VDC
Maximum System Voltage

22.20%
Maximum Efficiency



KEY SALIENT FEATURES



Industry leading lowest thermal co-efficient of power



Industry leading 15 years product warranty



Excellent low irradiance performance



Excellent PID resistance



Positive power tolerance of 0~+3%



Fully automated production at all stages



Fully Reduced power loss by minimizing the effect of shadow shading (9 - 18 Busbar)



European Warranty & After - Sales Service



TAMESOL BUILDING A GREEN FUTURE S.L

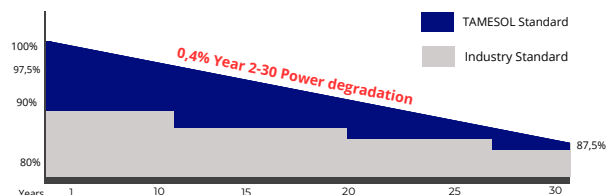
TAMESOL is a global provider of high-efficiency PV panels with a 10GW annual production capacity and a 100% automated production line, innovating state-of-the-art products for over 15 years. Our panels have been installed in more than 50 countries, with over 20 million panels already connected to the grid.

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LINEAR PERFORMANCE WARRANTY

15 year Product Warranty / 30-Year Linear Power Warranty



Since 2007, building a green future

22,20% MAX MODULE EFFICIENCY	0 - +3% POWER TOLERANCE	1,0% FIRST YEAR POWER DEGRADATION	0,40% YEAR 2-30 POWER DEGRADATION	N-TYPE CELL Lower operating temperature
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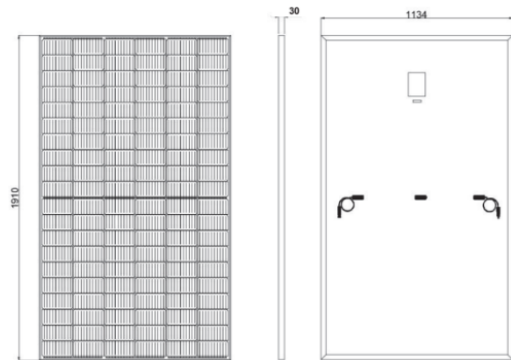
ELECTRICAL CHARACTERISTICS STC: AM1.5 1.000W/m2 NOTC: AM1.5 800W/m2 20° 1 m/s Test uncertainty for Pmax 0 - +3%

Module type	TOP - 460M-108BI		TOP - 465M-108BI		TOP - 470M-108BI		TOP - 475M-108BI		TOP - 480M-108BI	
	STC	NOTC	STC	NOTC	STC	NOTC	STC	NOTC	STC	NOTC
Testing condition										
Maximum Power (Pmax/w)	460	346	465	350	470	353	475	357	480	361
Open Circuit Voltage (Voc/V)	32.50	39.94	42.22	40.10	42.38	40.25	42.54	40.41	42.71	40.57
Short Circuit Current (Isc/A)	13.99	11,29	14,07	11,36	14,15	11,42	14,23	11,49	14,31	11.55
Voltage at Maximum Power (Vmp/V)	34.72	32.60	34.89	32.77	35.05	32.21	32.21	33.10	35.38	33.27
Current at maximum Power (Imp/A)	13.25	10.61	13.33	10,67	13,41	10,73	13,49	10,79	13,57	10.85
Module Efficiency (%)	21.24%		21.60%		21.80%		22.0%		22.20%	

MECHANICAL PARAMETERS

Cell Orientation	single crystal N-Topcon 182x94mm (120 pieces)
Junction Box	IP68, three diodes
Output Cable	4.0mm² 300mm(+) / 300mm(-) or customized
Glass	3.2mm / 3.2mm
Frame	Anodized aluminum alloy frame
Weight	24 kg
Dimensión	1910*1134*30mm
Packaging	36 pcs*pallet / 864pcs*40HQ

PHYSICAL CHARACTERISTICS



OPERATING PARAMETERS

Operational Temperature	-40°C - +85°C
Power Output Tolerance	(0, +3%)
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	30 A
Nominal Operating Cell Temperature	45±2°C
Protection Glass	Class II
Fire Rating	Class C
Bifacial - Factor	80% ± 10%

MECHANICAL LOADING

Front Side Maximum Static Loading	5400 PA
Rear Side Maximum Static Loading	2400 PA

TEMPERATURA RATINGS (STC)

Temperature Coefficient of Isc	+0.046%/°C
Temperature Coefficient of Voc	-0.25%/°C
Temperature Coefficient of Pmax	-0.30%/°C

PACKING MANNER

Container	40ft(HQ)
Number of modules per container	864
Number of modules per pallet	36
Number of pallets per container	24

TAMESOL Authorized Solar Dealer

Note: The specifications are obtained under the Standard Test Conditions (STCs): 1000 W/m2 solar irradiance, 1.5 Air Mass, and cell temperature of 25°C. The NOCT is obtained under the Test Conditions: 800 W/m2, 20°C ambient temperature, 1m/s wind speed, AM 1.5 spectrum. Please contact info@tamesol.com for technical support. The actual transactions will be subject to the contracts. This parameter is for reference only and it is not a part of the contracts. The specifications are subject to change without prior notice.