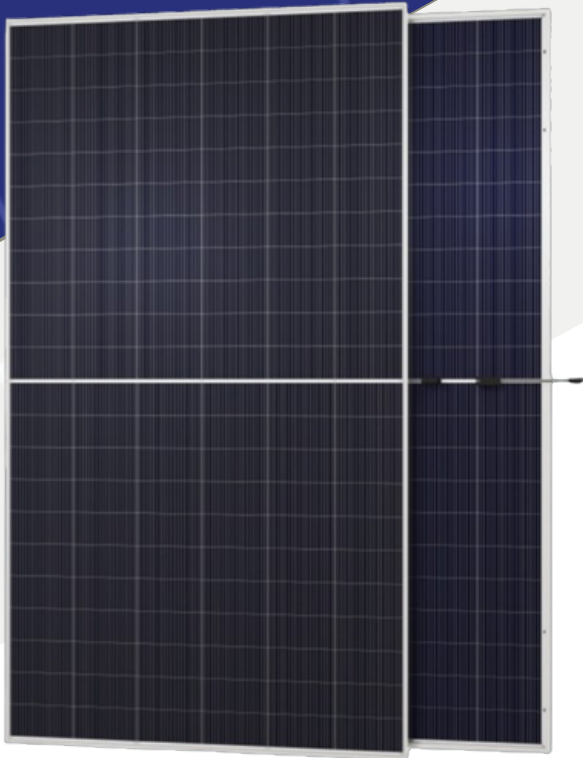


TOPSUN

# BIFACIAL

HIGH PERFORMANCE  
MONOCRYSTALLINE  
N-TYPE TECHNOLOGY

120



## TOP - 470/490M-120BI

**120 CELL**  
Mono N - Type Module

**470 - 490Wp**  
Power Output Range

**Double Glass**  
Transparent Backsheet

**22.70%**  
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)



EU Brand & european after sales service



### TAMESOL BUILDING A GREEN FUTURE S.L

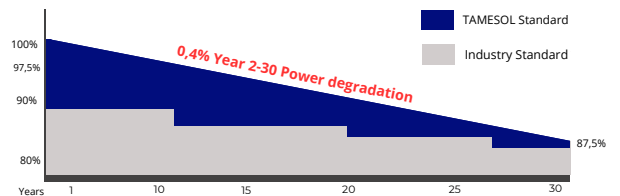
TAMESOL is a global provider of high-efficiency PV panels with a 10GW annual production capacity and a 100% automated production line, innovating state-of-the-art products for over 15 years. Our panels have been installed in more than 50 countries, with over 20 million panels already connected to the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

Tel : +34 933 801 596

E - mail: [info@tamesol.com](mailto:info@tamesol.com) Website: [www.tamesol.com](http://www.tamesol.com)

### LINEAR PERFORMANCE WARRANTY

15 year Product Warranty / 30-Year Linear Power Warranty



**TAMESOL**  
Energia para vivir

*Since 2007,  
building a green future*

<b>22,70%</b> MAX MODULE EFFICIENCY	<b>0 - +3%</b> POWER TOLERANCE	<b>1,0%</b> FIRST YEAR POWER DEGRADATION	<b>0,40%</b> YEAR 2-30 POWER DEGRADATION	<b>N-TYPE CELL</b> Lower operating temperature
--	-----------------------------------	---	---	---

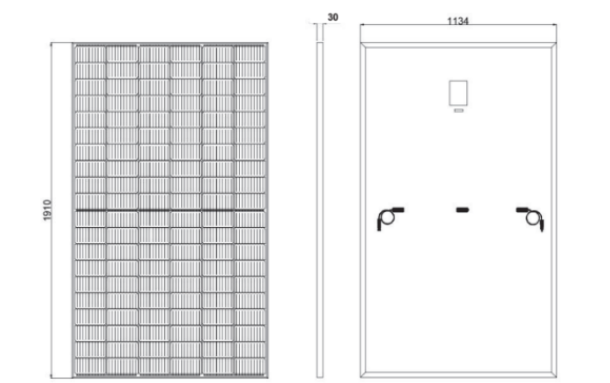
**ELECTRICAL CHARACTERISTICS** STC: AM1.5 1.000W/m2 NOTC: AM1.5 800W/m2 20° 1 m/s Test uncertainty for Pmax 0 - +3%

Module type	TOP - 470M-120BI		TOP - 475M-120BI		TOP - 480M-120BI		TOP - 485M-120BI		TOP - 490M-120BI	
	STC	NOTC	STC	NOTC	STC	NOTC	STC	NOTC	STC	NOTC
Testing condition										
Maximum Power (Pmax/w)	470	353	475	357	480	361	485	365	490	369
Open Circuit Voltage (Voc/V)	42.38	40.25	42.54	40.41	42.71	40.57	42.86	40.73	43.03	40.89
Short Circuit Current (Isc/A)	14,15	11,42	14,23	11,49	14,31	11,55	14,39	11,63	14,47	11,70
Voltage at Maximum Power (Vmp/V)	35.05	32.21	32.21	33.10	35.38	33.27	35.53	33.42	35.70	33.58
Current at maximum Power (Imp/A)	13,41	10,73	13,49	10,79	13,57	10,85	13,65	10,91	13,73	10,99
Module Efficiency (%)	21.78%		22.01%		22.24%		22.47%		22.70%	

**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	27,2 kg
Dimensión	1903*1134*30mm
Packaging	36/37 pcs*pallet / 864/888 pcs*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	864/888
Number of modules per pallet	36/37
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](mailto: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.