

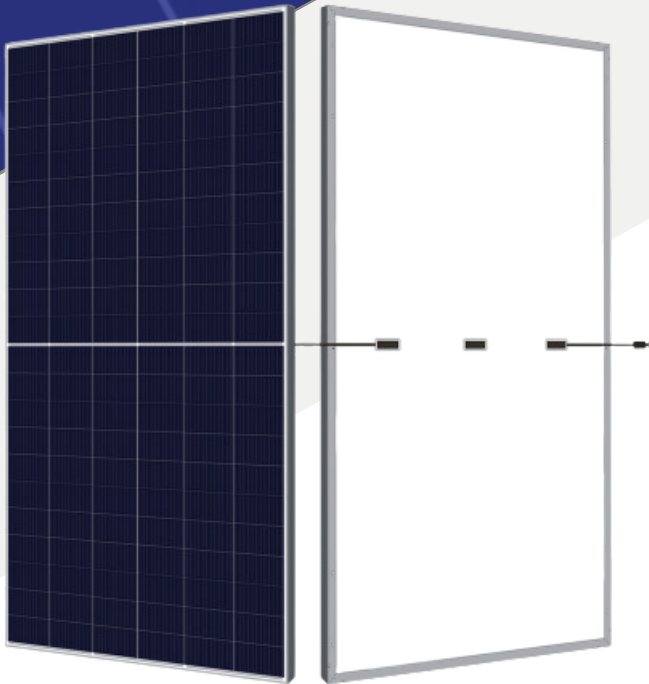
## TOP - 470/490M-120HC

**120 CELL**  
Mono N - Type Module









**470 - 490Wp**  
Power Output Range

**1500VDC**  
Maximum System Voltage

**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)
-  European Warranty & After - Sales Service



### TAMESOL BUILDING A GREEN FUTURE S.L

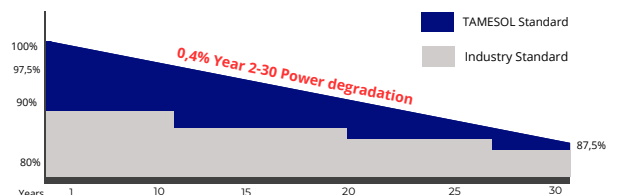
TAMESOL is a global provider of high-efficiency PV panels with a 10GW annual production capacity and a 100% automated production line, innovating state-of-the-art products for over 15 years. Our panels have been installed in more than 50 countries, with over 20 million panels already connected to the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

Tel : +34 872 222 388

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



**22,70%**

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

## ELECTRICAL CHARACTERISTICS

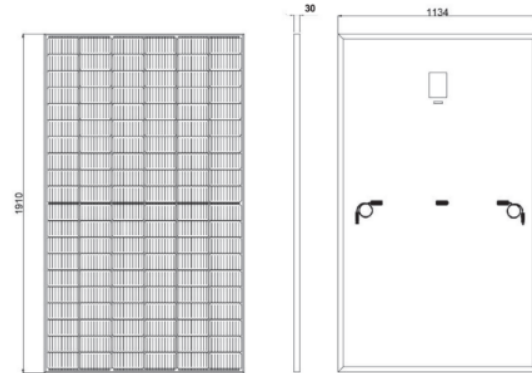
STC: AM1.5 1.000W/m2 NOTC: AM1.5 800W/m2 20° 1 m/s Test uncertainty for Pmax 0 - +3%

Module type	TOP - 470M-120HC		TOP - 475M-120HC		TOP - 480M-120HC		TOP - 485M-120HC		TOP - 490M-120HC	
	STC	NOTC	STC	NOTC	STC	NOTC	STC	NOTC	STC	NOTC
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	42.70	41.17	42.86	40.57	43.03	40,89
Short Circuit Current (Isc/A)	14,15	11,42	14,23	11,49	14,21	11,56	14,39	11,63	14,47	11,70
Voltage at Maximum Power (Vmp/V)	35.05	32.9	35.21	33.18	35.37	33.36	35.53	33.55	35.70	33.55
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 182x91mm (120 pieces)
Junction Box	IP68, three diodes
Output Cable	1000mm (can be customized)
Glass	3.2mm tempered coated glass, low iron
Frame	Anodized aluminum alloy frame
Weight	23, 23,8 kg
Dimensión	1919x1134x30/35mm
Packaging	31/37pcs*pallet / 744/ 888pcs*40HC

## PHYSICAL CHARACTERISTICS



## OPERATING PARAMETERS

Operational Temperature	-40°C - +85°C
Power Output Tolerance	(0, +3%)
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	25 A
Nominal Operating Cell Temperature	45±2°C
Protection Glass	Class II
Fire Rating	Class C

## 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	744/888
Number of modules per pallet	31/37
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.