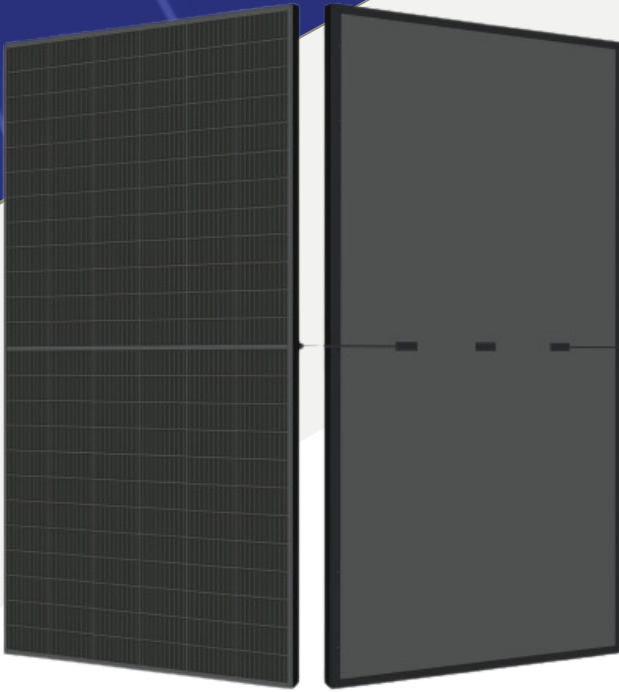


PERC**MAX**

# ALL BLACK

HIGH PERFORMANCE  
MONOCRYSTALLINE  
P.E.R.C MODULE

120



## TM - 445/465M-120AB

**120 CELL**  
Mono PERC Module

**445 - 465Wp**  
Power Output Range

**1500VDC**  
Maximum System Voltage

**20.46%**  
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

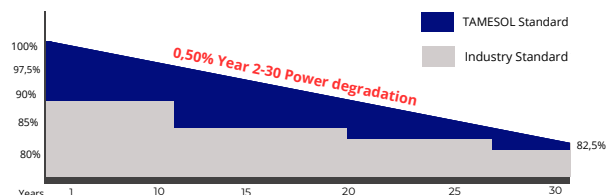
TAMESOL is a global provider of high-efficiency PV panels with a 10GW annual production capacity and a 100% automated production line, innovating state-of-the-art products for over 15 years. Our panels have been installed in more than 50 countries, with over 20 million panels already connected to the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



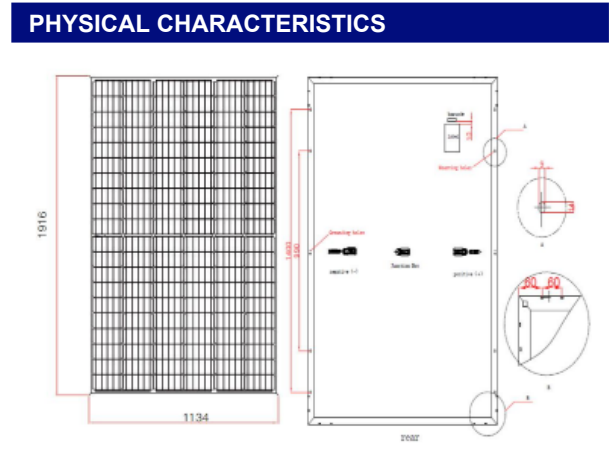
**TAMESOL** 15  
YEARS

*Since 2007, building a green future*

<b>21.46%</b> MAX MODULE EFFICIENCY	<b>0 - 3%</b> POWER TOLERANCE	<b>2,0%</b> FIRST YEAR POWER DEGRADATION	<b>0,50%</b> YEAR 2-30 POWER DEGRADATION	<b>PERC CELL</b> 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 +-3%									
Module type	TM - 445M-120AB		TM - 450M-120AB		TM - 455M-120AB		TM - 460M-120AB		TM - 465M-120AB		
	STC	NOTC	STC	NOTC	STC	NOTC	STC	NOTC	STC	NOTC	
Maximum Power (Pmax/w)	445	328	450	331	455	335	460	339	465	343	
Open Circuit Voltage (Voc/V)	41.2	38,48	41.4	38,68	41,60	38,88	41,80	39,08	42,00	39,28	
Short Circuit Current (Isc/A)	13,63	10,73	13,68	10,78	13,73	10,83	13,78	10,88	13,83	10,93	
Voltage at Maximum Power (Vmp/V)	34,40	32,14	34,60	32,34	34,80	32,50	35,0	32,74	35,4	32,94	
Current at maximum Power (Imp/A)	12,90	10,21	12,96	10,24	13,02	10,30	13,08	10,35	13,14	10,40	
Module Efficiency (%)	20,56%		20,79%		21,02%		21,25%		21,46%		

MECHANICAL PARAMETERS	
Cell Orientation	single crystal PERC182x91mm (120 pieces)
Junction Box	IP68, three diodes
Output Cable	4.0mm <sup>2</sup> , 300mm / 1000mm
Glass	3.2mm tempered coated glass, low iron
Frame	Anodized aluminum alloy frame
Weight	24kg
Dimensión	1916*1134*30mm
Packaging	36 pcs*pallet / 792/ 864pcs*40HQ



OPERATING PARAMETERS	
Operational Temperature	-40°C - +85°C
Power Output Tolerance	(0, +3%)
Voc and Isc Tolerance	±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
Hailstone Test	Diameter 25mm, impact speed 23m/s

PACKING MANNER	
Container	40ft(HQ)
Number of modules per container	792/ 864
Number of modules per pallet	36
Number of pallets per container	22 / 24

TEMPERATURA RATINGS (STC)	
Temperature Coefficient of Isc	+0.055%/°C
Temperature Coefficient of Voc	-0.289%/°C
Temperature Coefficient of Pmax	-0.380%/°C

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.