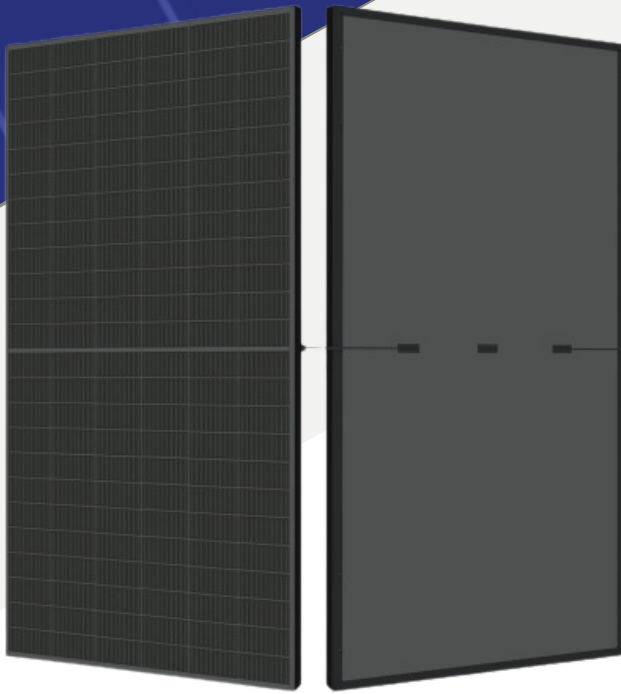


PERC**MAX**

ALL BLACK

HIGH PERFORMANCE
MONOCRYSTALLINE
P.E.R.C MODULE

120



TM - 440/460M-120AB









120 CELL
Mono PERC Module

440 - 460Wp
Power Output Range

1500VDC
Maximum System Voltage

21.24%
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

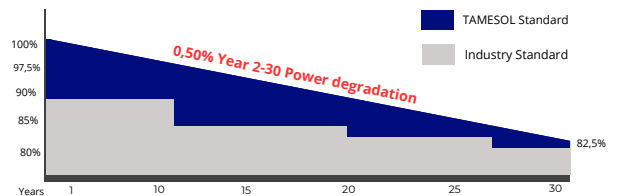
TAMESOL is a global provider of high-efficiency PV panels with a 10GW annual production capacity and a 100% automated production line, innovating state-of-the-art products for over 15 years. Our panels have been installed in more than 50 countries, with over 20 million panels already connected to the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

Tel : +34 872 222 388

E - mail: info@tamesol.com Website: www.tamesol.com

LINEAR PERFORMANCE WARRANTY

15 year Product Warranty / 30-Year Linear Power Warranty



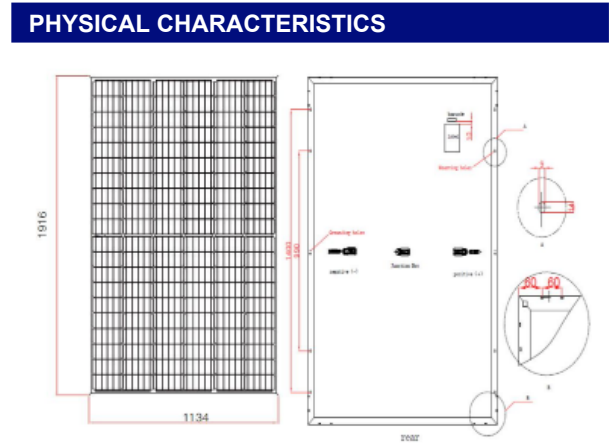
TAMESOL 15 YEARS

Since 2007, building a green future

21.24% MAX MODULE EFFICIENCY	0 - +3% POWER TOLERANCE	2,0% FIRST YEAR POWER DEGRADATION	0,50% YEAR 2-30 POWER DEGRADATION	PERC 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	TM - 440M-120AB		TM - 445M-120AB		TM - 450M-120AB		TM - 455M-120AB		TM - 460M-12AB	
Testing condition	STC	NOTC	STC	NOTC	STC	NOTC	STC	NOTC	STC	NOTC
Maximum Power (Pmax/w)	440	325	445	328	450	331	455	335	460	339
Open Circuit Voltage (Voc/V)	41.00	38,28	41.2	38,48	41.4	38,68	41,60	38,88	41,80	39.08
Short Circuit Current (Isc/A)	13,56	10,68	13,63	10,73	13,68	10,78	13,73	10,83	13,78	10,88
Voltage at Maximum Power (Vmp/V)	34,37	32,04	34,40	32,14	34,60	32,34	34,80	32,50	35,0	32,74
Current at maximum Power (Imp/A)	12,77	10,18	12,90	10,21	12,96	10,24	13,02	10,30	13,08	10,35
Module Efficiency (%)	20,32%		20,56%		20,79%		21,02%		21,24%	

MECHANICAL PARAMETERS	
Cell Orientation	single crystal PERC182x91mm (120 pieces)
Junction Box	IP68, three diodes
Output Cable	4.0mm ² , 300mm / 1000mm
Glass	3.2mm tempered coated glass, low iron
Frame	Anodized aluminum alloy frame
Weight	23.8kg
Dimensión	1909*1134*30mm
Packaging	37 pcs*pallet / 888pcs*40HQ



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	+0.055%/°C
Temperature Coefficient of Voc	-0.289%/°C
Temperature Coefficient of Pmax	-0.380%/°C

PACKING MANNER	
Container	40ft(HQ)
Number of modules per container	888
Number of modules per pallet	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 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.