SUNPRO POWER

Tier1
BloombergNEF

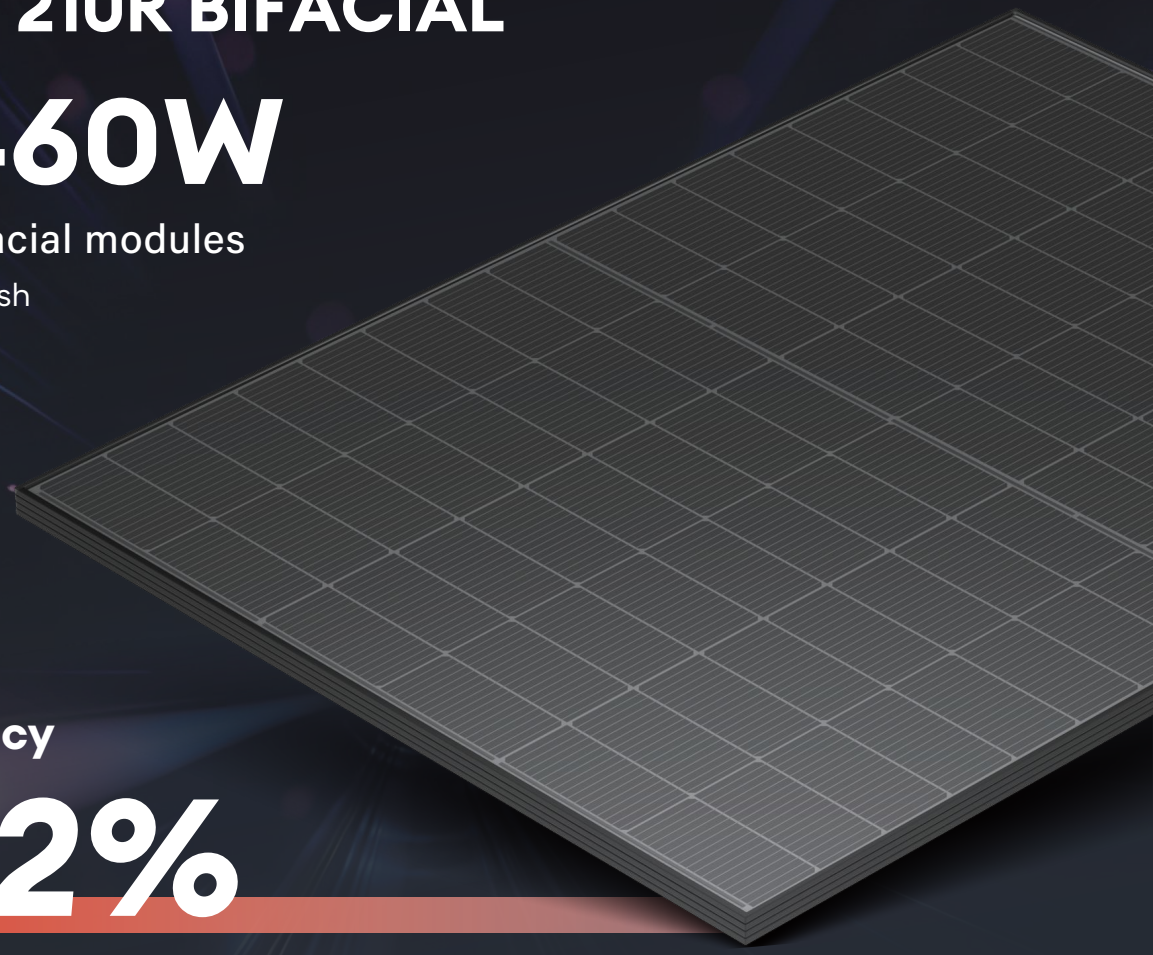
Power the future

TOPCon 210R BIFACIAL

445-460W

High efficiency bifacial modules

· Black frame, Black mesh



UTILITY

C&I

Module efficiency

23.02%

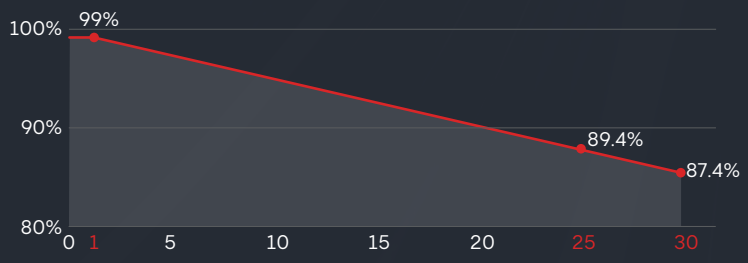
Better levelized cost of energy

Better high temperature stability

Improved low-light performance

Excellent bifacial performance

Linear performance guarantee for 30 years



WARRANTY

Quality Guarantee **25** years

Power Warranty **30** years

CERTIFICATE

www.sunpropower.com

ELECTRIC CHARACTERISTICS

SPDG (445/460W)-N96R12

Model of modules	SPDG445-N96R12		SPDG450-N96R12		SPDG455-N96R12		SPDG460-N96R12	
	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Power (Pmax/W)	445	336.50	450	340.70	455	344.80	460	348.90
Maximum power voltage (Vmp)	29.69	27.90	29.93	28.10	30.16	28.40	30.39	28.60
Maximum power current (Imp)	14.99	12.06	15.04	12.11	15.09	12.14	15.14	12.18
Open circuit voltage (Voc)	35.54	33.70	35.8	33.90	36.06	34.20	36.3	34.50
Short circuit current (Isc)	15.86	12.77	15.9	12.80	15.94	12.84	15.99	12.88
Module efficiency	22.27%		22.52%		22.77%		23.02%	

STC (Electrical parameters at standard test conditions. STC:AM=1.5, 1000W/m² ,Cells Temperature25°C)
NMOT (Irradiance 800W/m², Ambient Temperature 20°C,AM1.5,Wind Speed 1m/s)

ELECTRICAL CHARACTERISTICS WITH 15% REAR SIDE POWER GAIN

Front power Pmax/W	511.75	517.50	523.25	529.00
Maximum power voltage (Vmp)	29.69	29.93	30.16	30.39
Maximum power current (Imp)	17.24	17.29	17.35	17.41
Open circuit voltage (Voc)	35.54	35.80	36.06	36.3
Short circuit current (Isc)	18.24	18.29	18.33	18.39

STRUCTURAL CHARACTERISTICS

Module size (L*W*H)	1762x1134x30mm
Weight	23.8kg
Cell	96 cells,N type Mono-Crystalline , 182.2mm×105 mm
Front glass	2.0mm , Anti-Reflection Coating
Back glass	2.0mm , Heat Strengthened Glass
Frame	Anodized aluminum alloy
Junction box	IP68 , 3 bypass diodes
Output wire	4mm²
Wire length	Line length 1100mm/customized
Connector	MC4 Compatible
Packing Specification	37 pcs/Pallet ; 962 pcs/40' HQ

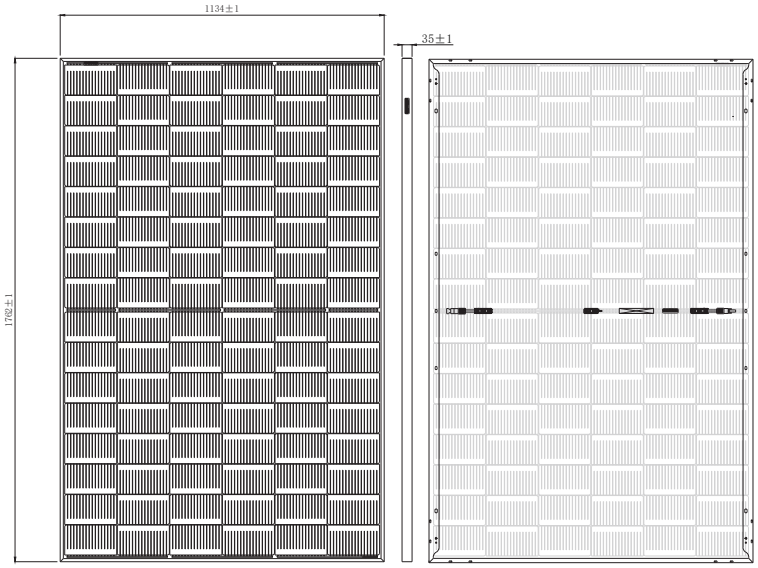
OPERATING PARAMETERS

Power tolerance (W)	(0~+5W)
Maximum system voltage (V)	1500V
Maximum rated fuse current (A)	30A
Current operating temperature (C)	-40~+85°C
Mechanical load	+5400Pa/-2400Pa

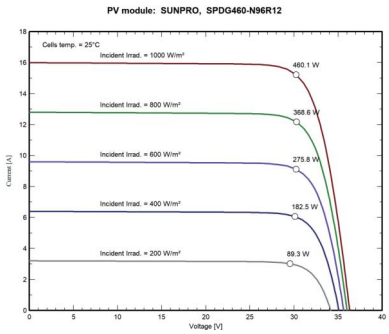
TEMPERATURE CHARACTERISTICS

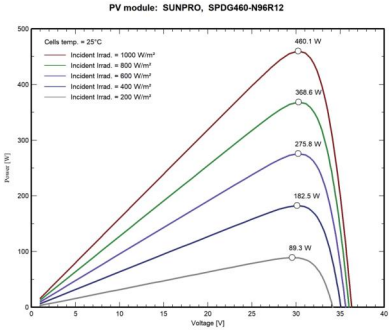
Temp. Coeff. of Isc (TK Isc)	0.045% / °C
Temp. Coeff. of Voc (TK Voc)	-0.25% / °C
Temp. Coeff. of Pmax (TK Pmax)	-0.30% / °C
Normal Operating Cell Temperature	45±2°C

MODULE DIMENSIONS(MM)



I-V CHARACTERISTICS AT DIFFERENT IRRADIATION





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*The above parameters are for reference only, and the actual parameters of the factory shall prevail