

Sunpro **Max** Series

N-type High Efficiency Bifacial Module

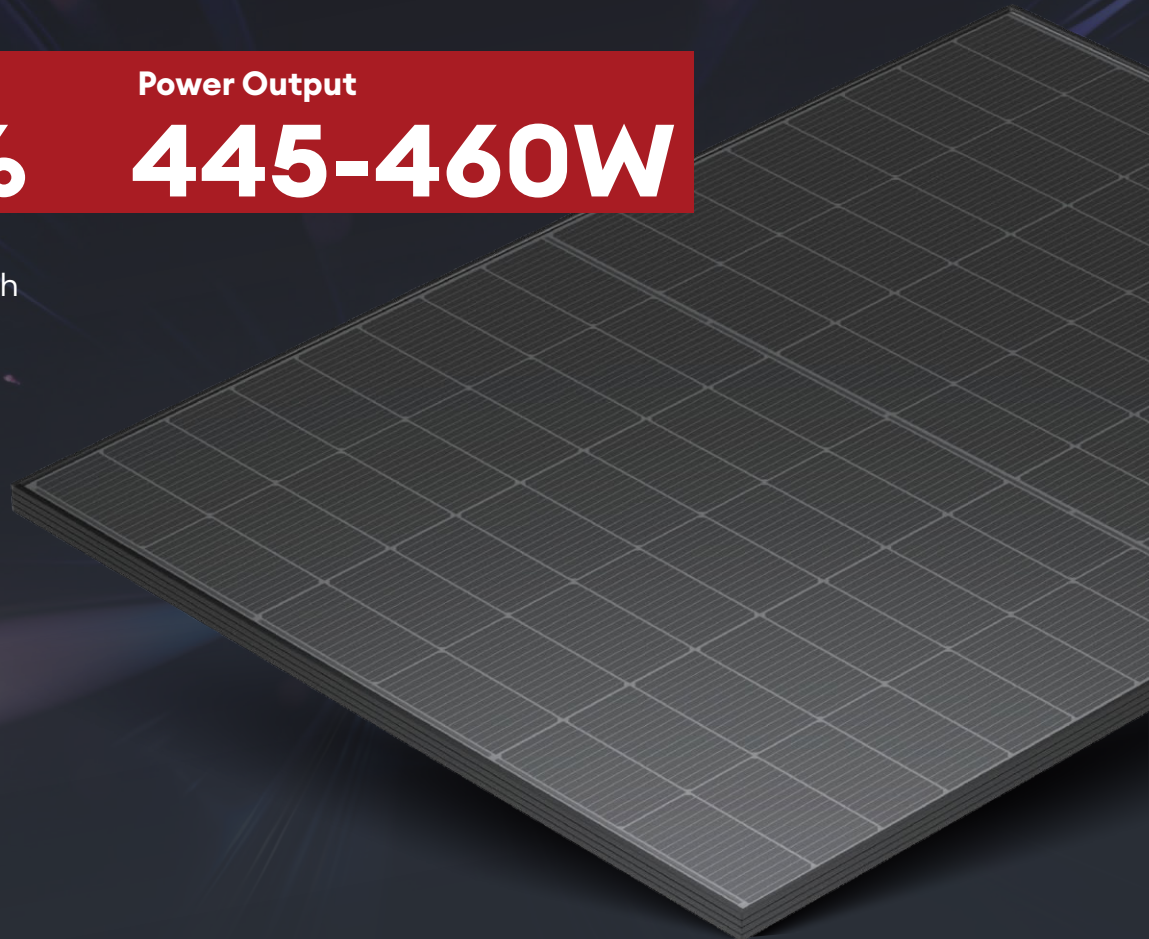
Module efficiency

23.02%

Power Output

445-460W

· Black frame , Black mesh



Lower levelized cost of energy



Superior high-temperature stability

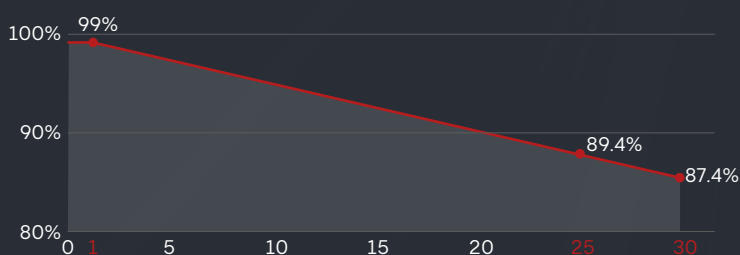


Enhanced low-irradiance performance



Excellent bifacial power gain performance

Linear power output warranty for 30 years



WARRANTY

Extended warranty available upon request at additional cost

Quality Guarantee **15** years

Power Warranty **30** years

CERTIFICATE



ELECTRICAL 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)	445.00	336.50	450.00	340.70	455.00	344.80	460.00	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	35.80	33.90	36.06	34.20	36.30	34.50
Short circuit current (Isc)	15.86	12.77	15.90	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 Temperature 25°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	36.30
Short circuit current (Isc)	18.24	18.29	18.33	18.39

STRUCTURAL CHARACTERISTICS

Module size (L*W*H)	1762x1134x30mm (69.37x44.65x1.18in)
Weight	23.8kg(52.47lb)
Cell	96 cells, N-type Mono-Crystalline, 182.2x105mm(7.17x4.13in)
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	4mm ²
Wire length	Line length 1100mm(43.31in)/customized
Connector	Stäubli MC4
Packing Specification	37 pcs/Pallet; 962 pcs/40' HQ

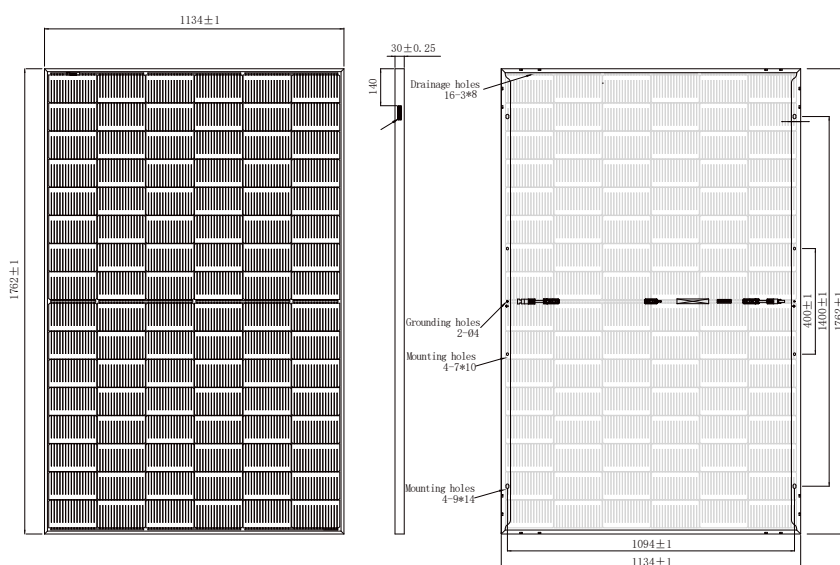
OPERATING PARAMETERS

Power tolerance	0~+5W
Maximum system voltage	1500V
Maximum rated fuse current	30A
Operating temperature range	-40~+85°C
Mechanical load capacity	+8000Pa/-5400Pa

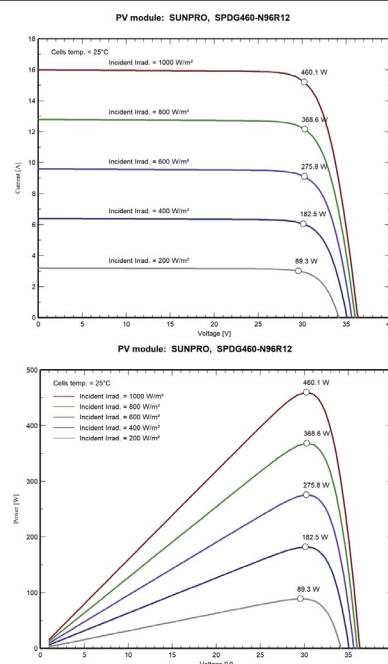
TEMPERATURE CHARACTERISTICS

Temp. Coefficient of Isc(TK Isc)	0.045% / °C
Temp. Coefficient of Voc (TK Voc)	-0.25% / °C
Temp. Coefficient of Pmax (TK Pmax)	-0.30% / °C
Operating temperature range	45±2°C

MODULE DIMENSIONS(MM)



I-V CHARACTERISTICS AT DIFFERENT IRRADIATION



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*All data are subject to slight deviations and are for reference only. Sunpro reserves the right of final interpretation.