



# Beam N **DUAL GLASS** Solar Panel

## 450-470W

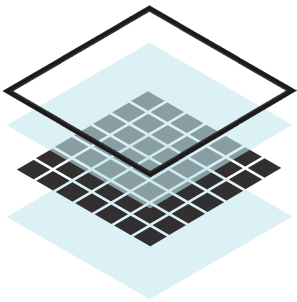
Black Frame (182mm)

Mono PERC Half Cell Module

ENSP60NBT2450BF    ENSP60NBT2465BF  
ENSP60NBT2455BF    ENSP60NBT2470BF  
ENSP60NBT2460BF



Built using Mono-crystalline PERC technology, the Energizer® Solar Panels range combine two of the best technologies in the market.



### Dual Glass Construction

- Panel Frame
- Front Glass Panel
- Solar Cells
- Rear Glass Panel

Dual glass technology

Lower operating temperatures

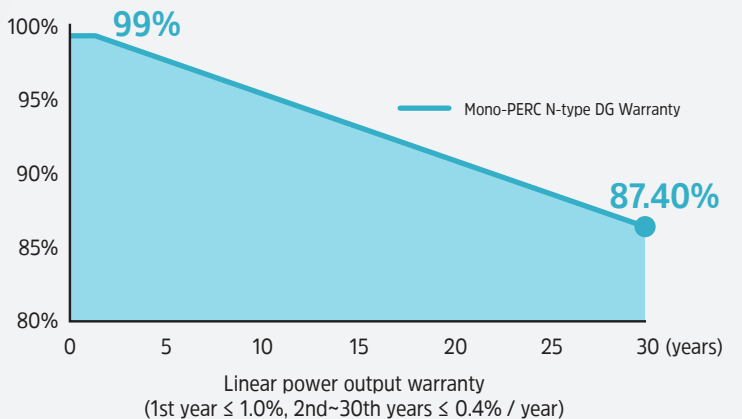
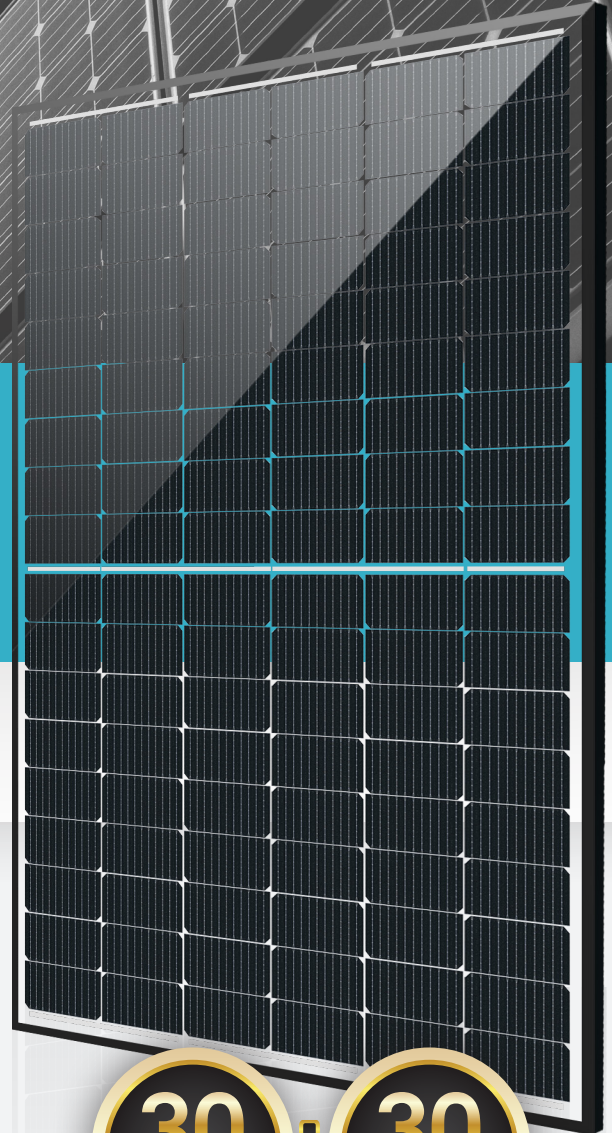
Improved fire & water resistance

Improved durability with no extra weight

Quality controlled by artificial intelligence

Positive power tolerance of 0~+5W

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## Electrical Specifications

STC rated output ( $P_{mpp}$ )	450 Wp	455 Wp	460 Wp	465 Wp	470 Wp
Rated voltage ( $V_{mpp}$ ) at STC	35.00 V	35.17 V	35.34 V	35.50 V	35.67 V
Rated current ( $I_{mpp}$ ) at STC	12.86 A	12.94 A	13.02 A	13.10 A	13.18 A
Open circuit voltage ( $V_{oc}$ ) at STC	41.65 V	41.85 V	42.05 V	42.25 V	42.45 V
Short circuit current ( $I_{sc}$ ) at STC	13.56 A	13.66 A	13.76 A	13.86 A	13.96 A
Module efficiency	20.8%	21.0%	21.3%	21.5%	21.7%
Rated output ( $P_{mpp}$ ) at NMOT	338.3 Wp	342.2 Wp	345.9 Wp	349.7 Wp	353.4 Wp
Rated voltage ( $V_{mpp}$ ) at NMOT	32.94 V	33.10 V	33.26 V	33.42 V	33.58 V
Rated current ( $I_{mpp}$ ) at NMOT	10.27 A	10.34 A	10.40 A	10.46 A	10.53 A
Open circuit voltage ( $V_{oc}$ ) at NMOT	39.56 V	39.75 V	39.94 V	40.13 V	40.32 V
Short circuit current ( $I_{sc}$ ) at NMOT	10.94 A	11.03 A	11.11 A	11.19 A	11.27 A
Temperature coefficient ( $P_{mpp}$ )			- 0.29%/°C		
Temperature coefficient ( $I_{sc}$ )			+ 0.043%/°C		
Temperature coefficient ( $V_{oc}$ )			- 0.25%/°C		
Nominal module operating temperature (NMOT)			41±2°C		
Maximum system voltage (IEC/UL)			1500V <sub>DC</sub>		
Number of diodes			2		
Junction box IP rating			IP 68		
Maximum series fuse rating			30 A		

STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, AM=1.5  
 NMOT: Irradiance 800W/m<sup>2</sup>, Ambient Temperature 20°C, AM=1.5, Wind Speed 1m/s  
 Name plate tolerances: Pmax +/-3.5%, Voc +/-3.5%, Isc +/-5%

## Electrical Specifications (Integrated power)

Pmpp Gain	Pmpp / Wp	Vmpp / V	Impp / A	Voc / V	Isc / A
5%	478	35.17	13.59	41.85	14.34
10%	501	35.17	14.25	41.85	15.02
15%	523	35.18	14.87	41.86	15.70
20%	546	35.18	15.52	41.86	16.39
25%	569	35.19	16.17	41.87	17.06

## Other Specifications

Outer dimensions (L x W x H)	1903 x 1134 x 30 mm
Cell type	N type Mono-crystalline
No. of cells	120
Frame technology	Black Aluminum frame, Translucent backing
Front glass thickness	2+2 mm
Cable length (IEC/UL)	Portrait: (+) 350mm, (-) 250mm
Cable diameter (IEC/UL)	4 mm <sup>2</sup> / 12 AWG
Maximum mechanical test load	5400 Pa (front) / 2400 Pa (back)
Connector type (IEC/UL)	PV-HCB40 (Astronergy) or PV-KST4-EV02/xy-UR, PVKBT4-EV02/xy (Stäubli)
Module weight	23 kg
Packing unit	36 pcs / box
Weight of packing unit (40ft container)	874 kg
Modules per 40ft container	864 pcs
Fire Class Rating	Class A
Country of Manufacturer	China



## Curve

