



# Beam N DUAL GLASS Solar Panel 435-455W

Bifacial - Black Profile (182mm)

## N-Type Half Cell Module

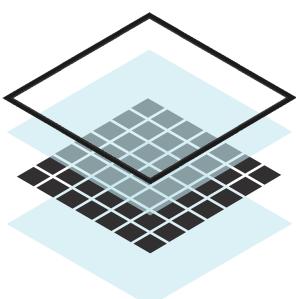
ENSP54NDGT2S435BL ENSP54NDGT2S450BL

ENSP54NDGT2S440BL ENSP54NDGT2S455BL

ENSP54NDGT2S445BL



**Built using N-Type Dual Glass 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



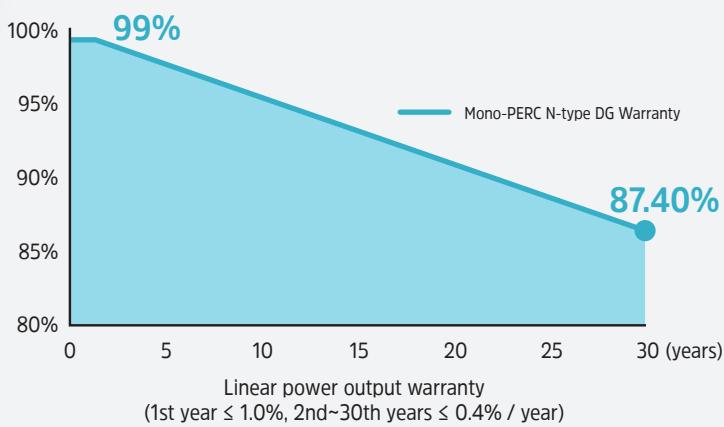
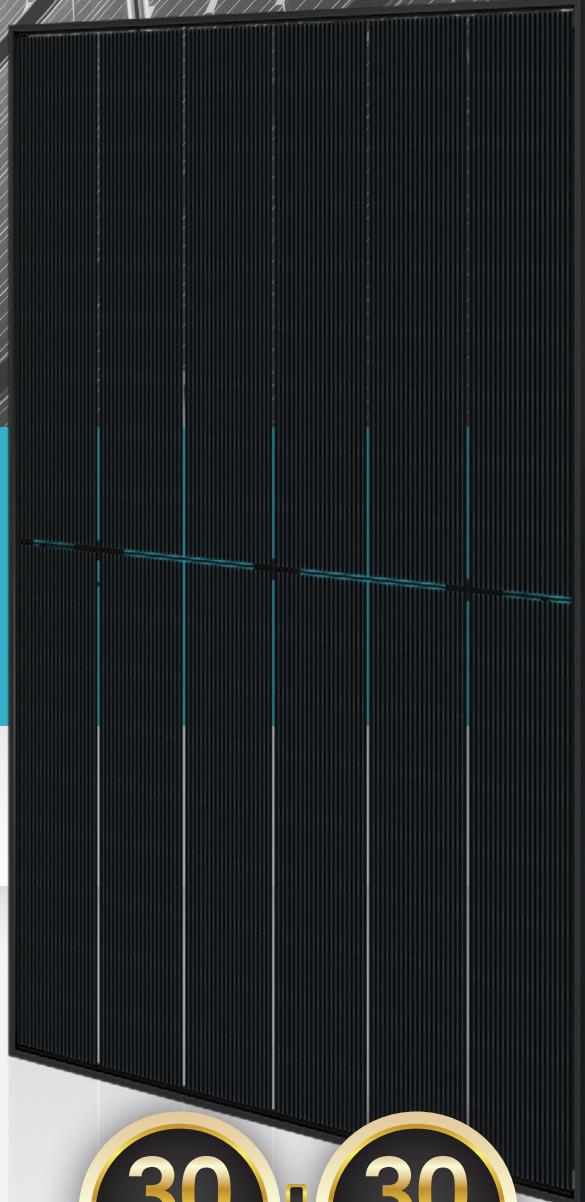
Improved durability with no extra weight



Quality controlled by artificial intelligence



Positive power tolerance of 0~+5W



## Electrical Specifications

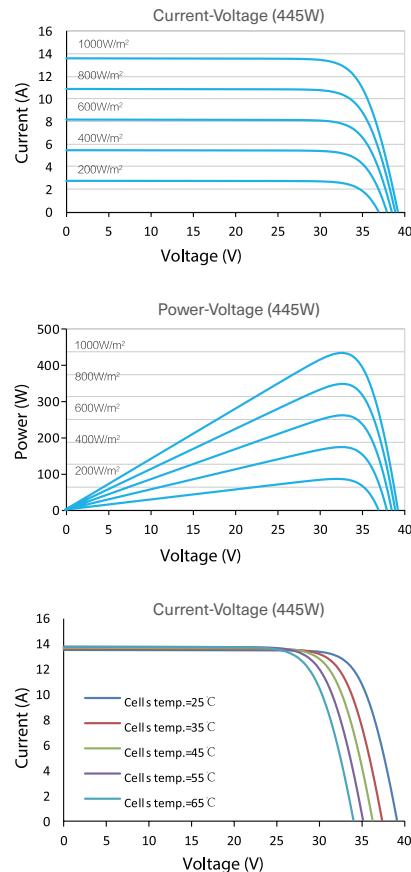
STC rated output ( $P_{mpp}$ )	435 Wp	440 Wp	445 Wp	450 Wp	455 Wp
Rated voltage ( $V_{mpp}$ ) at STC	32.88 V	33.05 V	33.22 V	33.39 V	33.56 V
Rated current ( $I_{mpp}$ ) at STC	13.23 A	13.31 A	13.40 A	13.48 A	13.56 A
Open circuit voltage ( $V_{oc}$ ) at STC	38.80 V	39.00 V	39.20 V	39.40 V	39.60 V
Short circuit current ( $I_{sc}$ ) at STC	14.01 A	14.10 A	14.19 A	14.28 A	14.36 A
Module efficiency	21.8%	22.0%	22.3%	22.5%	22.8%
Rated output ( $P_{mpp}$ ) at NMOT	327.1 Wp	330.9 Wp	334.6 Wp	338.4 Wp	342.2 Wp
Rated voltage ( $V_{mpp}$ ) at NMOT	30.95 V	31.11 V	31.27 V	31.43 V	31.59 V
Rated current ( $I_{mpp}$ ) at NMOT	10.57 A	10.64 A	10.70 A	10.77 A	10.83 A
Open circuit voltage ( $V_{oc}$ ) at NMOT	36.85 V	37.04 V	37.23 V	37.42 V	37.61 V
Short circuit current ( $I_{sc}$ ) at NMOT	11.31 A	11.38 A	11.46 A	11.54 A	11.59 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	3				
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%

## Curve



## Electrical Specifications (BNPI)

P <sub>mpp</sub> Gain	P <sub>mpp</sub> / Wp	V <sub>mpp</sub> / V	I <sub>mpp</sub> / A	V <sub>oc</sub> / V	I <sub>sc</sub> / A
5%	473	33.39	14.15	39.40	14.99
10%	495	33.39	14.82	39.40	15.70
15%	518	33.39	15.50	39.40	16.42
20%	540	33.39	16.17	39.40	17.13
25%	563	33.39	16.85	39.40	17.85

Bifacial Coefficient:  $\phi_{Voc}$ : 98% ±2%,  $\phi_{Pmax}$ : 80% ±5%,  $\phi_{Isc}$ : 80% ±5%

## Other Specifications

Outer dimensions (L x W x H)	1762 x 1134 x 30 mm
Cell type	N type Mono-crystalline
No. of cells	108 (6*18)
Frame technology	Black Aluminum frame
Front glass thickness	1.6+1.6 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)	MC4 Connector PV-KBT4-EVO2A/xy (Stäubli)
Module weight	21.5 kg
Packing unit	36 pcs / box
Weight of packing unit (40ft container)	820 kg
Modules per 40ft container	936 pcs
Fire Class Rating	Class A
Country of Manufacturer	China

