



# Beam N DUAL GLASS Solar Panel

## 440-450W

Black Profile (182mm)

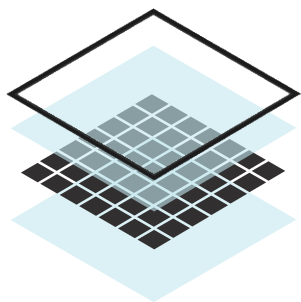
Mono PERC Half Cell Module

ENSP54NDG2S440BL ENSP54NDG2S450BL

ENSP54NDG2S445BL



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



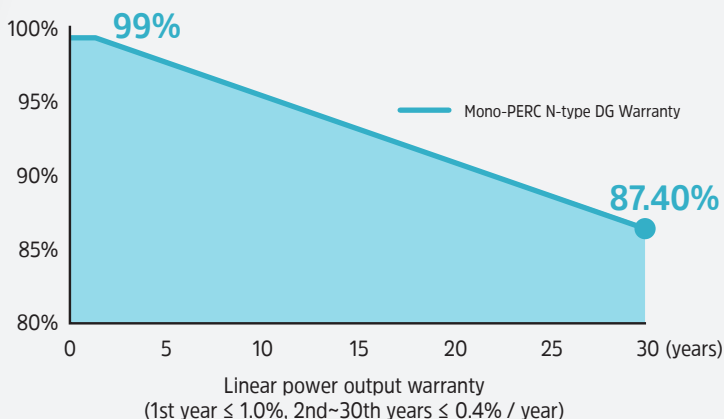
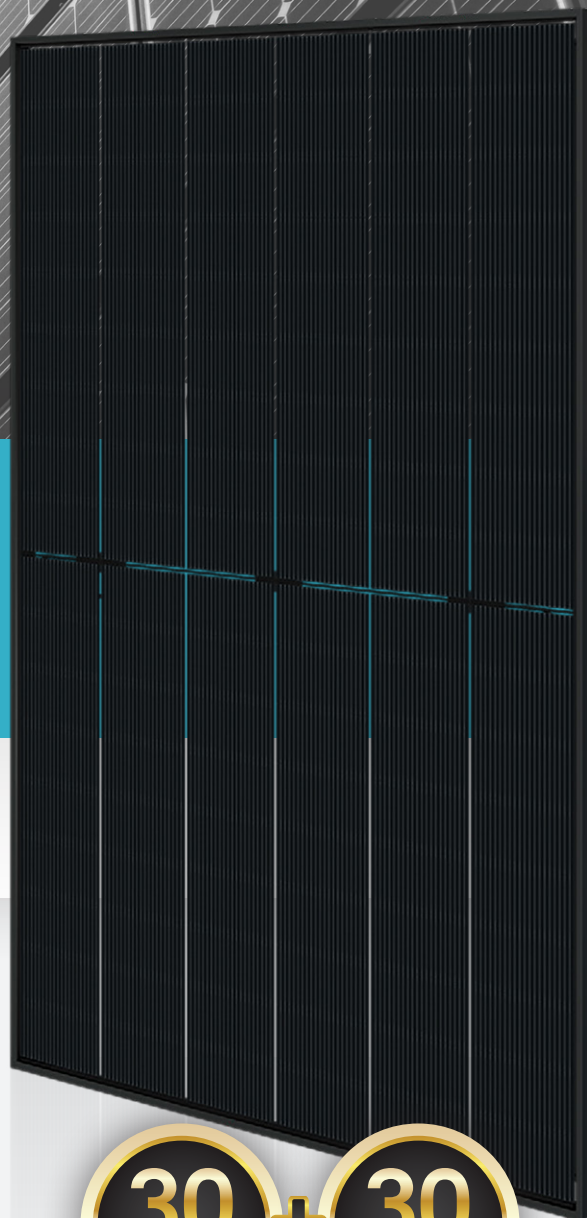
Improved durability with no extra weight



Quality controlled by artificial intelligence



Positive power tolerance of 0~+5W



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## Electrical Specifications

|                                             |                     |          |          |
|---------------------------------------------|---------------------|----------|----------|
| STC rated output ( $P_{mpp}$ )              | 440 Wp              | 445 Wp   | 450 Wp   |
| Rated voltage ( $V_{mpp}$ ) at STC          | 33.05 V             | 33.22 V  | 33.39 V  |
| Rated current ( $I_{mpp}$ ) at STC          | 13.31 A             | 13.40 A  | 13.48 A  |
| Open circuit voltage ( $V_{oc}$ ) at STC    | 39.00 V             | 39.20 V  | 39.40 V  |
| Short circuit current ( $I_{sc}$ ) at STC   | 14.10 A             | 14.19 A  | 14.28 A  |
| Module efficiency                           | 22.0%               | 22.3%    | 22.5%    |
| Rated output ( $P_{mpp}$ ) at NMOT          | 330.9 Wp            | 334.6 Wp | 338.4 Wp |
| Rated voltage ( $V_{mpp}$ ) at NMOT         | 31.11 V             | 31.27 V  | 31.43 V  |
| Rated current ( $I_{mpp}$ ) at NMOT         | 10.64 A             | 10.70 A  | 10.77 A  |
| Open circuit voltage ( $V_{oc}$ ) at NMOT   | 37.04 V             | 37.23 V  | 37.42 V  |
| Short circuit current ( $I_{sc}$ ) at NMOT  | 11.38 A             | 11.46 A  | 11.54 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>oc</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: P<sub>max</sub> +/-3.5%, V<sub>oc</sub> +/-3.5%, I<sub>sc</sub> +/-5%

## Electrical Specifications (BNPI)

| Pmpp Gain | Pmpp / Wp | Vmpp / V | Impp / A | Voc / V | Isc / A |
|-----------|-----------|----------|----------|---------|---------|
| 5%        | 462       | 33.05    | 13.98    | 39.00   | 14.81   |
| 10%       | 484       | 33.05    | 14.64    | 39.00   | 15.51   |
| 15%       | 506       | 33.05    | 15.31    | 39.00   | 16.22   |
| 20%       | 528       | 33.05    | 15.98    | 39.00   | 16.92   |
| 25%       | 550       | 33.05    | 16.64    | 39.00   | 17.63   |

Bifacial Coefficient: φV<sub>oc</sub>: 98% ±2%, φP<sub>max</sub>: 80% ±5%, φI<sub>sc</sub>: 80% ±5%

## Other Specifications

|                                         |                                             |
|-----------------------------------------|---------------------------------------------|
| Outer dimensions (L x W x H)            | 1722 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<br>PV-KBT4-EVO2A/xy (Stäubli) |
| Module weight                           | 21.5 kg                                     |
| Packing unit                            | 36 pcs / box                                |
| Weight of packing unit (40ft container) | 819 kg                                      |
| Modules per 40ft container              | 936 pcs                                     |
| Fire Class Rating                       | Class A                                     |
| Country of Manufacturer                 | China                                       |

## Curve

