

# The All Black stars



Denim All Black Glass Glass Bifacial 490Wp



# denim

SOLAR, IT'S THAT SIMPLE



## N-TYPE ALL BLACK GLASS GLASS BIFACIAL MODULES

The Denim All Black Glass Glass BiFacial is an aesthetic high-flyer with a compact design and 1.6mm glass on both the front and rear sides. As a result, the solar module is better protected against moisture and mechanical stress. The outcome? A module efficiency of 22% and an impressive product and power warranty of up to 30 years.

## WARRANTY

30-year product warranty.

30-year linear power output warranty.

Always assured of a good yield thanks to the long product warranty of up to 30 years. After 30 years, we guarantee an output of 87.4%.

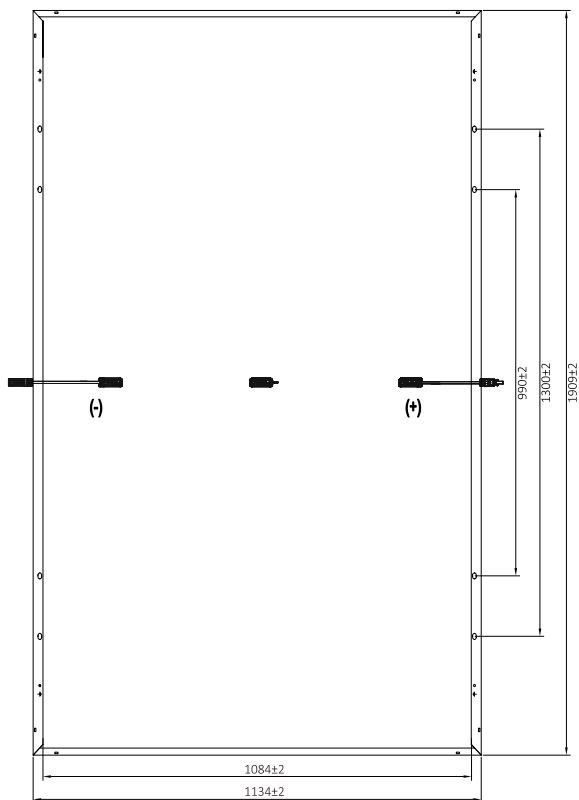
## PRODUCT CERTIFICATIONS



[denimsolar.com](https://denimsolar.com)

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## ENGINEERING DRAWING



## ELECTRICAL CHARACTERISTICS

|                             |      | STC <sup>1</sup>        | NOCT <sup>2</sup> |
|-----------------------------|------|-------------------------|-------------------|
| Maximum Power (Pmax)        | (W)  | 490                     | 373               |
| MPP Voltage (Vmpp)          | (V)  | 36.00                   | 34.60             |
| MPP Current (Impp)          | (A)  | 13.63                   | 10.78             |
| Open Circuit Voltage (Voc)  | (V)  | 42.90                   | 41.20             |
| Short Circuit Current (Isc) | (A)  | 14.47                   | 11.66             |
| Module Efficiency           | (%)  | 22.63                   |                   |
| Power Tolerance             | (W)  | 0 / +5                  |                   |
| Operating Temperature       | (°C) | -40 to +85              |                   |
| Maximum System Voltage      | (V)  | DC 1500                 |                   |
| Maximum Series Fuse Rating  | (A)  | 30                      |                   |
| Product reference           |      | Denim U N3 490 BBG 120H |                   |

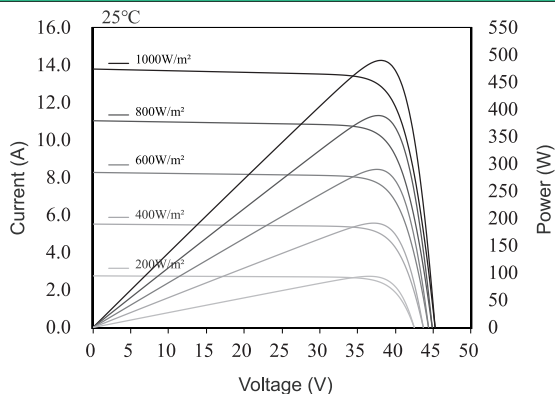
<sup>1</sup> STC (Standard Test Conditions): Irradiance 1000W/m<sup>2</sup>, Cell temperature 25°C, Air mass 1.5

<sup>2</sup> NOCT (Nominal operating cell temperature): Irradiance 800W/m<sup>2</sup>, Ambient temperature 20°C, Wind speed 1m/s

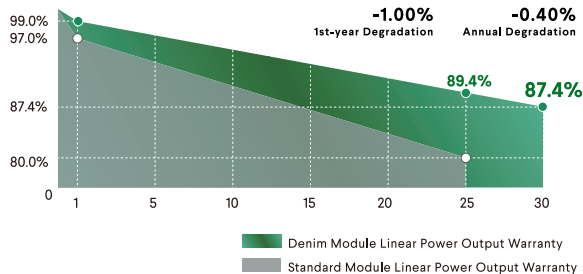
## ELECTRICAL CHARACTERISTICS WITH DIFFERENT REAR SIDE POWER GAIN

| Rear Gain                   |     | 5%    | 10%   | 15%   | 20%   |
|-----------------------------|-----|-------|-------|-------|-------|
| Maximum Power (Pmax)        | (W) | 515   | 539   | 564   | 590   |
| MPP Voltage (Vmpp)          | (V) | 36.00 | 36.00 | 36.00 | 36.10 |
| MPP Current (Impp)          | (A) | 14.31 | 14.99 | 15.67 | 16.36 |
| Open Circuit Voltage (Voc)  | (V) | 42.90 | 42.90 | 42.90 | 43.00 |
| Short Circuit Current (Isc) | (A) | 15.19 | 15.92 | 16.64 | 17.36 |

## DENIM IV CURVES



## SUPERIOR WARRANTY



**30 Years**  
Product Warranty

**30 Years**  
Linear Power Output Warranty

## MECHANICAL PROPERTIES

|                            |                                           |
|----------------------------|-------------------------------------------|
| Cell type                  | N-TOPCon M10RT Monocrystalline            |
| Number of cells            | 120 cells (6 x 20)                        |
| Dimensions                 | 1909 x 1134 x 30 mm / 2.16 m <sup>2</sup> |
| Weight                     | 23.0 kg                                   |
| Frame                      | Anodized aluminium                        |
| Front Glass                | 1.6mm Heat strengthened glass             |
| Back Glass                 | 1.6mm Heat strengthened glass             |
| Junction Box               | IP68, 3 diodes                            |
| Cable cross section/length | 4 mm <sup>2</sup> (IEC) - 1200 mm         |
| Connector type             | Stäubli - MC4-EVO2                        |
| Fire rating                | Class A according to UL790                |
| Snow load                  | Up to 5400 Pa                             |
| Wind load                  | Up to 2400 Pa                             |
| Hail test                  | Hailstones: Ø 35 mm, speed: 27.2 m/s      |

## TEMPERATURE RATINGS & BIFACIALITY

|                                 |            |
|---------------------------------|------------|
| NOCT                            | 43±2 °C    |
| Temperature Coefficient of Pmax | -0.30 %/°C |
| Temperature Coefficient of Voc  | -0.25 %/°C |
| Temperature Coefficient of Isc  | 0.046 %/°C |
| Bifaciality                     | 80±5%      |

## NUMBER OF PACKAGES

|                        |                      |
|------------------------|----------------------|
| Quantity per pallet    | 36 pcs               |
| Quantity per container | 24 pallets / 864 pcs |
| Pallet dimensions      | 1945*1132*1266 mm    |
| Pallet weight          | 866 kg               |
| Max stackable pallets  | 2 pallets            |