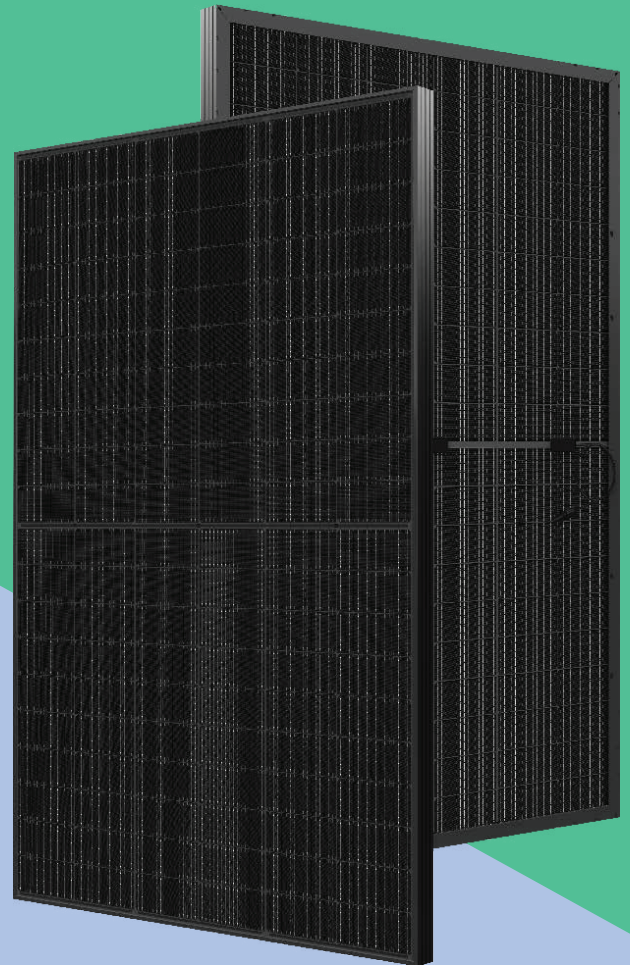


# The All Black stars



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%.

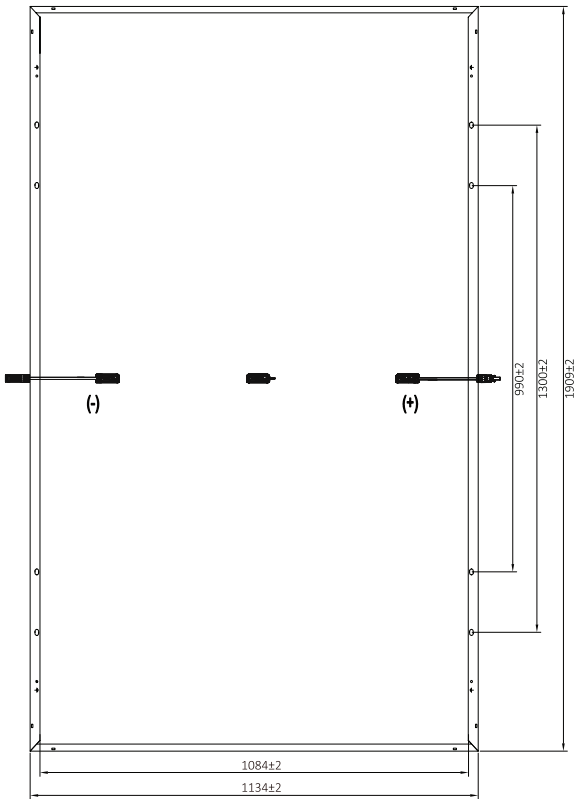
## PRODUCT CERTIFICATIONS



denimsolar.com

# Denim All Black Glass Glass Bifacial

## 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	

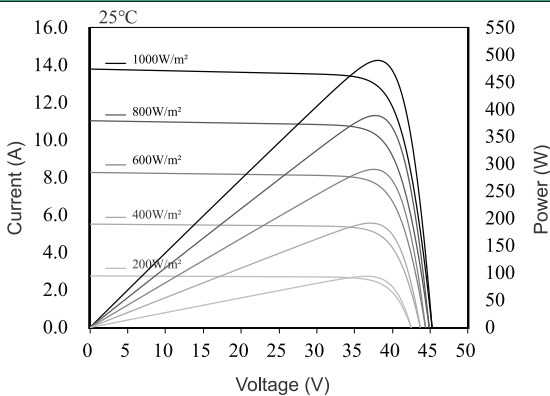
<sup>1</sup> STC (Standard Test Conditions): Irradiance 1000W/m<sup>2</sup>, Cell temperature 25°C, Air mass 1.5

<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

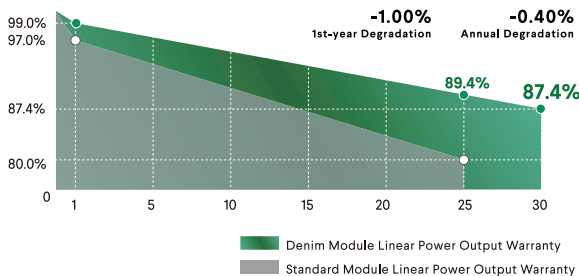
## DENIM IV CURVES



## 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

## SUPERIOR WARRANTY



**30 Years**  
Product Warranty

**30 Years**  
Linear Power Output Warranty



## TEMPERATURE RATINGS & BIFAILITY

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
Bifaility	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