

N-TYPE BIFACIAL GLASS-GLASS SERIES

Up to 450 watt
WST-NFX54-B1 Full Black



Zero busbar technology

Reduces shading area while increasing module power by 0.3%.



High-Density Module Technology

Utilizing stacked soldering technology to improve module conversion efficiency.



PID & LID Resistant

To reduce power degradation and ensure long-term sustained performance.



Aesthetic glass

The module's glass surface is coated with a dual-layer film to maintain light transmittance, resulting in a darker and more visually appealing module.

30 years product warranty

30 years linear performance

-1% 1st-year degradation

-0.40% annual power degradation

>87.4% of linear performance after 30 years



Power to Perform

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MECHANICAL DATA

Cell	Monocrystalline, N-type, bifacial
Quantity and wiring of cells	108 (6 strings x 18 cells)
Dimensions	1,762 x 1,134 x 35 mm
Weight	25 kg (55.12 lbs)
Front-side glass	2.0 mm, semi-tempered solar glass with anti-reflective coating
Back-side glass	2.0 mm, semi-tempered solar glass, partially black printed
Frame	Black anodised aluminium
Junction box	IP68, 3 bypass diodes
Connector type	Stäubli MC4-EVO2A IP68
Cable length (IEC/UL)	Cable 2 x 1,200 mm / 4 mm ²
Fire safety class (UL 790)	A
Protection class (IEC 61140)	II

OPERATING CONDITION

Operating temperature	-40 °C to +85 °C / -40 °F to +185 °F
Maximum system voltage IEC/UL	1,500 V / 1,500 V
Maximum series fuse	30 A
Maximum design load (push/pull)	3,600 Pa / 1,600 Pa
Maximum test load (push/pull)	5,400 Pa / 2,400 Pa
Nominal module operating temperature NMOT	42 ± 2°C
Temperature coefficient of P _{MAX}	-0.29%/°C
Temperature coefficient of V _{OC}	-0.25%/°C
Temperature coefficient of I _{SC}	0.043%/°C

ELECTRICAL DATA

Module type		WST-NFX54-B1 Full Black			
Electrical data		STC ¹	NMOT ²	BNPI ³	
Nominal performance	P _{MAX}	450	338	490	Wp
Voltage at maximum performance	V _{MP}	33.39	31.43	32.94	V
Current at maximum performance	I _{MP}	13.48	10.77	14.88	A
Open circuit voltage	V _{OC}	39.40	37.42	39.20	V
Short circuit current	I _{SC}	14.28	11.53	15.70	A
BSI: 1000 W/m ² front / 300 W/m ² rear irradiance	I _{SC}		17.45		A
Module efficiency			22.5		%
Bifacial gain ⁴	10 % P _{mpp}		459 (+45)		W
*Depending on irradiation conditions	15 % P _{mpp}		518 (+68)		W
	20 % P _{mpp}		540 (+90)		W
Power tolerance			0~+5		W

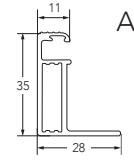
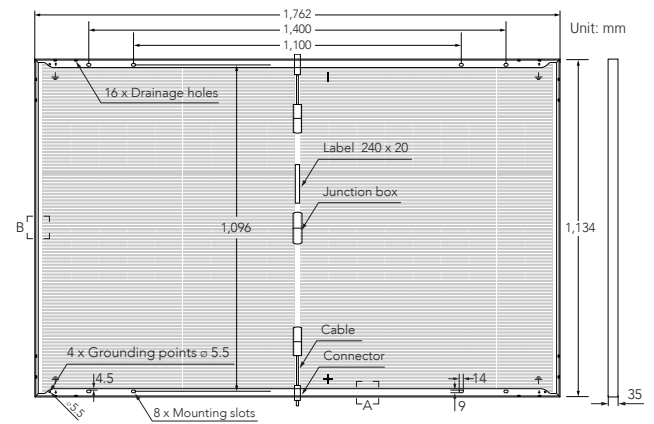
PRODUCT AND QUALITY CERTIFICATES

IEC 61215: 2021, IEC 61730: 2023
 IEC 61701 Salt Mist Resistance (in progress)
 IEC 62716 Ammonia Resistance (in progress)
 IEC 61215-2 Hail Storm Resistance (35mm at ~27.2m/s)
 UL 790 Fire Resistance

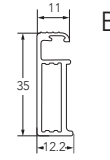
ISO 9001 Quality Management System
 ISO 50001 Occupational Health and Safety Management System
 ISO 14001 Environment Management System
 SA 8000 Social Accountability



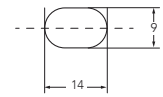
DIMENSIONS



Frame cross section A



Frame cross section B

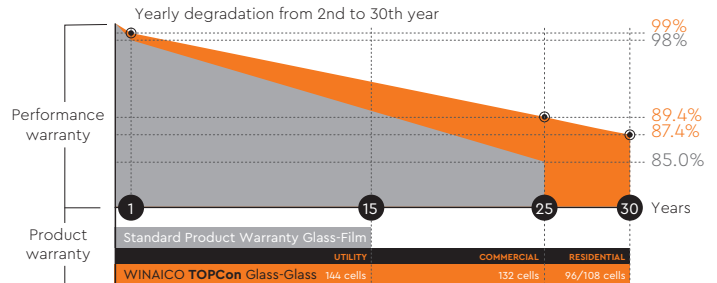


Mounting slot

PACKAGING



WINAICO PERFORMANCE GUARANTEE



30 year product guarantee.
 Linear performance guarantee for 30 years.
 No more than 0.4% degradation per year from 2nd year to 30th year.

- Electrical data applies under standard test conditions (STC): solar radiation 1,000 W/m² with light spectrum AM 1.5, with cell temperature 25°C. Measurement tolerance of P_{max}: ±3%; V_{oc}: ±3%; I_{sc}: ±4% at STC.
- Electrical data applies under Nominal Module Operating Temperature (NMOT), irradiance of 800 W/m², spectrum AM 1.5, ambient temperature 20°C, wind speed 1 m/s.

- BNPI: The front side 1,000 W/m² solar irradiance and rear 135 W/m².
- The additional power gain from the rear side depends on the irradiance conditions at the installation site and the mounting situation.



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