RESIDENTIAL

# N-TYPE BIFACIAL GLASS-GLASS SERIES

## 435/450 watt
## WST-NGX-D3

**Better low-light performance**
Enhanced electricity production in low-irradiance environments

**PID & LID Resistant**
To reduce power degradation and ensure long-term sustained performance

**Excellent durability in extreme environments**
WINAICO modules are tested above and beyond international standards.

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

WINAICO®
*Power to Perform*
www.winaico.com

SOLAR PRO SUMER AWARD GERMANY >22.000 RATINGS
MODULES
PURCHASE RECOMMENDATION
EUPD Research
2022/23

EUPD RESEARCH
TOP BRAND PV
MODULES
GERMANY
2022

PFAS FREE

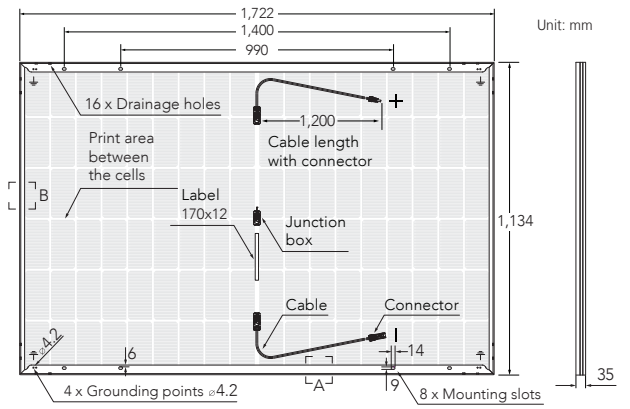
## MECHANICAL DATA

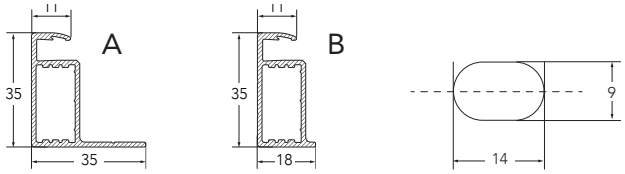
| | |
|---|---|
| Cell | Monocrystalline, N-type, bifacial |
| Quantity and wiring of cells | 108 (6 strings x 18 cells) |
| Bifaciality | Up to 80 % |
| Dimensions | 1,722 x 1,134 x 35 mm |
| Weight | 24 kg (52.9 lbs) |
| Front-side glass | 2.0 mm, semi-tempered solar glass with anti-reflective coating |
| Back-side glass | 2.0 mm, semi-tempered solar glass, partially white 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 mm² |
| Fire safety class[1] (IEC61730) | C |
| 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) | 5,400 Pa / 2,400 Pa |
| Maximum test load (push/pull) | 8,100 Pa / 3,600 Pa |
| Nominal module operating temperature NMOT | 42 ± 2°C |
| Temperature coefficient of $P_{MAX}$ | -0.30%/°C |
| Temperature coefficient of $V_{OC}$ | -0.25%/°C |
| Temperature coefficient of $I_{SC}$ | 0.045%/°C |

## DIMENSIONS




Frame cross section A | Frame cross section B | Mounting slot

## PACKAGING


1,764 mm | 1,145 mm | 1,257 mm | 31 modules | 795 kg | 26 pallets

## ELECTRICAL DATA

| Module type | | WST-435NGX-D3 | | | WST-450NGX-D3 | | | |
|---|---|---|---|---|---|---|---|---|
| Electrical data | | STC[2] | NMOT[3] | BNPI[4] | STC[2] | NMOT[3] | BNPI[4] | |
| Nominal performance | $P_{MAX}$ | 435 | 325 | 475 | 450 | 342 | 490 | Wp |
| Voltage at maximum performance | $V_{MP}$ | 33.01 | 30.83 | 33.01 | 33.76 | 31.79 | 33.76 | V |
| Current at maximum performance | $I_{MP}$ | 13.18 | 10.58 | 14.47 | 13.33 | 10.75 | 14.75 | A |
| Open circuit voltage | $V_{OC}$ | 38.72 | 36.82 | 38.72 | 39.36 | 37.69 | 39.36 | V |
| Short circuit current | $I_{SC}$ | 13.89 | 11.12 | 15.29 | 14.08 | 11.35 | 15.57 | A |
| BSI: 1000 W/m² front / 300 W/m² back irradiance | $I_{SC}$ | 17.22 | | | 17.40 | | | A |
| Module efficiency | | 22.3 | | | 23.0 | | | % |
| Bifacial gain[5] *Depending on irradiation conditions | 10 % Pmpp | 478 (+43) | | | 495 (+45) | | | W |
| | 15 % Pmpp | 500 (+65) | | | 518 (+68) | | | W |
| | 20 % Pmpp | 522 (+87) | | | 540 (+90) | | | W |
| Power tolerance | | 0~+5 | | | 0~+5 | | | W |

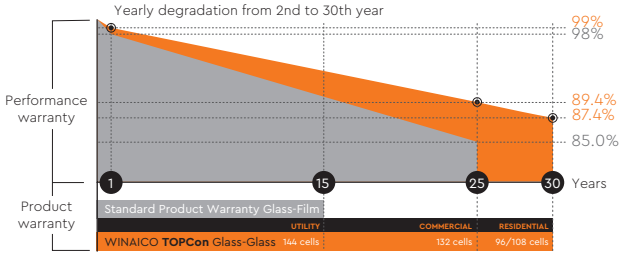
## PRODUCT AND QUALITY CERTIFICATES

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 (45mm at ~30.7m/s)
IEC TS 62804-1 Anti-PID (in progress)
IEC 61730-2 & UNI 9177:1987 Fire Resistance

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

APPROVED PRODUCT
Certificate Number BABT 8529
Solar Photovoltaic Products

## 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.

1. The fire safety test methods according to IEC 61730-2, Fire Tests of Roof Coverings.
2. 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 Pmax: ±3%; Voc: ±3%; Isc: ± 5% at STC.
3. 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.
4. BNPI: The front side 1,000 W/m² solar irradiance and rear 135 W/m².
5. 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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