

N-TYPE
430Wp
FULLBLACK
LONGLIFE30

DATASHEET

430 Wp 182/16BB mm cell(1/2 CUT) 108 pcs

N-type Full Black

AN-430-N-16BB-G-FB

Designed and manufactured by



DARWIN
RENEWABLE ENERGY INNOVATOR





STÄUBLI

Original European parts (ie. MC + Staubli)



DARWIN Module Frame
High stability and torsion free



DARWIN Module Wave Shape
Grip shaped frame with anti-slip coating



DARWIN Junction box
High quality design for longer life expectancy



DARWIN anti-reflection coating
Maximize the light absorption for higher output

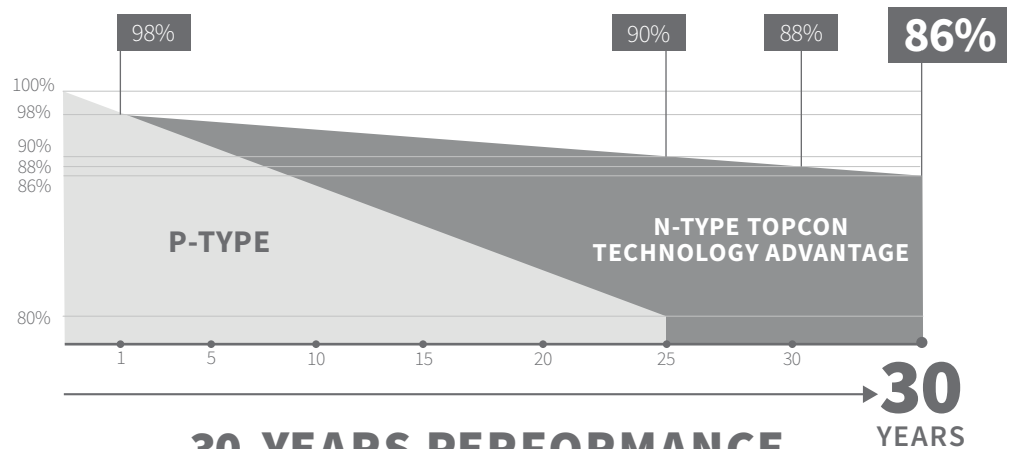
**N-TYPE
TOPCON 2023**



High Power Output Standards



30 years linear power output guarantee (86%) 0,40% annual degradation



**30 YEARS PERFORMANCE
WARRANTY 86%**

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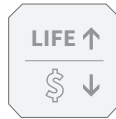


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Efficiency



0-5 % positive power tolerance by individual measurement.



Low LCOE
(Levelized Cost of Energy)

22,00%

MODULE EFFICIENCY

Key Features – Durability & Quality



100% visual electro-luminance inspection



Enhanced mechanical load, certified to withstand Wind load (2400 Pascal) and Snow load (5400 Pascal)



Durability against extreme environmental conditions



Better shading tolerance and lower resistive loss



High salt mist and ammonia resistance



Multi Busbar Technology for better light trapping



No hot spot due to optimized electrical design, low current
MUCH LOWER THAN P-TYPE



Very low temp coefficient (P Max) for higher output
MUCH LOWER THAN P-TYPE



N-TYPE
NO HOT SPOT
TOPCON TECHNOLOGY



VERY LOW TEMP COEFFICIENT
(P Max) for higher output



ZERO PID+LID
(DUE TO N-TYPE)

European



- "ANDO by Darwin" is a European brand with 100% European roots

- The Darwin R&D team collaborates with IMEC for new product developments.

- All products are engineered in Europe according to European norms (EN, IEC, etc.)

- The manufacturing facilities operate with European insurance partners such as MunichRE

- The company Darwin has offices and is represented in LV, BE, NL, DE, FR, ESP, IT and GB. Warehousing as well as technical support and warranty issues are being taken care of locally.

- Our quality control team works, upon request, with "EnergyVille Belgium" and "Solartester Netherlands" for incoming quality controls, such as extra flash, durability, electro-luminescence inspections and tests.



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Darwin Management & Production



ISO9001:2015 (Quality Management Systems)
ISO14001:2015 + ISO45001:2018 (Environmental Management Systems)



OHSAS18001:2011 (Occupational Health and Safety Management Systems)



Most of Darwin products are manufactured in TIER1 listed production facilities

Certifications



Darwin manufacturing facilities strive to work with a maximum possible Cradle2cradle percentage.

Electrical Parameters

STC: Irradiance 1000 W/m², module temperature 25°C, AM=1.5; Tolerances of Pmax, Voc and Isc are all within +/- 5%

Electrical Parameters at NOCT

Max. Power – Pmax (W)	328.7 W
Open Circuit Voltage-Voc (V)	36.80 V
Short Circuit Current-Isc (A)	11.49 A
Max. Power Voltage-Vmp (V)	30.20 V
Max. Power Current-Imp (A)	10.89 A

*NOCT (Nominal cell temp.): Irradiance 800W/m², Ambient Temp. 25°C, Wind Speed 1m/s

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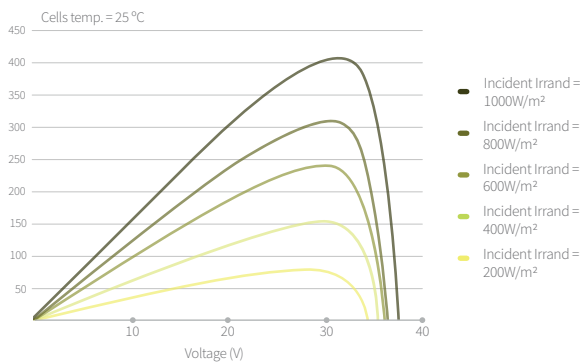
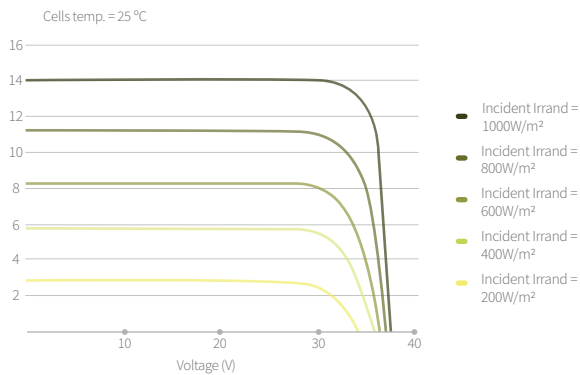
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Operating Parameters

Max. System Voltage (Vdc)	1500 VDC
Max. Series Fuse Rating (A)	25 A
Nominal Operating Cell temp. (°C)	45 +/- 2 °C
Operational temp. (°C)	-45°C -+85 °C

Class II

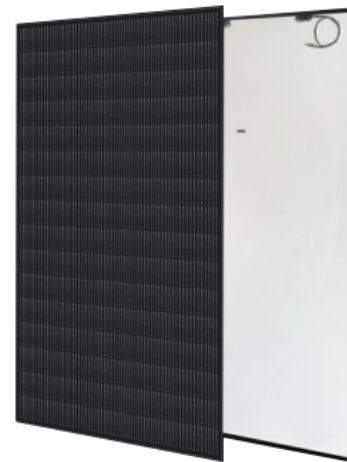
Current-voltage Curve (Cell Temp.)



Temperature Coefficient

Temp. Coefficient of Isc (°C)	+.0.045%/°C
Temp. Coefficient of Voc (°C)	-.0.250%/°C
Temp. Coefficient of Pmax (°C)	-.0.290%/°C

Power + Performance Warranty



25 years= 90% 30 years= 88% 35 years= 86%

Mechanical Design

Frontside glass + Backside glass	1.6 mm + 1.6 mm toughened Low-reflection low-irontempered glass for maximum transmission
Coating on glass	Anti-reflection coating Darwin type
Backside	Black front, white back composite film
Encapsulant material	EVA/POE
Frame	30 mm Black anodized Aluminium Alloy 6005-T6 Cradle to cradle concept
Junction Box	IP68, 1500 V, Darwin type
Cable Length (mm)	(+) 1200 mm, (-) 1200 mm
Cable Thickness (mm ²)	4del mm ² (IEC)
Connector (plug-in system)	EU original Stäubli Plug Socket, IP68, MC4-EVO2, 1500 V
Fire class	C
Internal Diodes	3 Bypass Diodes

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Mechanical Specifications TOPCON

Cell	N Type 16BB 182mm (2x54pcs)
Cell Size (mm)	182x91 mm (1/2 cut)
No. of Cells	108 pcs (6 x 18)
Dimensions L x W x H (mm)	1722 x 1134 x 30 +/- 1.5 mm
Weight (kg)	20.5 kg

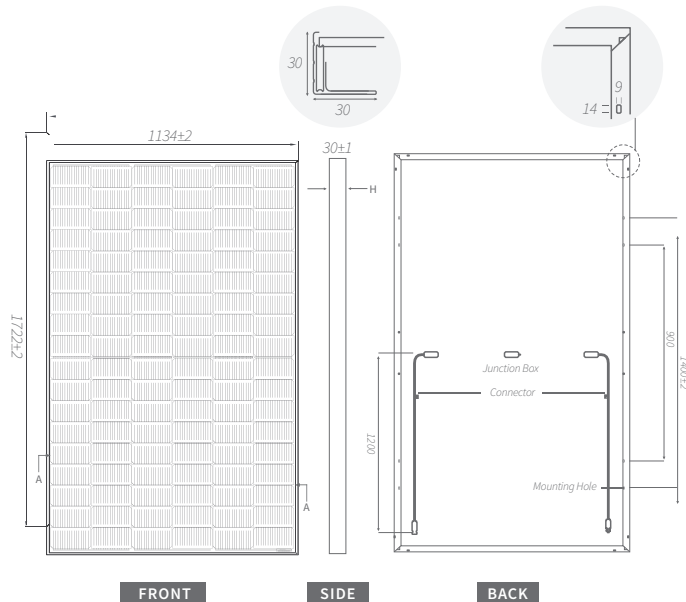
Mechanical Load

Design load (pressure/suction)	3600 Pa / 1600 Pa
Test load (pressure/suction)	5400 Pa / 2400 Pa
Hail Test	Diam. 25 mm, speed 80 km/h

Packaging

Configuration Pallet	36 pcs / pallet
Pallet Size	1722 x 1130 x 1245 mm
Pallet configuration 40ft HQ	26 pallets / container
Qty per 40ft HQ	936 pcs / container

Mechanical Diagrams



*All Dimensions in mm | The above drawing is a graphical representation of the product | For engineering quality drawings please contact DARWIN.

FULL-OPTION DARWIN WARRANTY

30 YEARS PRODUCT WARRANTY | **30 YEARS PERFORMANCE WARRANTY** | **30 YEARS SERVICE WARRANTY**



	Darwin Full-Option	VS	Conventional
Product Warranty	30 Years		Max. 10 Years
Performance Warranty	30 Years		Max. 10 Years
Start point	100%		97%
Yearly decline	0.34/ 0.40%		0.55 / 0.7%
End point (25years)	>90%		80%
End point (35 years)	>86%		NOT AVAILABLE
Service Warranty	30 Years		NOT AVAILABLE
Shipping - new part	INCLUDED!		NOT AVAILABLE
Shipping - old part	INCLUDED!		NOT AVAILABLE
Installation	INCLUDED!		NOT AVAILABLE

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*Specifications are subject to change without further notification
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