



N-TYPE
420Wp
BIFACIAL
GLASS/GLASS
FULLBLACK
LONGLIFE 35

DATASHEET

420 Wp 182/16BB mm cell(1/2 CUT) 108 pcs
N-type Bi-Facial Mono Glass/Glass Full Black
AN-420-N-16BB-BI-GG-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



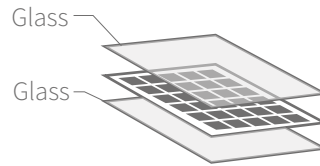
**DARWIN
anti-reflection coating**

Maximize the light absorption
for higher output

**90%
BIFACIALITY**

N-TYPE

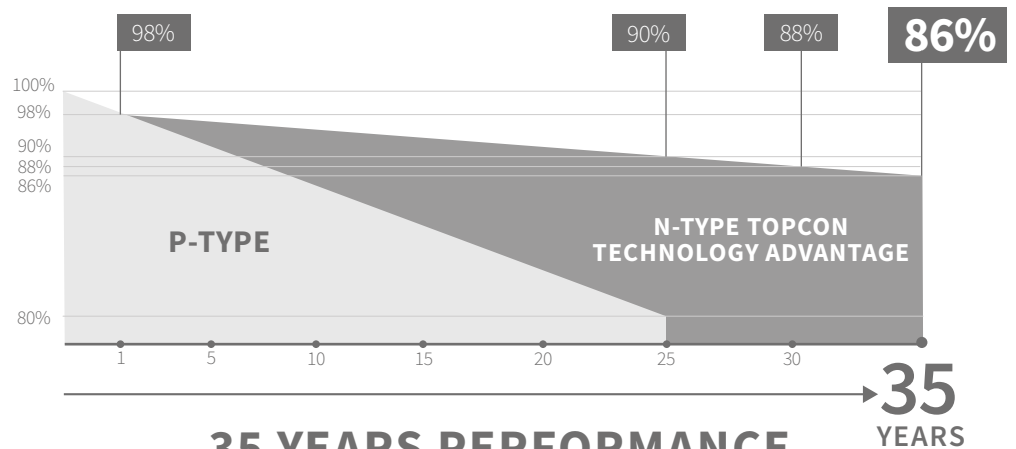
TOPCON 2023



High Power Output Standards



35 years linear Power Output
Guarantee (86%) 0,40 % annual
degradatiion



35 YEARS PERFORMANCE

WARRANTY 86%

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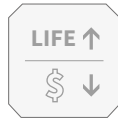


DARWIN
RENEWABLE ENERGY INNOVATOR

Efficiency



0-5 % Positive Power Tolerance by individual measurement.



Low LCOE (Levelized Cost of Energy)

21,50%
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.



Testing upon request from:



Designed and manufactured by




Darwin Management & Production


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




Testing upon request from Energyville



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
Electrical Parameters

AN ULTRA HIGH EXTRA EFFICIENCY can be reached by the reflection of sunlight to the back of the panel.

	Front	Back Extra Power (Depend on the % of reflected light to the back)		
		10%	20%	30%
Light Source (%)	100%			
Peak Power (Pmax) (W)	420	±450	±487	±520
Open Circuit Voltage-Voc	37.9	38.0	38.1	38.2
Short Circuit Current-Isc (A)	14.04	14.80	15.80	16.80
Max. Power Voltage-Vmp (V)	32.0	32.1	32.2	32.3
Max. Power Current-Imp (A)	13.13	14.00	15.10	16.20
Module Efficiency – Nm (%)	21.50 %	24.72 %	26.66 %	28.52%
Power Tolerance		0+5Wp		

Final results depend on the actual reflection from the location of installation and are subject to many other unknown factors.

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	318
Open Circuit Voltage-Voc	36.2
Short Circuit Current-Isc (A)	11.27
Max. Power Voltage-Vmp (V)	30.0
Max. Power Current-Imp (A)	10.62

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

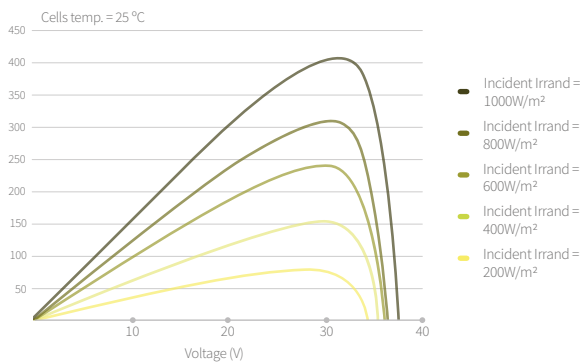
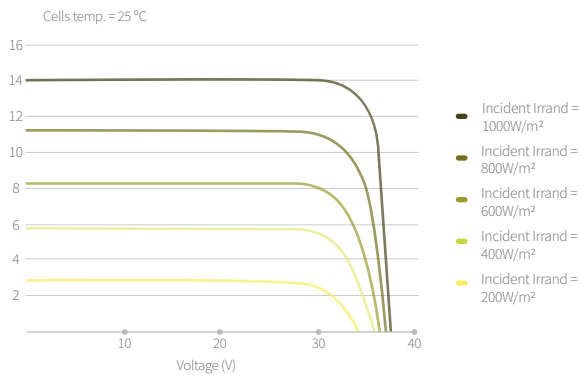
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Operating Parameters

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

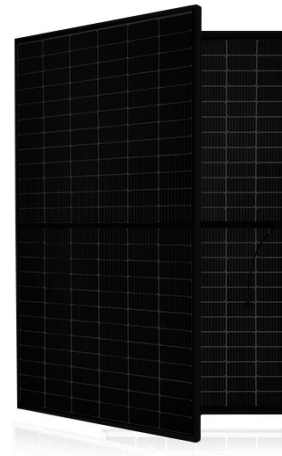
Current-voltage Curve (Cell Temp.)



Temperature Coefficient

Temp. Coefficient of Isc	+0.046%/°C
Temp. Coefficient of Voc	-0.260%/°C
Temp. Coefficient of Pmax	-0.310%/°C

Power + Performance Warranty



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

Mechanical Design

Frontside glass + Backside glass	1.6mm + 1.6mm toughened Low-reflection low-iron tempered glass for maximum transmission
Coating on glass	Anti-reflection coating Darwin type
Backside	Black 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	(+) 1200 mm, (-) 1200 mm
Cable Thickness	4mm 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 2023

Cell	N Type 16BB 182mm (2x52 pcs)
Cell Size	182x91 mm
No. of Cells	108 pcs (6 x 18)
Dimensions L X W X H	1722 x 1134 x 30 ± 1.5mm
Weight	23 kg

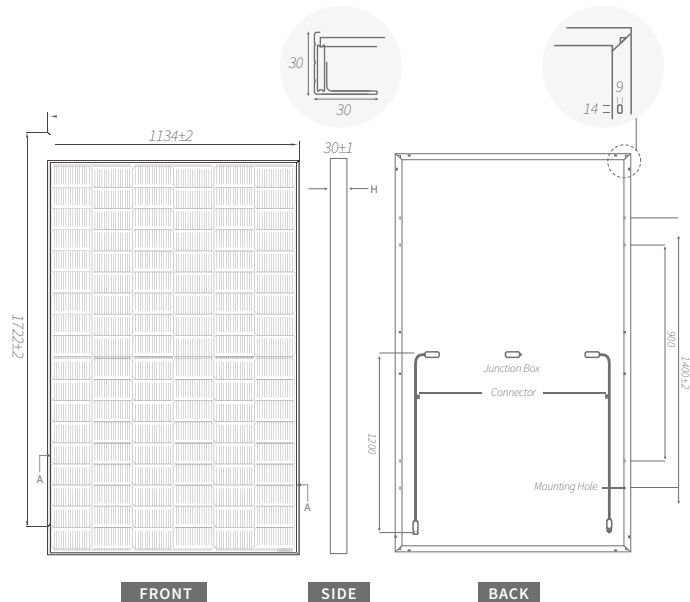
Mechanical Load

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 1134 X 1080 mm
Pallet configuration 40ft HQ	26 pallets / container
Qty per 40ft HQ	26 x 36 pps = 936 pcs

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

35 YEARS PRODUCT WARRANTY | **35 YEARS PERFORMANCE WARRANTY** | **35 YEARS SERVICE WARRANTY**



	Darwin Full-Option	VS	Conventional
Product Warranty	35 Years		Max. 10 Years
Performance Warranty	35 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	35 Years		NOT AVAILABLE
Shipping - new part	INCLUDED!		NOT AVAILABLE
Shipping - old part	INCLUDED!		NOT AVAILABLE
Installation	INCLUDED!		NOT AVAILABLE

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