

P-TYPE
410 Wp
FULL BLACK
DESIGN

DATASHEET

410 Wp M10 182x91 mm cell (1/2 cut) 108 pcs

PERC MONO TYPE FULL BLACK

AN-410-182x91-FB-WB

Designed and manufactured by



DARWIN
RENEWABLE ENERGY INNOVATOR



EXCLUSIVE HIGHLIGHTS

KEY FEATURES

Exclusive Darwin Reliability Features



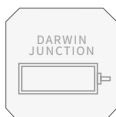
STÄUBLI

Original European Parts
(ie. MC + Staubli)



**DARWIN
Module Frame**

High stability and
torsion free



**DARWIN
Junction box**

High Quality Design
for longer life
expectancy



**DARWIN
anti-reflection
coating**

Maximize the light
absorption for
higher output



**DARWIN
Module Wave
Shape**

Grip shaped frame
with anti-slip coating



**Black front /
White Back**

Technology
more efficiency

DARWIN EUROPEAN QUALITY CONTROL



Extra flash test control in
accredited European lab

DARWIN 25 YEARS FACTORY WARRANTY

Extension from 15 to 25 years for installs
done by registered Darwin installers

**25
YEARS**

Efficiency



0-5 % Positive Power
Tolerance by individual
measurement.



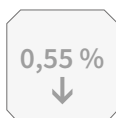
Low LCOE
(Levelized Cost of Energy)

21%
MODULE EFFICIENCY

High Power Output Standards

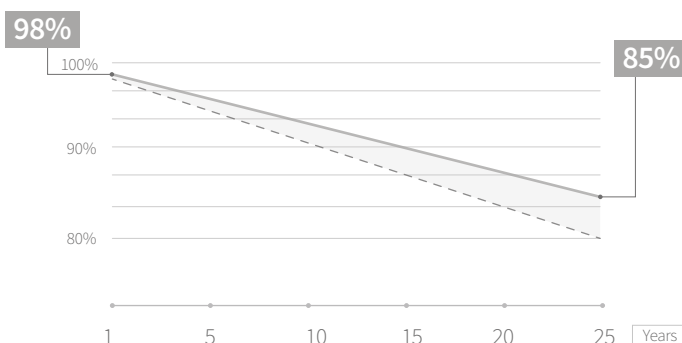


25 years linear Power Output
Guarantee (85 %)
0,55 % annual degradation



Annual degradation over 25 years
limited to 0,55 %

ADDITIONAL VALUE
25- Year Power Warranty



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Key Features – Durability & Quality



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



100 % visual electro-luminescence inspection



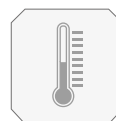
Reduced Hot Spot temperature due to optimized electrical design, low current



Durability against Extreme Environmental Conditions



Better shading tolerance and lower resistive loss



Low temp coefficient (P Max) for higher output



High salt mist and ammonia resistance



Multi Busbar Technology for better Light trapping



PID Resistance via optimized mass-production process and optimized material control during all the production phases

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 the European insurance partner MunichRE.

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

· Our Quality control – team works with “EnergyVille Belgium” and “Solartester Netherlands” for incoming Quality Controls, such as extra Flash - Durability – electro-luminescence inspections and tests.



Testing upon request from:



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.

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Electrical Parameters at STC

Peak Power-Pmax (W)	410 Wp
Open Circuit Voltage-Voc	37.50 V
Short Circuit Current-Isc (A)	13.88 A
Max. Power Voltage-Vmp (V)	31.60 V
Max. Power Current-Imp (A)	12.98 A
Module Efficiency – Nm (%)	21%
Power Tolerance	0+5%

*STC (Standard Test Conditions): 1000 W/m²,
Ambient Temp. 25°C, Air Mass (AM) 1.5

Temperature Coefficient

Temp. Coefficient of Isc	+.0055%/°C
Temp. Coefficient of Voc	-.0289%/°C
Temp. Coefficient of Pmax	-.0380%/°C

Electrical Parameters at NOCT

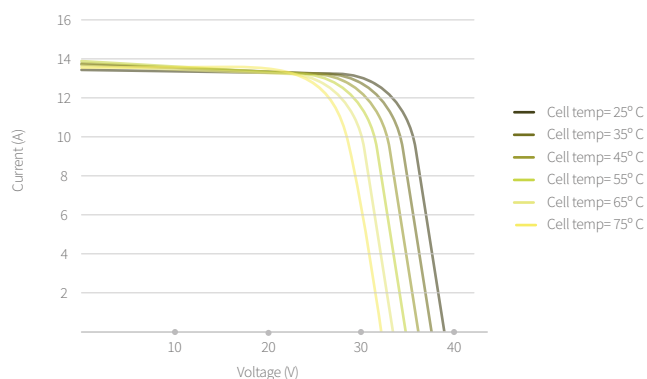
Max. Power – Pmax	309,6
Open Circuit Voltage-Voc	35,2
Short Circuit Current-Isc (A)	11,16
Max. Power Voltage-Vmp (V)	29,2
Max. Power Current-Imp (A)	10,62

*NOCT (Nominal cell temp.): Irradiance 800W/m²,
Ambient Temp. 20°C, Wind Speed 1m/s

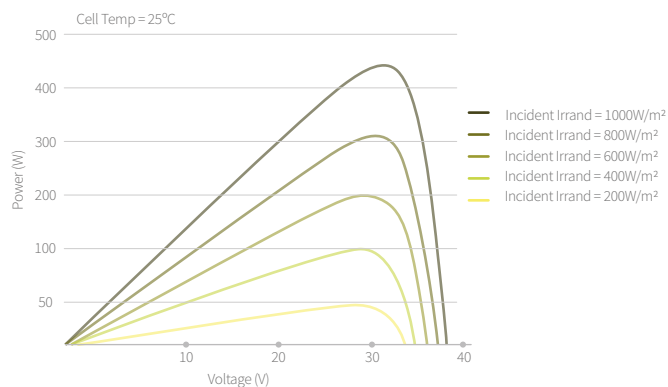
Operating Parameters

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

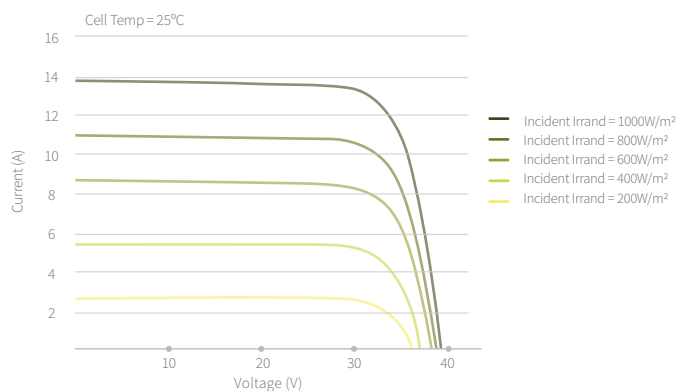
Current-voltage Curve (Cell Temp.)



Power-voltage Curve (Incident Irrad)



Current-voltage Curve (Incident Irrad)



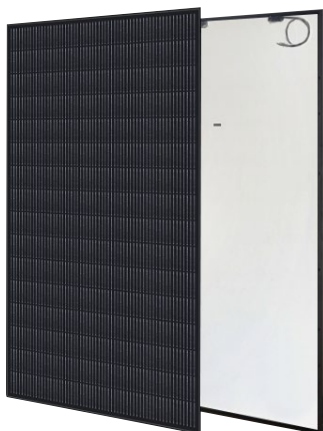
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Power + Performance Warranty

12 years = 91.5 %

25 years = 85 %



Mechanical Design

Frontside glass	3.2 mm toughened Low-reflection low-iron tempered glass for max. 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

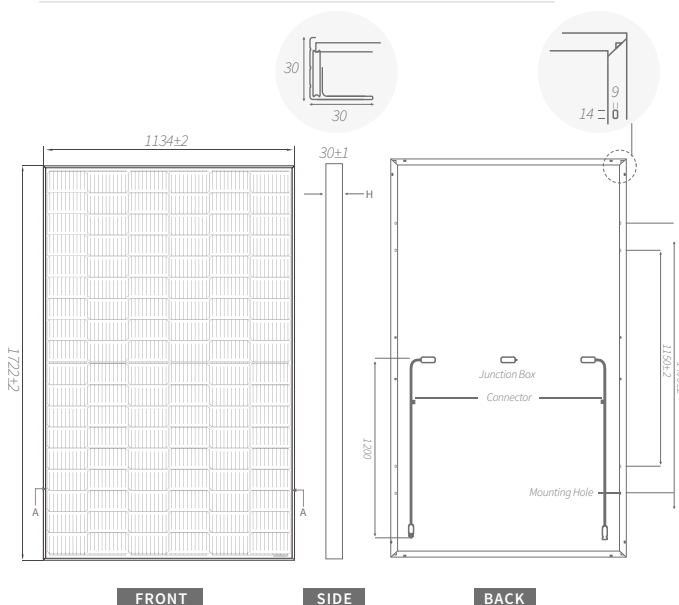
Mechanical Specifications

Cell	Mono PERC (P-type)
Cell Size	182x91 (182 mm 1/2 cut)
No. of Cells	108 pcs (6 x 18)
Dimensions L X W X H	1722 x 1134 x 30 mm
Weight	21.5 kg (+- 3%) with frame

Mechanical Load

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

Mechanical Diagrams



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

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 pcs = 936 pcs

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*Specifications are subject to change without further notification
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