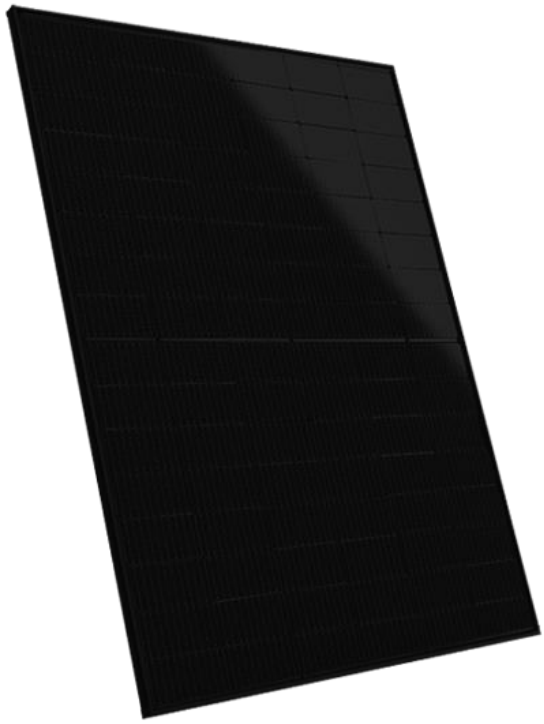


ASTORIOS

per aspera ad astra

PHOTOVOLTAIC MODULE

HIGH EFFICIENCY
TOPCON N-TYPE BIFACIAL CELLS
ULTRA BLACK, BLACK FRAME, DOUBLE GLASS

ASTR **96 HCND/10.1** Series **450-460 Wp**

460 Wp
MAXIMUM POWER OUTPUT

23.02%
MAXIMUM MODULE EFFICIENCY

NEGLIGIBLE LID IMPACT
TOPCon cells exhibit an almost zero susceptibility to Light Induced Degradation, ensuring sustained high efficiency over time despite exposure to sunlight

HIGH EFFICIENCY
N-type cells technology provides the highest efficiency modern multi busbar configuration at affordable cost

MINIMIZING THE SHADING IMPACT
Better partial-shade tolerance due to separated half panel string wiring

SAND, AMMONIA AND SALT MIST RESISTANCE
Sand blowing, ammonia and salt mist resistance tests have been passed by international standards to ensure operation in harsh conditions

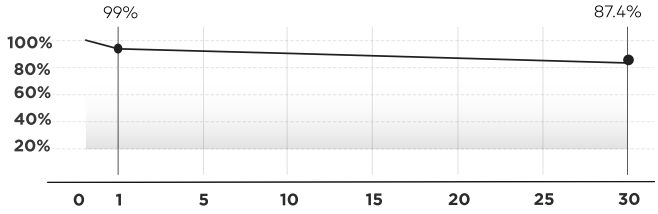
HOT SPOTS RISK REDUCTION
Sophisticated electrical design, cells sorting, cutting and soldering technology leads to low hot spot risk and temperature control

MULTI BUSBAR TECHNOLOGY
Better light absorption and current collection for better power output

PID RESISTANT
Selected encapsulants, precision in manufacturing quality control makes modules highly PID resistant and snail trails free

SUPERIOR SAFETY AND RELIABILITY
Tested to avoid microcracks and welding cracks, can withstand high pressure loads, passed multi-step quality control

PERFORMANCE



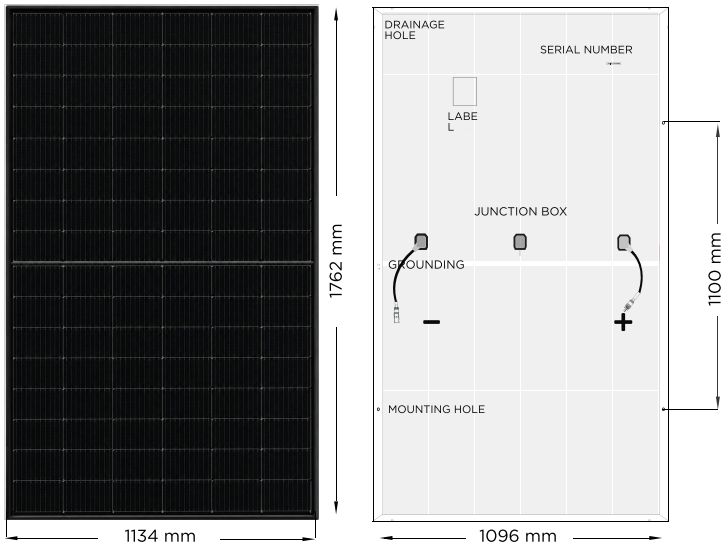
30 YEARS
Performance Guarantee

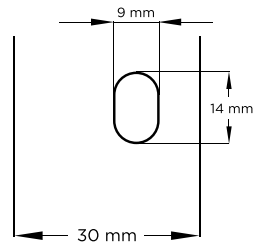
20 YEARS
Product Warranty

info@astorios.com
www.astorios.com

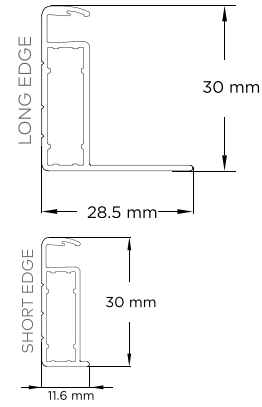
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MOUNTING HOLE



FRAME PROFILE

MATERIAL CHARACTERISTICS

Dimensions	1762 × 1134 × 30 mm
Weight	24.6kg
Number of cells	96 pcs (6x16)
Glass	2mm, High transparency, AR coated
Cell layout	Bifacial, Half Cut N-type (182x105 mm)
Frame	Ultra black, Black frame, Anodized aluminum alloy
Junction box	IP68 Rated, 3 bypass diodes
Connector type	Staubli MC4-Evo 2 / MC4 (Original)
Cable	4 mm², 300 mm

PACKAGING INFORMATION

One pallet quantity	36 Pcs / 909kg / 1790x1120x1247mm
40 ft HC/HQ container	936 Pcs / 26 Pallets

TEMPERATURE PARAMETERS

Temperature Coefficient of Pmax	-0.30 % / °C
Temperature Coefficient of Voc	-0.25 % / °C
Temperature Coefficient of Isc	+0.046 % / °C
Operating Temperature	- 40°C to + 85°C
Normal Operating Cell Temperature (NOCT)	44±2°C

MAXIMUM RATINGS

Max. System Voltage	1500V DC - (H)
Max. Series Fuse Rating	30A
Uplift load (wind)	2400 Pa*
Downforce (snow)	5400 Pa*
Hail Resistance	25mm ice-ball with velocity of 23m/s

*For more information please refer to Instruction Manual

MODULE TYPE 96 HCND/10.1	450 Wp		455 Wp		460 Wp	
ELECTRICAL CHARACTERISTICS	**STC**	NMOT	**STC**	NMOT	**STC**	NMOT
Maximum power (Pmax/Wp)	**450**	343	**455**	347	**460**	351
Open circuit voltage (Voc / V)	**35.69**	33.76	**35.91**	34.04	**36.12**	34.31
Short circuit current (Isc / A)	**15.85**	12.78	**15.89**	12.81	**15.93**	12.84
Maximum power voltage (Vmp / V)	**29.91**	28.03	**30.14**	28.26	**30.37**	28.50
Maximum power current (Imp / A)	**15.05**	12.24	**15.10**	12.28	**15.15**	12.32
Module efficiency at STC (ηm / %)	**22.52**		**22.77**		**23.02**	
Power tolerance (Pmax)			**0~+3%**			

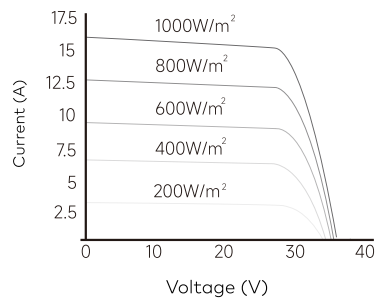
NMOT: Irradiance 800 W/m2, ambient temperature 20°C, wind speed 1 m/s / **STC:** Irradiance of 1000 W/m2, spectrum AM 1.5, a module temperature of 25°C

BIFACIAL OUTPUT: BACKSIDE POWER GAIN	**10%**	**20%**	**10%**	**20%**	**10%**	**20%**
Pmax (Wp)	495	540	500.5	546	506	552
Module efficiency (%)	**24.77**	**27.02**	**25.05**	**27.32**	**25.32**	**27.62**

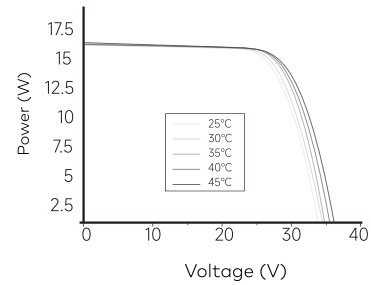
CERTIFICATES

IEC62716 (Ammonia)
IEC60068-2-68 (Sand)
IEC61215 / 61730 / 61701

I-V Curve at Different Temperature



P-V Curve



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V2610DSEN
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