



ASTORIOS

per aspera ad astra

PHOTOVOLTAIC MODULE

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

ASTR **108HCND/10** 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



HOT SPOTS RISK REDUCTION

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



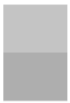
HIGH EFFICIENCY

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



MULTI BUSBAR TECHNOLOGY

Better light absorption and current collection for better power output



MINIMIZING THE SHADING IMPACT

Better partial-shade tolerance due to separated half panel string wiring



PID RESISTANT

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



SAND, AMMONIA AND SALT MIST RESISTANCE

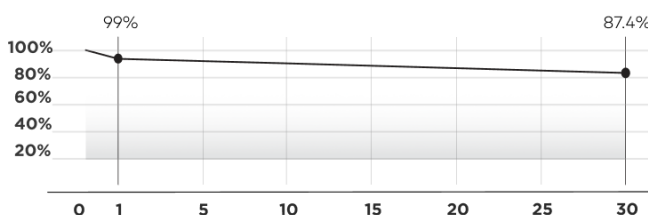
Sand blowing, ammonia and salt mist resistance tests have been passed by international standards to ensure operation in harsh conditions



SUPERIOR SAFETY AND RELIABILITY

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

PERFORMANCE

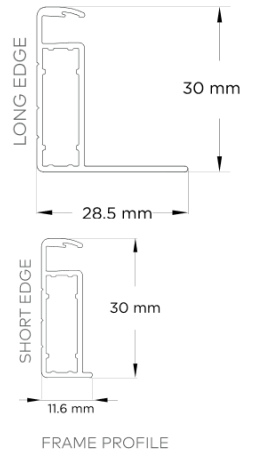
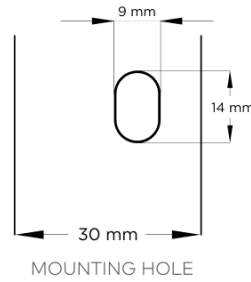
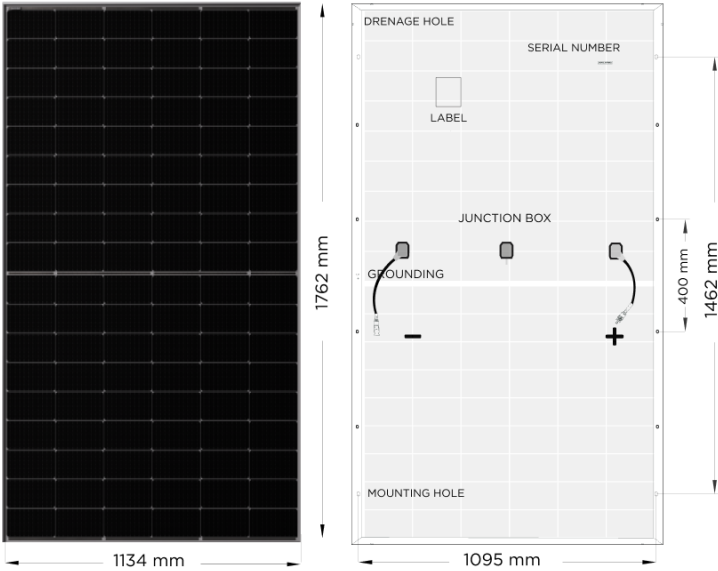


30 YEARS

Performance Guarantee

20 YEARS

Product Warranty



MATERIAL CHARACTERISTICS

Dimensions	1762 x 1134 x 30 mm
Weight	24.6kg
Number of cells	108 pcs (6x18)
Glass front/rear	2mm, High transparency, AR coated
Cell layout	Mono-crystalline, N-type, Bifacial (94x182.2 mm)
Frame	Black/Silver Color, Anodized aluminum alloy
Junction box	IP68 Rated, 3 bypass diodes
Connector type	Staubli MC4-Evo 2 / MC4 (Original)
Cable	4 mm ² , 300 mm

PACKAGING INFORMATION

One pallet quantity	36 Pcs / 909 kg / 1790x1130x1247 mm
40 ft HC/HQ container	936 Pcs / 36 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	25A
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

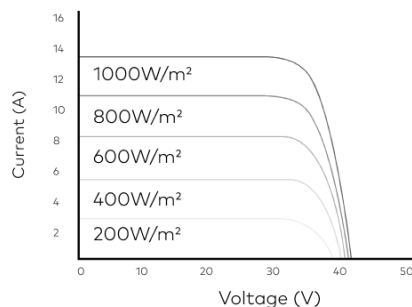
MODULE TYPE 108HCND/10	450 Wp		455 Wp		460 Wp	
	STC	NMOT	STC	NMOT	STC	NMOT
ELECTRICAL CHARACTERISTICS						
Maximum power (Pmax/Wp)	450	343	455	347	460	351
Open circuit voltage (Voc / V)	39.93	38.03	40.19	38.28	40.44	38.54
Short circuit current (Isc / A)	13.96	11.27	14.01	11.31	14.06	11.35
Maximum power voltage (Vmp / V)	33.69	31.51	33.86	31.69	34.03	31.87
Maximum power current (Imp / A)	13.36	10.89	13.44	10.95	13.52	11.02
Module efficiency at STC (ηm / %)	22.52		22.77		23.02	
Power tolerance (Pmax)			0-+3%			
NMOT: Irradiance 800 W/m ² , ambient temperature 20°C, wind speed 1 m/s / STC: Irradiance of 1000 W/m ² , 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

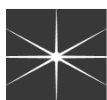
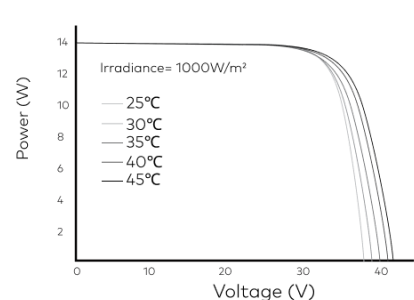
IEC62716 (Ammonia)
IEC60068-2-68 (Sand)
IEC61215 / 61730 / 61701



I-V Curve at Different Temperature (455 W)



P-V Curve



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