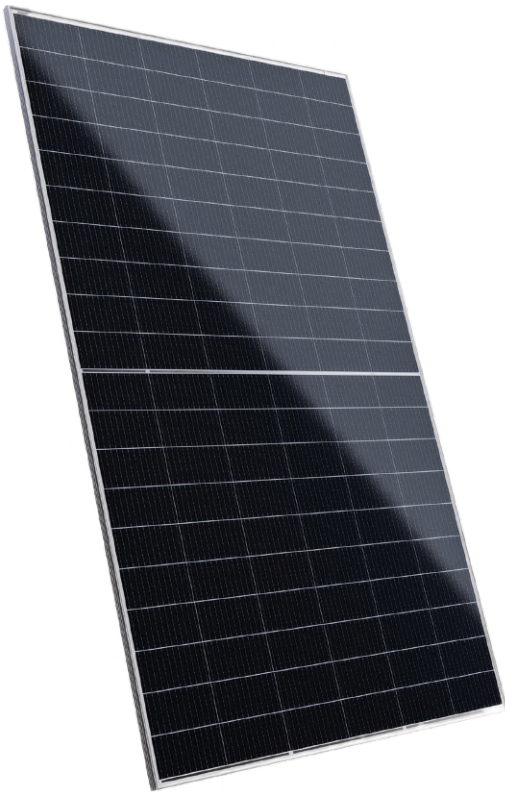


ASTORIOS

per aspera ad astra



BIFACIAL, DOUBLE GLASS PHOTOVOLTAIC MODULE

ASTR 120HCD/10 Series 450-460 Wp

HALF CUT PERC CELLS

460 Wp

MAXIMUM POWER OUTPUT

21.4%

MAXIMUM MODULE EFFICIENCY



MORE YIELD

PV modules are positive tolerance current level sorted bringing to increase in energy yield and avoiding solar panel degradation due to mismatch



HOT SPOTS RISK REDUCTION

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



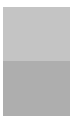
HIGH QUALITY GLASS

Additional yield and easy maintenance are provided by high transparent and self-cleaning glass



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

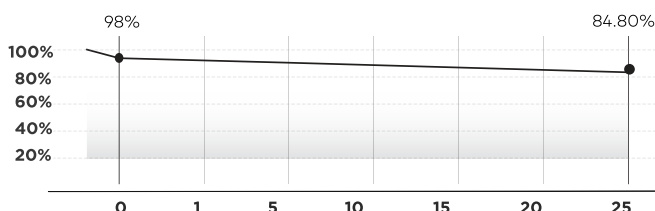
Sand blowing, ammonia and salt mist resistance tests have been passed by international standards to ensure operation in harsh conditions



SUPERIOR SAFETY AND RELIABILITY

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

PERFORMANCE



30 YEARS

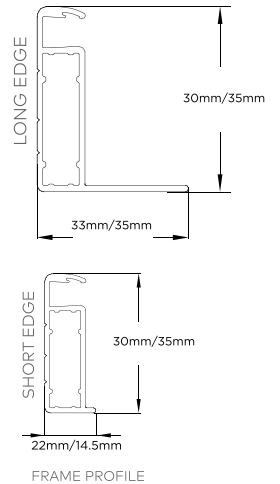
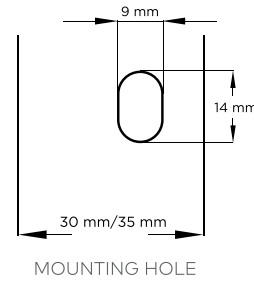
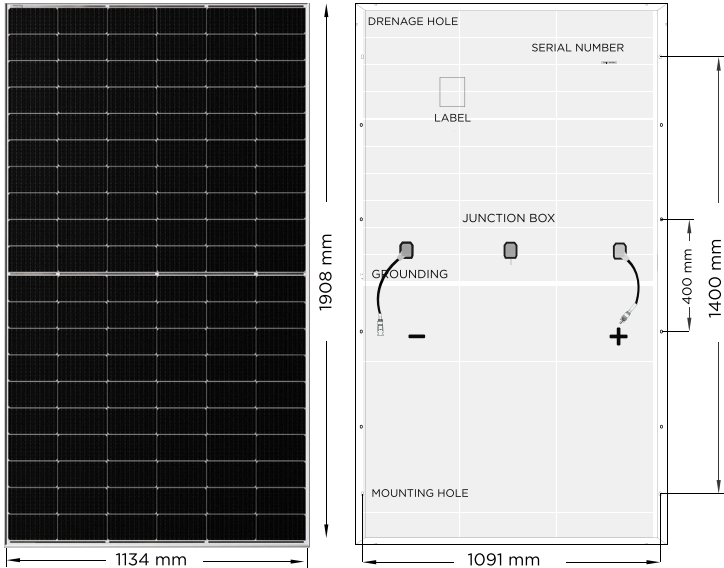
Performance Guarantee

15 YEARS

Product Warranty

ASTORIOS

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MATERIAL CHARACTERISTICS

Dimensions	1908 x 1134 x 30 mm (35 mm optional)
Weight	28.4kg (28.7kg optional)
Number of cells	120 pcs (6x20)
Glass front/back	3.2mm, High transparency, AR coated
Cell layout	Bifacial, Half Cut PERC 9BB/10BB (182 mm)
Frame	Silver color (Black optional), anodized aluminum alloy
Junction box	IP68 Rated, 3 bypass diodes
Connector type	Staubli MC4-Evo 2 / MC4 (Original)
Cable	4 mm ² , 300 mm

TEMPERATURE PARAMETERS

Temperature Coefficient of Pmax	-0.35 % / °C
Temperature Coefficient of Voc	-0.27 % / °C
Temperature Coefficient of Isc	+0.048 % / °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	20A
Uplift load (wind)	2400 Pa*
Downforce (snow)	5400 Pa*

*For more information please refer to Instruction Manual

PACKAGING INFORMATION

One pallet quantity	36 pcs (31 pcs optional)
40 ft HC/HQ container	756 pcs (744 pcs optional)

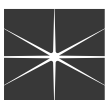
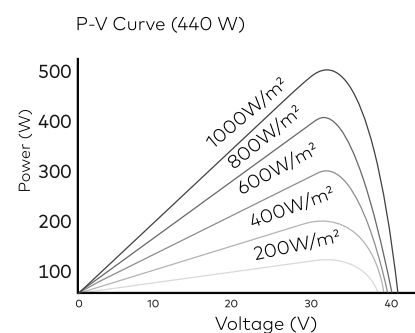
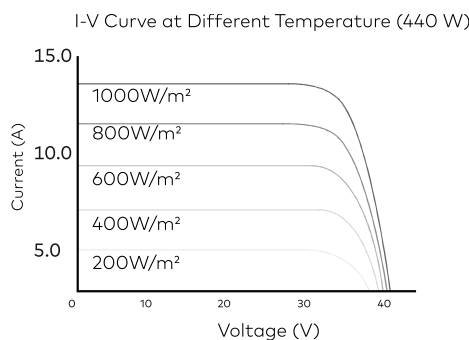
MODULE TYPE 120HCD/10	450 Wp		455 Wp		460 Wp	
	STC	NMOT	STC	NMOT	STC	NMOT
ELECTRICAL CHARACTERISTICS						
Maximum power (Pmax/Wp)	450	335	455	339	460	343
Open circuit voltage (Voc / V)	41.18	39.23	41.33	39.29	41.48	39.35
Short circuit current (Isc / A)	13.85	11.15	13.93	11.26	14.01	11.37
Maximum power voltage (Vmp / V)	33.91	31.92	34.06	31.97	34.20	32.02
Maximum power current (Imp / A)	13.27	10.49	13.36	10.60	13.45	10.70
Module efficiency at STC (ηm / %)	21.00		21.20		21.40	
Power tolerance (Pmax)			0-+3%			

NMOT: Irradiance 800 W/m², ambient temperature 20°C and wind speed 1 m/s

STC: Irradiance of 1000 W/m² with spectrum AM 1.5 and a module temperature of 25°C

CERTIFICATES

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



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