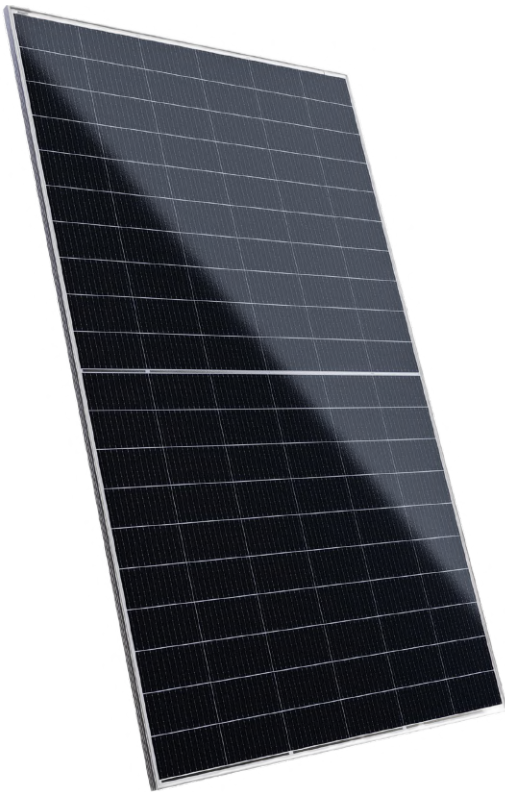


# ASTORIOS

per aspera ad astra



## BIFACIAL, DOUBLE GLASS PHOTOVOLTAIC MODULE

ASTR 120HCD/12 Series 610-620 Wp

HALF CUT PERC CELLS

**620 Wp**

MAXIMUM POWER OUTPUT

**22%**

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



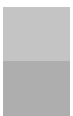
### HIGH QUALITY GLASS

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

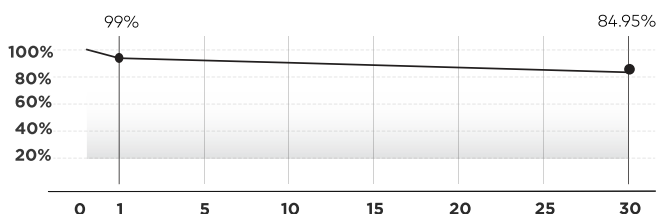
Sand blowing, ammonia and salt mist resistance tests have been passed by international standards to ensure operation in harsh conditions



### SUPERIOR SAFETY AND RELIABILITY

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

## PERFORMANCE

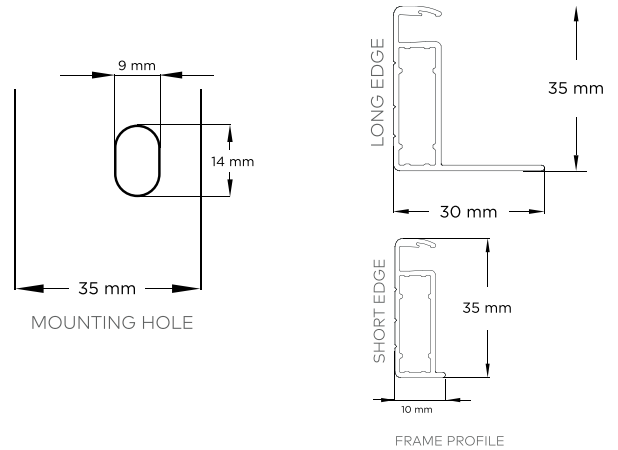
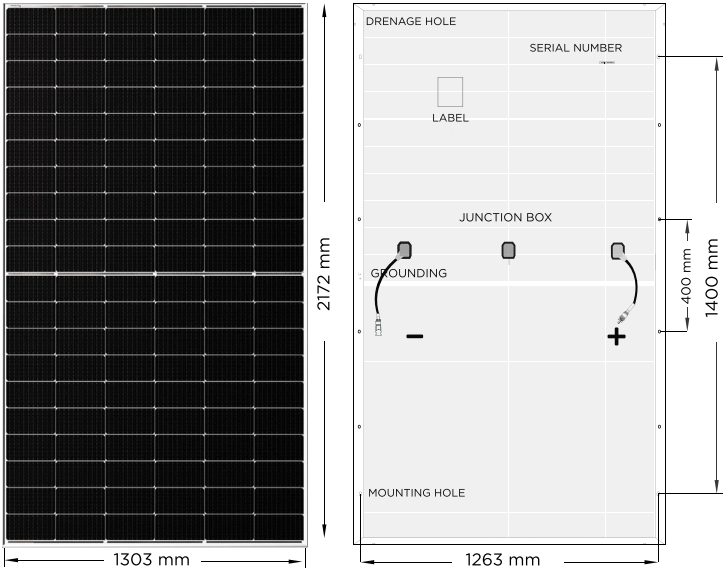


**30 YEARS**

Performance Guarantee

**15 YEARS**

Product Warranty



## MATERIAL CHARACTERISTICS

Dimensions	2172 x 1303 x 35 mm
Weight	35.3kg
Number of cells	120 pcs (6x20)
Glass front/back	2mm, High transparency, AR coated
Cell layout	Bifacial, Half Cut PERC 12BB (210 mm)
Frame	Silver color, anodized aluminum alloy
Junction box	IP68 Rated, 3 bypass diodes
Connector type	Staubli MC4-Evo 2 / MC4 (Original)
Cable	4 mm <sup>2</sup> , 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	35A
Uplift load (wind)	2400 Pa*
Downforce (snow)	5400 Pa*

\*For more information please refer to Instruction Manual

## PACKAGING INFORMATION

One pallet quantity	31 pcs
40 ft HC/HQ container	558 pcs

MODULE TYPE 120HCD/12	610 Wp		615 Wp		620 Wp	
	STC	NMOT	STC	NMOT	STC	NMOT
<b>ELECTRICAL CHARACTERISTICS</b>						
Maximum power (Pmax/Wp)	610	462	615	466	620	471
Open circuit voltage (Voc / V)	41.90	39.50	42.10	39.70	42.30	39.90
Short circuit current (Isc / A)	18.63	15.00	18.68	15.04	18.74	15.08
Maximum power voltage (Vmp / V)	34.80	32.40	35.00	32.60	35.21	32.80
Maximum power current (Imp / A)	17.52	14.26	17.56	14.30	17.61	14.33
Module efficiency at STC (ηm / %)	21.60		21.80		22.00	
Power tolerance (Pmax)			0-+3%			

NMOT: Irradiance 800 W/m<sup>2</sup>, ambient temperature 20°C and wind speed 1 m/s

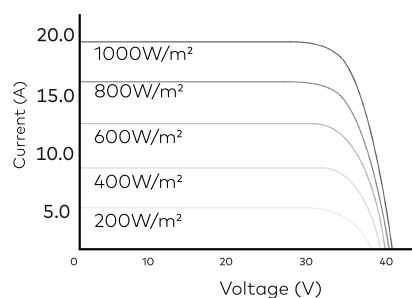
STC: Irradiance of 1000 W/m<sup>2</sup> with spectrum AM 1.5 and a module temperature of 25°C

## CERTIFICATES

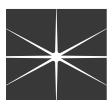
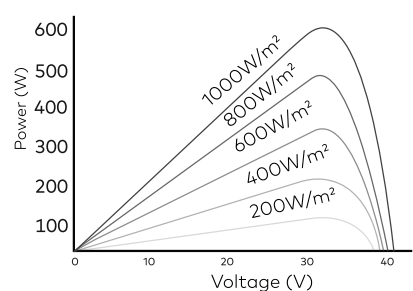
IEC62716 (Ammonia)  
IEC60068-2-68 (Sand)  
IEC61215 / 61730 / 61701



I-V Curve at Different Temperature (600 W)



P-V Curve (600 W)



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