

# ASTORIOS

per aspera ad astra

## PHOTOVOLTAIC MODULE

**BACK-CONTACT  
N-ABC MONO BIFACIAL CELLS**  
SILVER FRAME

ASTR **144HCNB/10** Series **660-670 Wp**

**670 Wp**  
MAXIMUM POWER OUTPUT

**24.80%**  
MAXIMUM MODULE EFFICIENCY



### BACK-CONTACT

Utilizes back contact technology to enhance light absorption, minimize internal current loss and deliver higher power output



### HOT SPOTS RISK REDUCTION

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



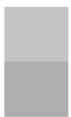
### HIGH EFFICIENCY

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



### NEGLIGIBLE LID IMPACT

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



### 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

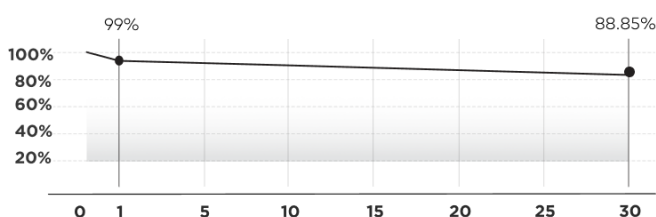
Sand blowing, ammonia and salt mist resistance tests have been passed by international standards to ensure operation in harsh conditions



### SUPERIOR SAFETY AND RELIABILITY

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

## PERFORMANCE

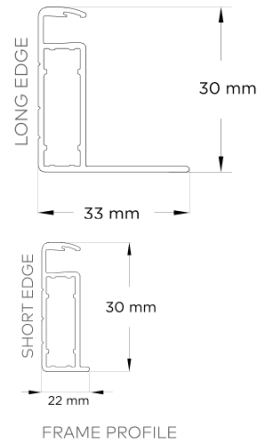
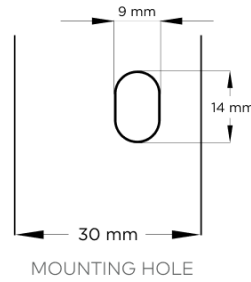
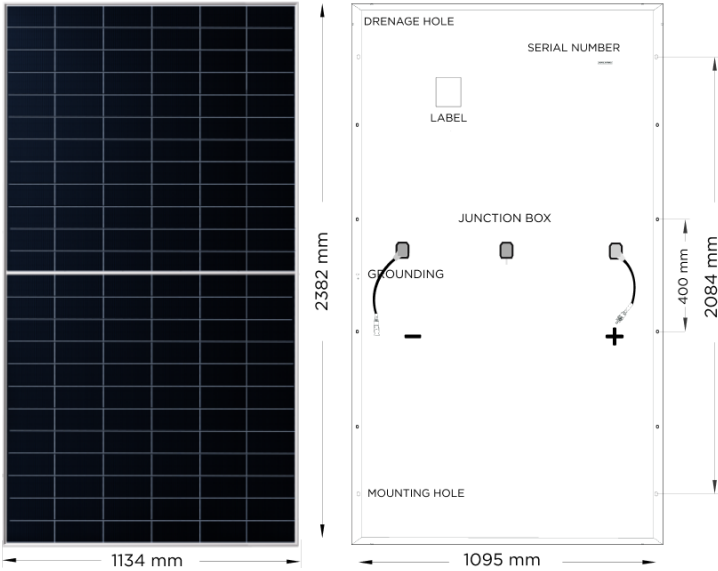


**30 YEARS**

Performance Guarantee

**20 YEARS**

Product Warranty



## MATERIAL CHARACTERISTICS

Dimensions	2382 x 1134 x 30 mm
Weight	27.6kg
Number of cells	144 pcs (96x182)
Glass	3.2mm, High transparency, AR coated
Cell layout	Bifacial, N-ABC Mono
Frame	Silver frame, 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	-0.26 % / °C
Temperature Coefficient of Voc	-0.22 % / °C
Temperature Coefficient of Isc	+0.05 % / °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

## PACKAGING INFORMATION

One pallet quantity	36 Pcs / 1034kg / 2410x1120x1247mm
40 ft HC/HQ container	576 Pcs / 36 Pallets

MODULE TYPE 144HCNB/10	660 Wp		665 Wp		670 Wp	
ELECTRICAL CHARACTERISTICS	STC	NMOT	STC	NMOT	STC	NMOT
Maximum power (Pmax/Wp)	660	507	665	511	670	515
Open circuit voltage (Voc / V)	54.10	51.72	54.23	51.86	54.36	51.92
Short circuit current (Isc / A)	15.27	12.32	15.34	12.37	15.41	12.43
Maximum power voltage (Vmp / V)	45.33	42.80	45.43	42.91	45.52	43.01
Maximum power current (Imp / A)	14.56	11.85	14.64	11.91	14.72	11.98
Module efficiency at STC (ηm / %)	24.43		24.62		24.80	
Power tolerance (Pmax)			0-+3%			

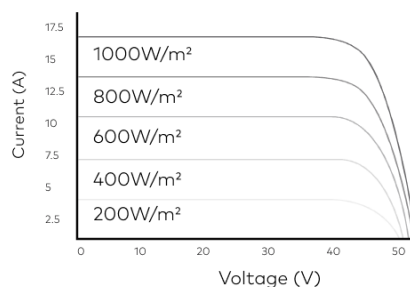
**NMOT:** Irradiance 800 W/m<sup>2</sup>, ambient temperature 20°C, wind speed 1 m/s / **STC:** Irradiance of 1000 W/m<sup>2</sup>, spectrum AM 1.5, a module temperature of 25°C

## CERTIFICATES

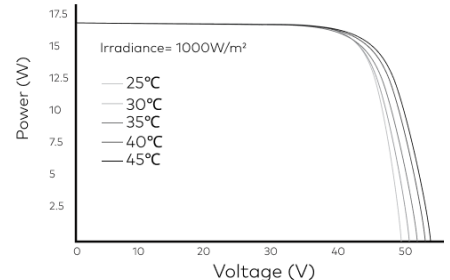
IEC62716 (Ammonia)  
IEC60068-2-68 (Sand)  
IEC61215 / 61730 / 61701



I-V Curve at Different Temperature (665 W)



P-V Curve



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