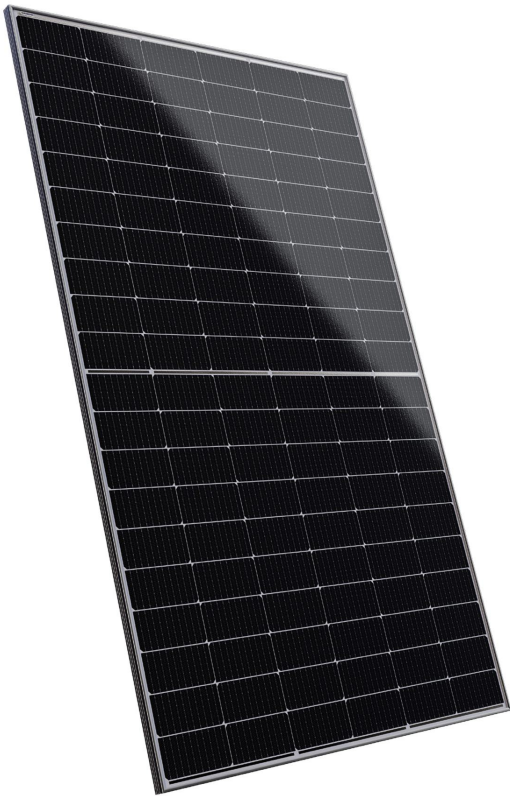


ASTORIOS

per aspera ad astra



HETEROJUNCTION BIFACIAL, DOUBLE GLASS PHOTOVOLTAIC MODULE

ASTR 120HCHD/12 Series 635-660 Wp

660Wp

MAXIMUM POWER OUTPUT

23.6%

MAXIMUM MODULE EFFICIENCY



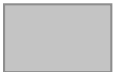
NEGLECTIBLE LID IMPACT

HJT is subject to minimal LID due to the absence of boron-oxygen complexes and superior surface passivation, enhancing stability and efficiency under sunlight exposure



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

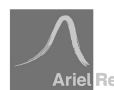
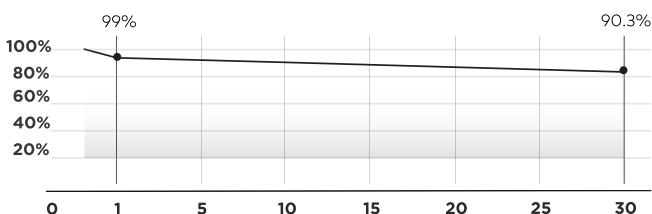
Sand blowing, ammonia and salt mist resistance tests have been passed by international standards to ensure operation in harsh conditions



SUPERIOR SAFETY AND RELIABILITY

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

PERFORMANCE



REINSURANCE COVERAGE

Reinsured for 30 years of performance guarantee by Ariel Re (Syndicate 1910 at Lloyd's)

30 YEARS

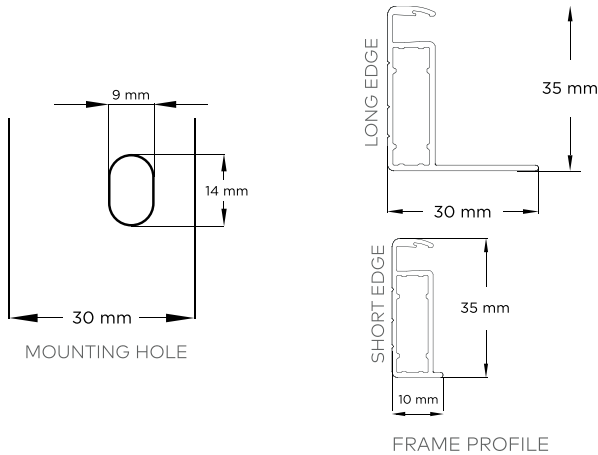
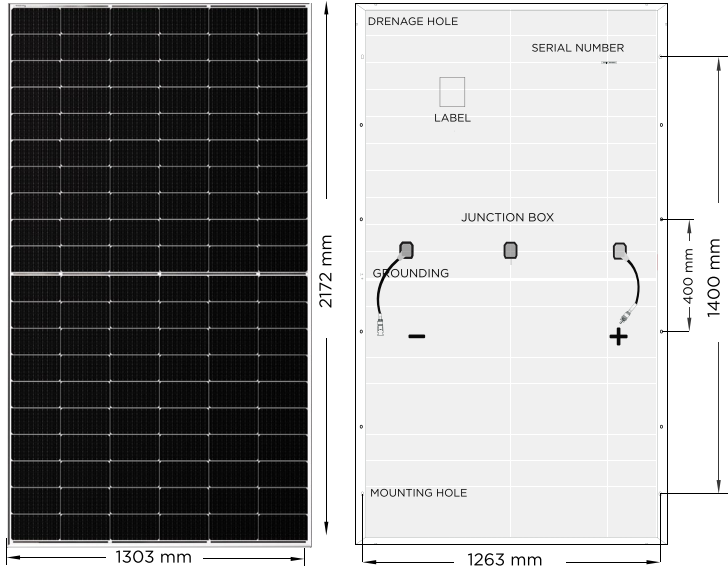
Performance Guarantee

20 YEARS

Product Warranty

ASTORIOS

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MATERIAL CHARACTERISTICS

| | |
|------------------|---------------------------------------|
| Dimensions | 2172 x 1303 x 35 mm |
| Weight | 35.3kg |
| Number of cells | 120 pcs (6x20) |
| Glass front/rear | 2mm, High transparency, AR coated |
| Cell layout | HJT Mono 18BB/20BB |
| Frame | 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 |

TEMPERATURE PARAMETERS

| | |
|--|------------------|
| Temperature Coefficient of Pmax | -0.243 % / °C |
| Temperature Coefficient of Voc | -0.223 % / °C |
| Temperature Coefficient of Isc | +0.026 % / °C |
| Operating Temperature | - 40°C to + 85°C |
| Normal Operating Cell Temperature (NOCT) | 43±2°C |

MAXIMUM RATINGS

| | |
|-------------------------|----------------|
| Max. System Voltage | 1500V DC - (H) |
| Max. Series Fuse Rating | 35A |
| Uplift load (wind) | 2400 Pa* |
| Downforce (snow) | 5400 Pa* |

PACKAGING INFORMATION

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

*For more information please refer to Instruction Manual

| MODULE TYPE 120HCHD/12 | 635 Wp | | 640 Wp | | 645 Wp | | 650 Wp | | 655 Wp | | 660 Wp | |
|-----------------------------------|--------------|-------|--------------|-------|--------------|-------|--------------|-------|--------------|-------|--------------|-------|
| | STC | NMOT | STC | NMOT | STC | NMOT | STC | NMOT | STC | NMOT | STC | NMOT |
| ELECTRICAL CHARACTERISTICS | | | | | | | | | | | | |
| Maximum power (Pmax/Wp) | 635 | 497 | 640 | 501 | 645 | 505 | 650 | 509 | 655 | 513 | 660 | 517 |
| Open circuit voltage (Voc / V) | 44.70 | 41.25 | 44.76 | 41.50 | 44.82 | 41.75 | 44.88 | 42.00 | 44.94 | 42.25 | 45.00 | 42.50 |
| Short circuit current (Isc / A) | 17.27 | 15.05 | 17.33 | 15.10 | 17.42 | 15.15 | 17.53 | 15.20 | 17.64 | 15.25 | 17.75 | 15.30 |
| Maximum power voltage (Vmp / V) | 39.31 | 35.94 | 39.37 | 36.14 | 39.48 | 36.34 | 39.60 | 36.54 | 39.72 | 36.74 | 39.84 | 36.94 |
| Maximum power current (Imp / A) | 16.17 | 13.83 | 16.27 | 13.87 | 16.34 | 13.90 | 16.42 | 13.93 | 16.50 | 13.97 | 16.58 | 14.00 |
| Module efficiency at STC (ηm / %) | 22.60 | | 22.80 | | 23.00 | | 23.20 | | 23.40 | | 23.60 | |
| 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

