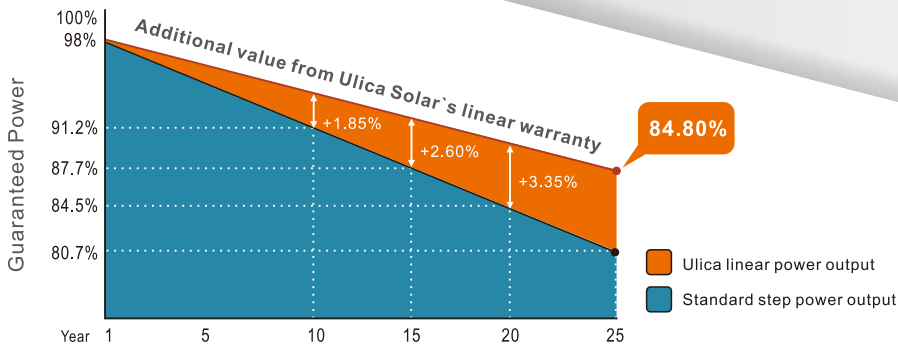
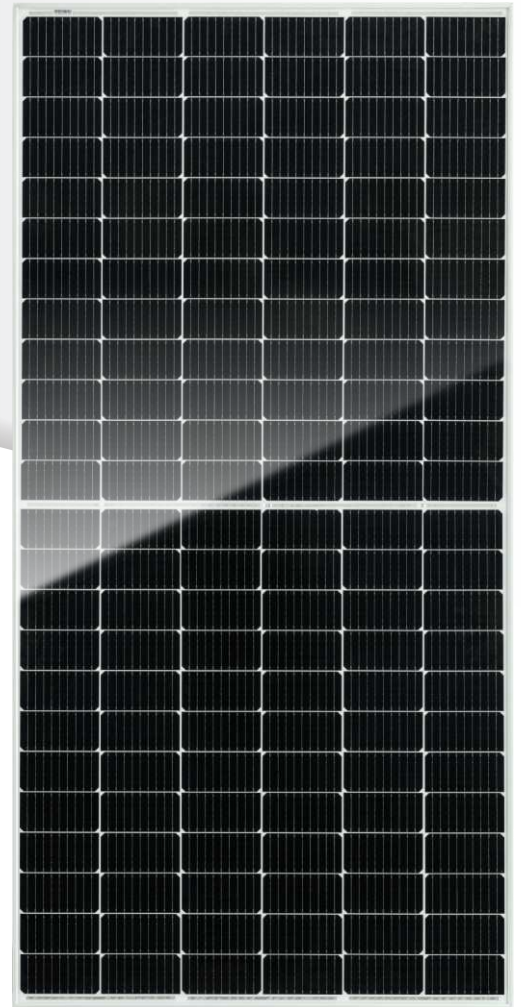


MONO HALF-CUT MODULE

UL-450 | 455 | 460M-144HV

450W-460W 1500V MBB 166mm cell



Global Tier 1 brand as announced by Bloomberg NEF



Lower LCOE
Lower shading and resistive loss
Lower temperature coefficient



Outstanding mechanical load resistance
3800 Pa wind load, 5400 Pa snow load



Anti-PID (potential induced degradation)
Passed anti-PID test under 85% damp heat, 85% relative humidity for 96 hours



Great Durability against extreme conditions
Passed salt mist corrosion test, ammonia corrosion test, dust & sand test, fire test, all certified by TUV



About Ulica Solar: As member of Shanshan Group (stock code: 600884) which is TOP500 Enterprise in China, Ulica Solar is the leading manufacturer of solar cells and solar panels in China since 2005, and has been continuously listed as the Tier 1 PV Module Manufacturer from Q1 2020 by Bloomberg NEF, with the annual capacity of 3GW, and own investment projects of 300MW.

MONO UL-450 | 455 | 460M-144HV



ELECTRICAL PERFORMANCE

Electrical Parameters Standard Test Conditions

| Module Type | UL-450M-144HV | | | UL-455M-144HV | UL-460M-144HV |
|-----------------------------|-------------------|---|-------|---------------|---------------|
| Power Output | P _{max} | W | 450 | 455 | 460 |
| Power Tolerance | ΔP _{max} | W | 0/+5W | | |
| Module Efficiency | η _m | % | 20.70 | 20.93 | 21.16 |
| Voltage at P _{max} | V _m | V | 41.0 | 41.1 | 41.2 |
| Current at P _{max} | I _m | A | 10.98 | 11.07 | 11.17 |
| Open-Circuit Voltage | V _{oc} | V | 49.8 | 49.9 | 50.0 |
| Short-Circuit Current | I _{sc} | A | 11.55 | 11.64 | 11.74 |

STC:1000W/m² irradiance,25C module temperature,AM1.5

THERMAL CHARACTERISTICS

| | | | |
|---------------------------------------------|------------------|------|--------|
| Nominal Operating Cell Temperature | NOCT | °C | 43±2 |
| Temperature Coefficient of P _{max} | γ | %/°C | -0.340 |
| Temperature Coefficient of V _{oc} | β _{voc} | %/°C | -0.290 |
| Temperature Coefficient of I _{sc} | α _{isc} | %/°C | +0.049 |

OPERATING CONDITIONS

| | |
|-----------------------------|------------|
| Max.System Voltage | DC1500V |
| Max.Series Fuse Rating | 20A |
| Operating Temperature Range | -40°C~85°C |
| Max static snow load | 5400Pa |
| Max static wind load | 3800Pa |
| Application Class | A |

CONSTRUCTION MATERIALS

| | |
|----------------------------------------|---------------------------------------------------------------------------------------|
| Front Cover(material/type/thickness) | low-iron tempered glass/3.2mm |
| Cell(quantity/material/type/dimension) | 144/monocrystalline/166X83mm |
| Encapsulant(material) | ethylene vinyl acetate(EVA) |
| Frame(material/anodization color) | anodized aluminum alloy/silver or black |
| Junction Box(protection degree) | IP68 |
| Cable(length/cross-sectionalarea) | 4mm ² Landscape: (+) 1300mm/(-)1300 mm Portrait: (+)400 mm/(-) 200mm |
| Plug Connector | MC4 compatible |

GENERAL CHARACTERISTICS

| | |
|------------------|----------------|
| Dimension(L/W/H) | 2094/1038/35mm |
| Weight | 23.3kg |

PACKING CONFIGURATION

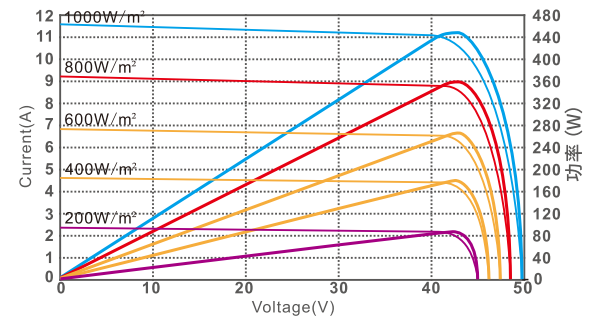
| | |
|----------------------|------------------|
| Pallet Size(L/W/H) | 2134/1130/2350mm |
| Pallet Weight | 1526kg |
| Pieces per Pallet | 62pcs |
| Pieces per Container | 682pcs |

INTERNATIONAL CERTIFICATES

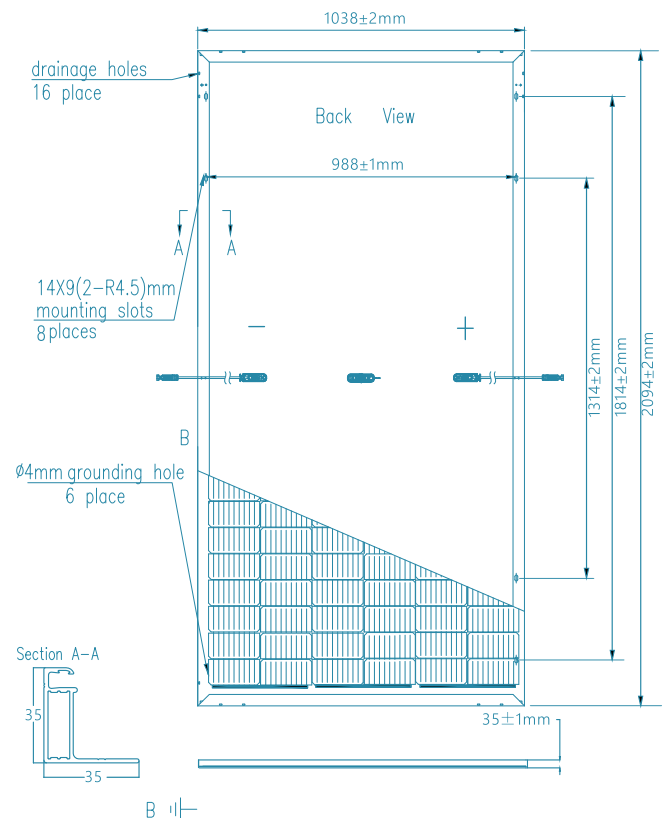
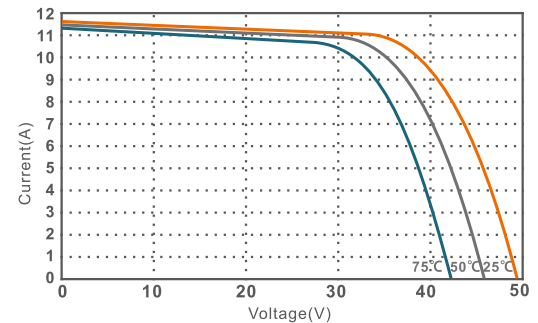
- IEC 61215, IEC 61730
- ISO 9001: 2015(Quality management systems)
- ISO 14001: 2015 (Environmental management systems)
- ISO 45001: 2018 (Occupational health and safety)
- UNI 9177 Ia CLASSE DI REAZIONE AL FUOCO:1

I-V CURVE

I-V characteristics at different irradiances



I-V characteristics at different temperature



Please read the instruction entirely before handling, installing and operating Ulica Solar modules.

Due to continuous research and development, the specification is subject to change without prior notice.