

Mono

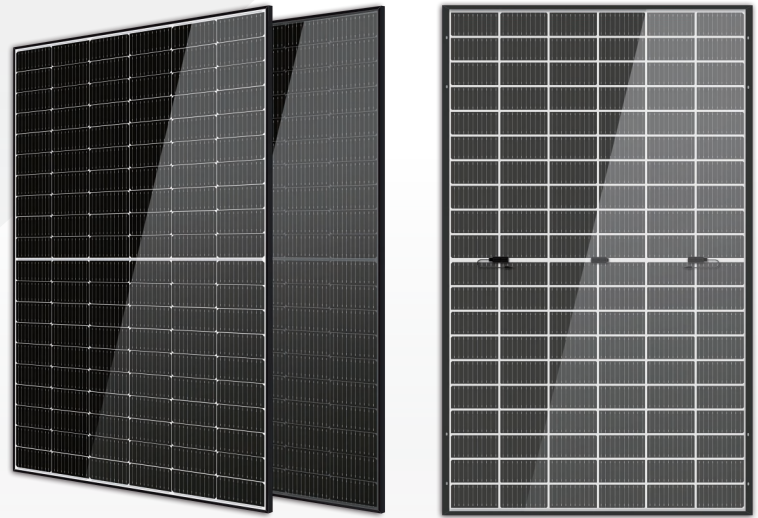
Bifacial

HORAY

Solar Ocean

450-470 Watt MONO-BIFACIAL MODULE

- IEC61215: 2021
- IEC61730: 2016
- TUV Rheinland Standard
- Lloyd'S Ariel Re
- Solar Performance Insurance
- ISO9001: 2015
- Quality Management System
- ISO14001:
- Environmental Management System
- CE: Europe Standard
- Inmetro Certificate
- Japan JP-AC



KEY FEATURES



9BB/10BB/11BB Cell

More uniform current collection capability, reducing the current heat loss of the internal cells.



Low Light Features

Higher performance under low light environment.



Higher Output Power

The output power of 120 half-cells Monocrystalline modules is up to 470W.



PID Protection

Ensure the attenuation probability caused by PID phenomenon is minimized.



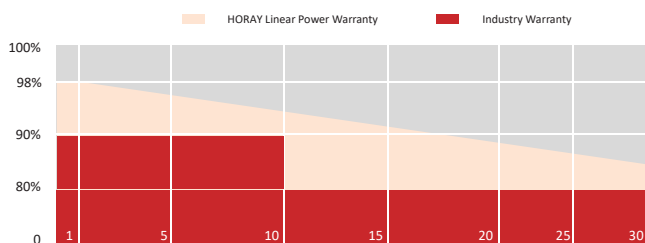
Harsh Environmental Adaptability

Strict salt spray and ammonia corrosion test by the third party.



Load Capacity

Mechanical load tests including wind load 2400 Pa and snow load 5400 Pa.



HEADQUARTER: HORAY SOLAR CO., LTD.

GLOBAL MARKETING AND SERVICE: HORAY SOLAR GMBH

✉ sales@horaysolar.com 🌐 www.horaysolar.com ☎ +86-510 83580688
 📍 NO.30-5, East Yanxin Road, Huishan District, Wuxi 214177 Jiangsu P.R China

✉ info@horaysolar.com 🌐 www.horaysolar.com
 📍 Robert-Bosch-Str. 29, Langen, Frankfurt am Main, Germany

SPECIFICATIONS

| | |
|-------------------------|---|
| Weight | 28.0kg |
| Dimension | 1909mm*1134mm*35mm |
| Cell Dimension | 182*91mm |
| Cell Amount | 60*2 pcs |
| Maximum System Voltage | 1500V |
| Junction Box | IP68 |
| Type of the front glass | 2.0mm Coated ultra clear glass |
| Type of the back glass | 2.0mm Heat-strengthened glass |
| Frame | Aluminum Alloy |
| Cable | 4mm ² ,+300,-300mm/±1100mm Length can be customized |
| Connector | MC4 compatible |
| Application Level | Class A |

ELECTRICAL PARAMETERS AT STC

| Module Type | HS450-MHO-D | HS455-MHO-D | HS460-MHO-D | HS465-MHO-D | HS470-MHO-D |
|-----------------------|-------------|-------------|-------------|-------------|-------------|
| Power | 450W | 455W | 460W | 465W | 470W |
| Open Circuit Voltage | 41.40V | 41.60V | 41.80V | 42.00V | 42.20V |
| Short Circuit Current | 13.68A | 13.73A | 13.78A | 13.84A | 13.90A |
| Maximum Power Voltage | 34.60V | 34.80V | 35.00V | 35.20V | 35.40V |
| Maximum Power Current | 13.01A | 13.08A | 13.15A | 13.21A | 13.28A |
| Module Efficiency | 20.79% | 21.02% | 21.25% | 21.48% | 21.71% |

* Under Standard Test Conditions (STC) of irradiance of 1000 W/m², spectrum AM 1.5 and cell temperature of 25°C.

ELECTRICAL PARAMETERS AT BNPI

| | | | | | |
|-----------------------|--------|--------|--------|--------|--------|
| Power | 493W | 498W | 504W | 509W | 515W |
| Open Circuit Voltage | 41.40V | 41.60V | 41.80V | 42.00V | 42.20V |
| Short Circuit Current | 14.88A | 14.97A | 15.06A | 15.15A | 15.24A |
| Maximum Power Voltage | 34.60V | 34.80V | 35.00V | 35.20V | 35.40V |
| Maximum Power Current | 14.24A | 14.32A | 14.39A | 14.47A | 14.54A |

*Rear side power gain: The additional gain from the rear side compared to the power of the front side at the standard test condition. It depends on mounting (structure,height,tilt angle etc.)and albedo of the ground.

ELECTRICAL PARAMETERS AT NMOT

| | | | | | |
|-----------------------|--------|--------|---|--------|--------|
| Power | 340W | 344W | 348W | 352W | 356W |
| Open Circuit Voltage | 39.20V | 39.45V | 39.70V | 39.97V | 40.21V |
| Short Circuit Current | 10.94A | 10.98A | 11.02A | 11.06A | 11.10A |
| Maximum Power Voltage | 32.67V | 32.87V | 33.08V | 33.31V | 33.51V |
| Maximum Power Current | 10.41A | 10.46A | 10.52A </td <td>10.57A</td> <td>10.62A</td> | 10.57A | 10.62A |
| Module Efficiency | 15.71% | 15.89% | 16.08% | 16.26% | 16.44% |

* Under Nominal Module Operating Temperature (NMOT), irradiance of 800 W/m², spectrum AM 1.5, ambient temperature 20°C, wind speed 1 m/s.

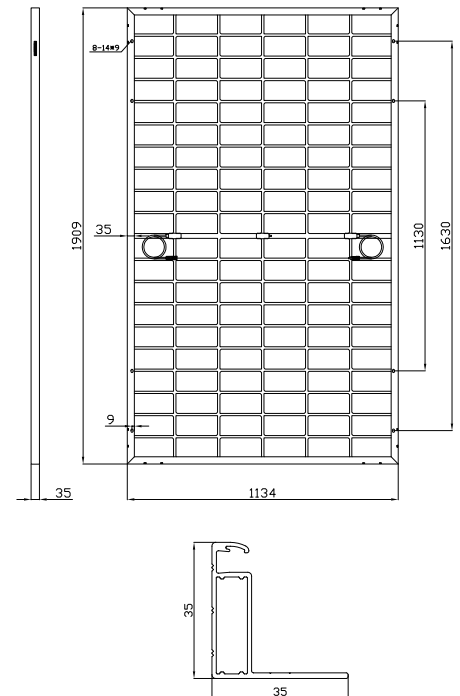
TEMPERATURE CHARACTERISTICS

| | |
|--------------------------|-----------|
| NMOT | 45±2°C |
| Temp Coefficient of ISC | +0.05%/°C |
| Temp Coefficient of VOC | -0.28%/°C |
| Temp Coefficient of Pmax | -0.34%/°C |

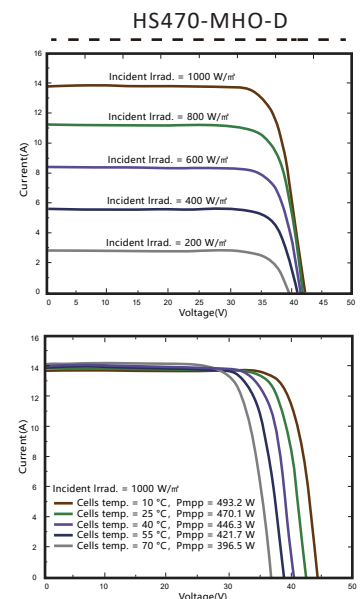
PACKING CONFIGURATION

| | |
|-----------------------|---|
| Modules/Pallet | 31 Pieces |
| Packaging Description | 24 Pallets, Total=(31+31)x12=744 Pieces |
| Modules/40' Container | 744 Pieces |

MECHANICAL DIAGRAMS



IV CHARACTERISTICS



MAXIMUM RATING

| | |
|-----------------------------|---------------|
| Power selection | 0~+5W |
| Measuring uncertainty of Pm | 0~±3% |
| Operating Temperature | -40°C~+85°C |
| Wind Load/Snow Load | 2400pa/5400pa |
| Fuse Current | 25A |

15
YEARS

Quality
Warranty

30
YEARS

Power
Warranty

CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.

©2023 Horay Solar Co.,Ltd. All rights reserved. Specifications included in this datasheet are subject to change without notice.

Version number: MHO_D_EN_2024_A