

Mono

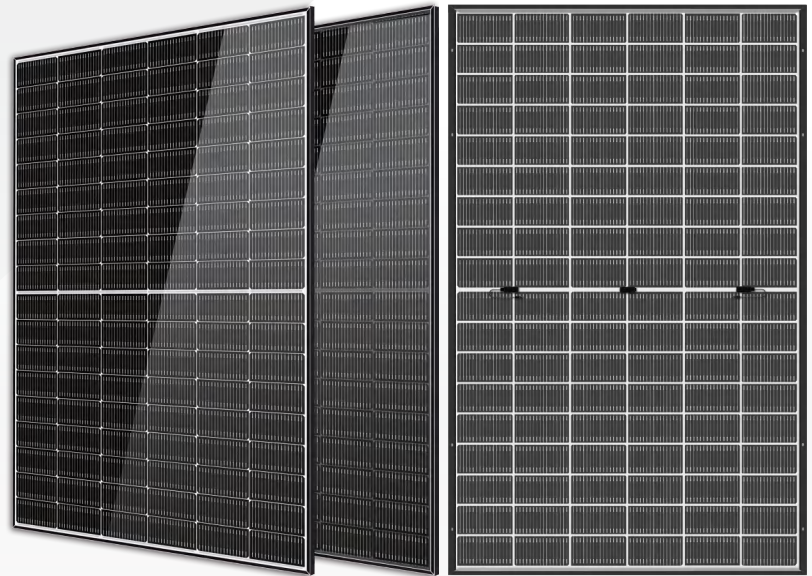
Bifacial

# HORAY

## Solar Ocean

### 455-475 Watt N-Type MONO-BIFACIAL MODULE

- IEC61215: 2021
- IEC61730: 2023
- 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
- China Quality Certification Centre
- Solar product certification



#### KEY FEATURES



##### SMBB 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 108 half-cells Monocrystalline modules is up to 475W.



##### LID Free

N-type solar cell has no LID naturally which can increase power generation.



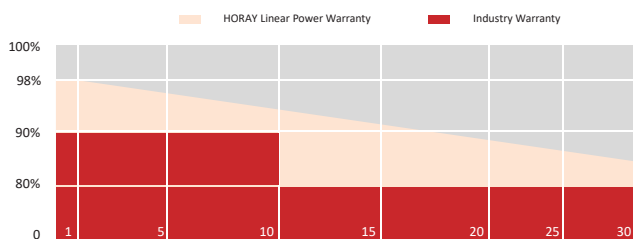
##### Harsh Environmental Adaptability

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.



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## SPECIFICATIONS

Weight	25.0kg
Dimension	1800mm*1134mm*30mm
Cell Dimension	182.2*95.8mm
Cell Amount	54*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 <sup>2</sup> ,+300,-300mm;Length can be customized
Connector	MC4 compatible
Application Level	Class A

## ELECTRICAL PARAMETERS AT STC

Module Type	HS455TC-MHB-D	HS460TC-MHB-D	HS465TC-MHB-D	HS470TC-MHB-D	HS475TC-MHB-D
Power	455W	460W	465W	470W	475W
Open Circuit Voltage	38.90V	39.08V	39.26V	39.31V	39.61V
Short Circuit Current	14.68A	14.78A	14.87A	15.01A	15.06A
Maximum Power Voltage	33.00V	33.15V	33.30V	33.35V	33.60V
Maximum Power Current	13.79A	13.88A	13.96A	14.10A	14.14A
Module Efficiency	22.29%	22.54%	22.78%	23.03%	23.27%

\* Under Standard Test Conditions (STC) of irradiance of 1000 W/m<sup>2</sup>, spectrum AM 1.5 and cell temperature of 25°C.

## ELECTRICAL PARAMETERS AT BNPI

Power	501W	506W	512W	517W	523W
Open Circuit Voltage	38.90V	39.08V	39.26V	39.31V	39.61V
Short Circuit Current	16.15A	16.26A	16.36A	16.51A	16.56A
Maximum Power Voltage	33.00V	33.15V	33.30V	33.35V	33.60V
Maximum Power Current	15.17A	15.26A	15.36A	15.50A	15.55A

\*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	381W	386W	390W	394W	398W
Open Circuit Voltage	38.90V	39.08V	39.26V	39.31V	39.61V
Short Circuit Current	11.19A	11.26A	11.33A	11.44A	11.47A
Maximum Power Voltage	33.00V	33.15V	33.30V	33.35V	33.60V
Maximum Power Current	10.51A	10.57A	10.64A	10.74A	10.77A

\* Under Nominal Module Operating Temperature (NMOT), irradiance of 800 W/m<sup>2</sup>, spectrum AM 1.5, ambient temperature 20°C, wind speed 1 m/s.

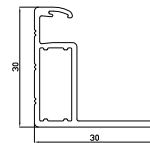
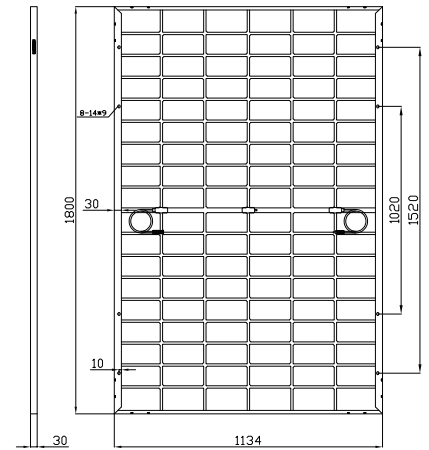
## TEMPERATURE CHARACTERISTICS

NMOT	45±2°C
Temp Coefficient of ISC	+0.04%/°C
Temp Coefficient of VOC	-0.23%/°C
Temp Coefficient of Pmax	-0.28%/°C

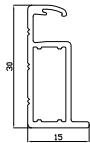
## PACKING CONFIGURATION

Modules/Pallet	37 Pieces
Packaging Description	24 Pallets, Total=(37+37)x12=888 Pieces
Modules/40' Container	888 Pieces

## MECHANICAL DIAGRAMS

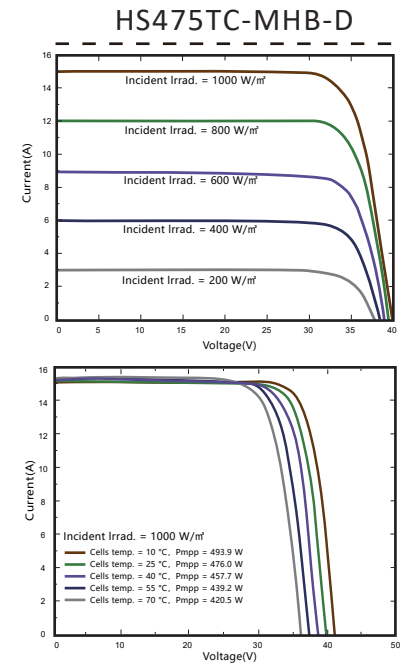


Section diagram of long frame profile



Section diagram of short frame profile

## 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	30A

15 YEARS

Quality Warranty

30 YEARS

Power Warranty

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

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