

Mono

Bifacial

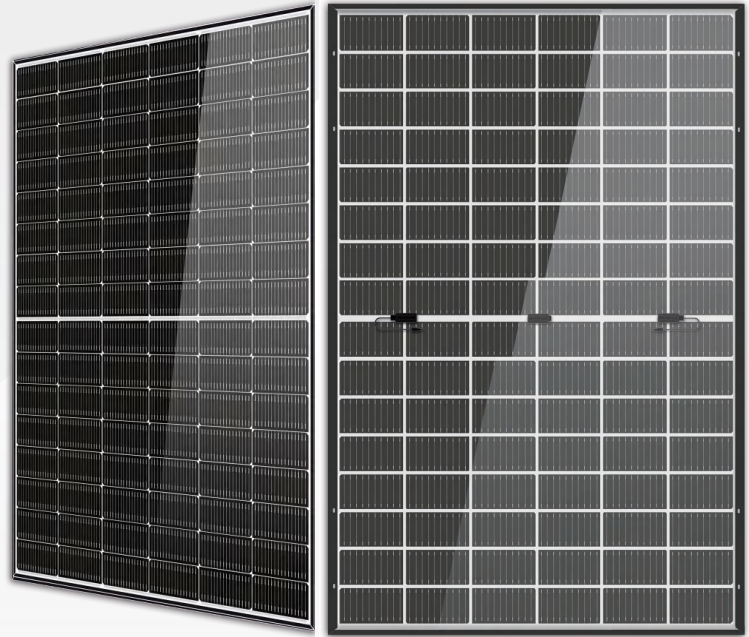
# HORAY

## Solar Ocean

### 430-450 Watt N-Type

#### 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



##### 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 96 half-cells Monocrystalline modules is up to 450W.



##### LID Free

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



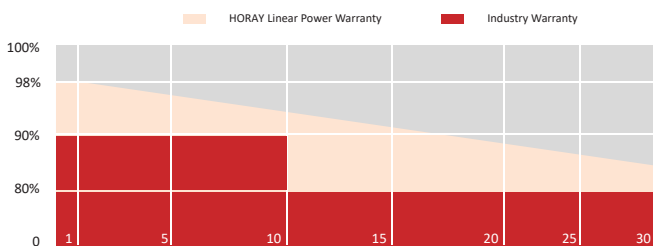
##### Harsh Environmental Adaptability

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.



HEADQUARTER: HORAY SOLAR CO., LTD.

GLOBAL MARKETING AND SERVICE: HORAY SOLAR GMBH

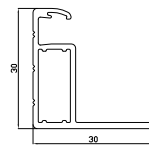
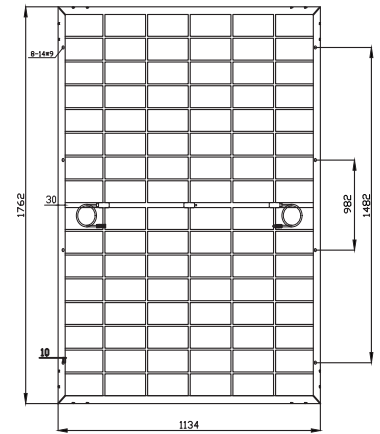
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## SPECIFICATIONS

Weight	24.5kg
Dimension	1762mm*1134mm*30mm
Cell Dimension	182*105mm
Cell Amount	48*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

## MECHANICAL DIAGRAMS



## ELECTRICAL PARAMETERS AT STC

Module Type	HS430TC-MHC-D	HS435TC-MHC-D	HS440TC-MHC-D	HS445TC-MHC-D	HS450TC-MHC-D
Power	430W	435W	440W	445W	450W
Open Circuit Voltage	34.50V	34.60V	34.75V	34.90V	35.05V
Short Circuit Current	13.96A	13.98A	14.01A	14.04A	14.15A
Maximum Power Voltage	31.81V	31.86V	31.90V	31.92V	31.95V
Maximum Power Current	13.53A	13.64A	13.78A	13.95A	14.09A
Module Efficiency	21.54%	21.75%	22.00%	22.29%	22.53%

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

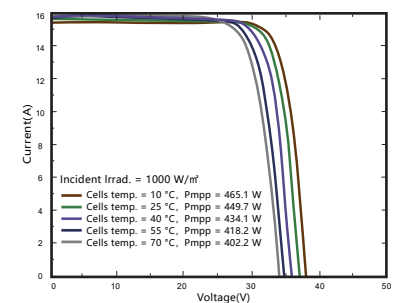
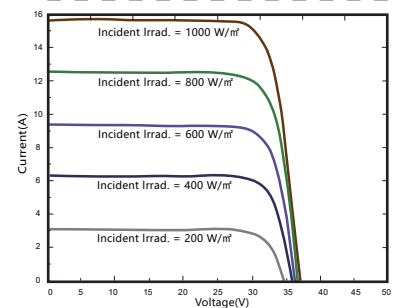
## CHARACTERISTICS

### ELECTRICAL PARAMETERS AT BNPI

Power	473W	478W	483W	490W	495W
Open Circuit Voltage	34.50V	34.60V	34.75V	34.90V	35.05V
Short Circuit Current	15.50A	15.52A	15.55A	15.58A	15.71A
Maximum Power Voltage	31.81V	31.86V	31.90V	31.92V	31.95V
Maximum Power Current	14.88A	15.00A	15.16A	15.35A	15.50A

\*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.

### HS450TC-MHC-D



### ELECTRICAL PARAMETERS AT NMOT

Power	328W	331W	335W	339W	343W
Open Circuit Voltage	34.50V	34.60V	34.75V	34.90V	35.05V
Short Circuit Current	10.64A	10.65A	10.68A	10.70A	10.78A
Maximum Power Voltage	31.81V	31.86V	31.90V	31.92V	31.95V
Maximum Power Current	10.31A	10.39A	10.50A	10.63A	10.74A

\* 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	+0.05%/°C
Temp Coefficient of VOC	-0.28%/°C
Temp Coefficient of Pmax	-0.34%/°C

## PACKING CONFIGURATION

Modules/Pallet	37 Pieces
Packaging Description	26 Pallets, Total=(37+37)x13=962 Pieces
Modules/40' Container	962 Pieces

## 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

**30 YEARS** Quality Warranty

**30 YEARS** Power Warranty