

455W

HORAY



HS 186R-108 TC Alpine N-type Mono-facial Modules



SMBB Half-Cell Technology

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



Higher Output Power

The output power of 108 half-cells monocrystalline modules is up to 455W.



Low Light Features

Higher performance under low light environment.



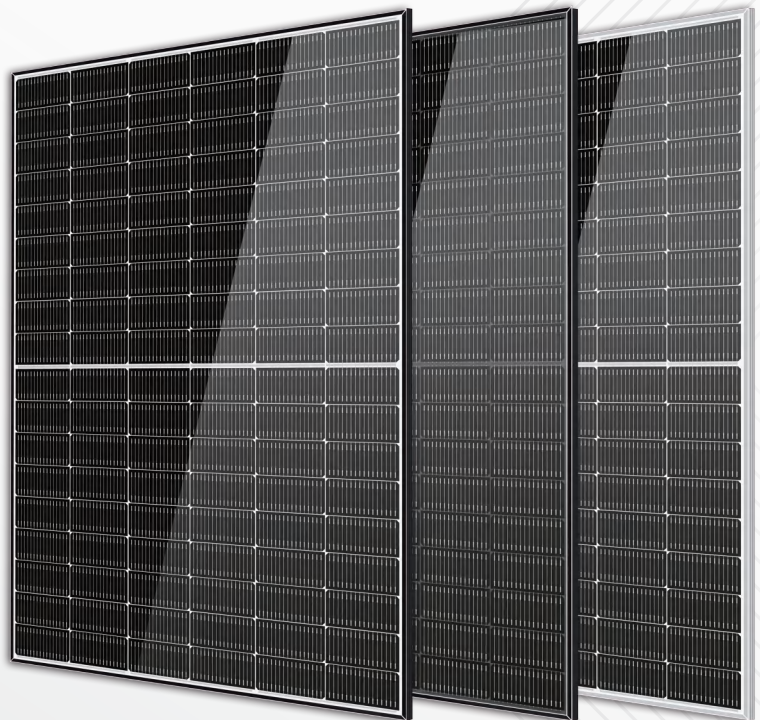
Harsh Environmental Adaptability

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



N-type With Very Low LID

N-type solar cell has very low LID naturally which can reduce power degradation.



IEC61215:2021

IEC61730:2023

ISO9001:2015 Quality Management System

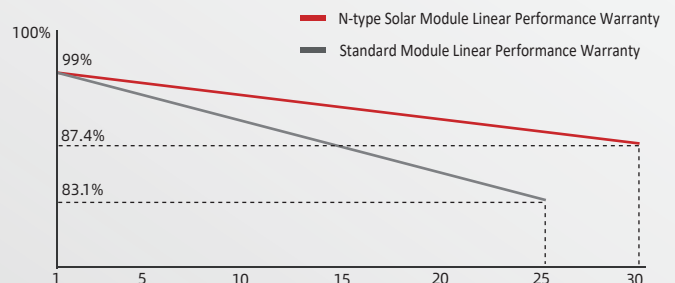
ISO14001:2015 Environmental Management System

IOS45001:2018 Occupational Health and Safety Management System

CE: Europe Standard

China Quality Certification Centre

Solar Product Certification



12-year product warranty



30-year linear power output warranty

HEADQUARTER: HORAY SOLAR CO., LTD.

GLOBAL MARKETING AND SERVICE: HORAY SOLAR GMBH

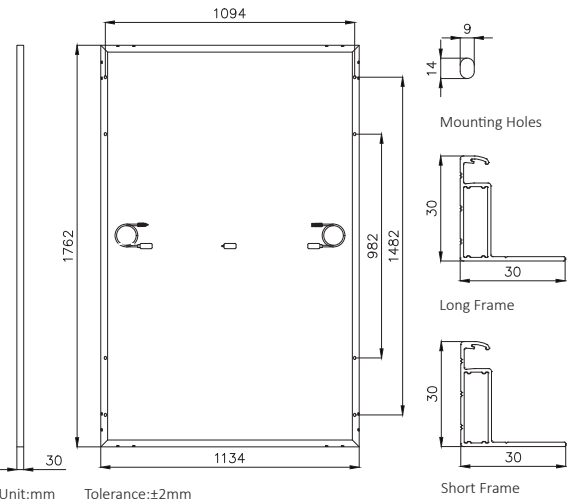
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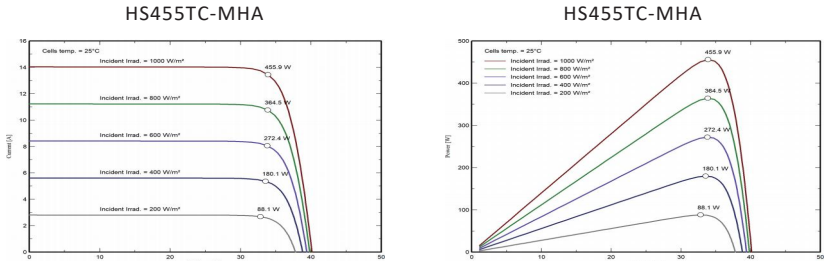
MECHANICAL DIAGRAMS



MECHANICAL PARAMETERS

Weight	20.5kg
Dimension	1762×1134×30mm
Cell Orientation	108 (6×18)
Junction Box	IP68, three diodes
Output Cable	4mm ² ,±300mm (length can be customized)
Connector	MC4 compatible
Glass	3.2mm AR coated heat strengthened glass
Frame	Anodized aluminum alloy frame
Packaging	37pcs per pallet/962pcs per 40'HC

MECHANICAL PARAMETERS



ELECTRICAL CHARACTERISTICS AT STC

Module Type	HS435TC-MHA	HS440TC-MHA	HS445TC-MHA	HS450TC-MHA	HS455TC-MHA
Testing Condition	STC	STC	STC	STC	STC
Maximum Power(Pmax/W)	435	440	445	450	455
Open Circuit Voltage(Voc/V)	39.36	39.57	39.77	39.97	40.14
Short Circuit Current(Isc/A)	13.72	13.80	13.87	13.94	14.03
Maximum Power Voltage(Vmp/V)	32.78	32.99	33.19	33.39	33.53
Maximum Power Current(Imp/A)	13.27	13.34	13.41	13.48	13.57
Module Efficiency(%)	21.8	22.0	22.3	22.5	22.8

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

ELECTRICAL CHARACTERISTICS AT NMOT

Module Type	HS435TC-MHA	HS440TC-MHA	HS445TC-MHA	HS450TC-MHA	HS455TC-MHA
Testing Condition	NMOT	NMOT	NMOT	NMOT	NMOT
Maximum Power(Pmax/W)	331	335	339	343	347
Open Circuit Voltage(Voc/V)	39.36	39.57	39.77	39.97	40.14
Short Circuit Current(Isc/A)	10.45	10.52	10.57	10.62	10.69
Maximum Power Voltage(Vmp/V)	32.78	32.99	33.19	33.39	33.53
Maximum Power Current(Imp/A)	10.11	10.17	10.22	10.27	10.34

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

OPERATING PARAMETERS

Operational Temperature	-40°C~+85°C
Power Output Tolerance	0~3%
Maximum System Voltage	1500V
Maximum Series Fuse Rating	25A
Nominal Operating Cell Temperature	45±2°C
Protection Class	Class II
Fire Rating	IEC Class C

*The actual test value may be slightly deviated from the technical parameters due to the difference in test methods.

MECHANICAL LOADING

Front Side Maximum Static Loading	5400Pa
Rear Side Maximum Static Loading	2400Pa
Hailstone Test	25mm Hailstone at the speed of 23m/s

TEMPERATURE RATINGS (STC)

Temperature Coefficient of Isc	+0.04%/°C
Temperature Coefficient of Voc	-0.23%/°C
Temperature Coefficient of Pmax	-0.28%/°C



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