

440~465 Watt

HORAY



HS 210R-96 TC-D Cosmos N-type Bifacial 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 96 half-cells monocrystalline modules is up to 465W.



Low Light Features

Higher performance under low light environment.



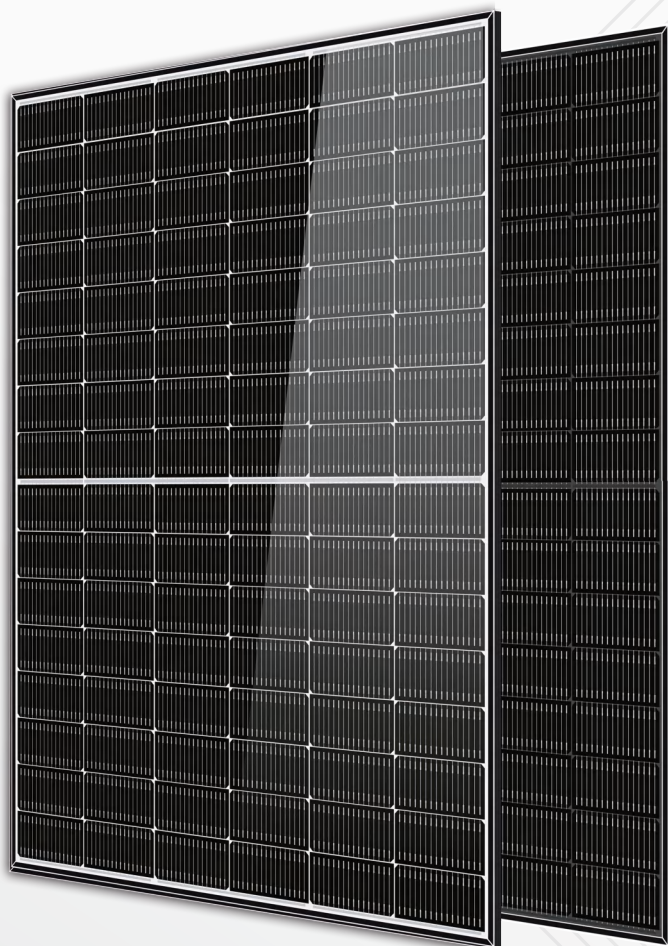
Ideal Choice For Utility Project

Lower BOS cost, lower LCOE, and improved ROI.



N-type With Very Low LID

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



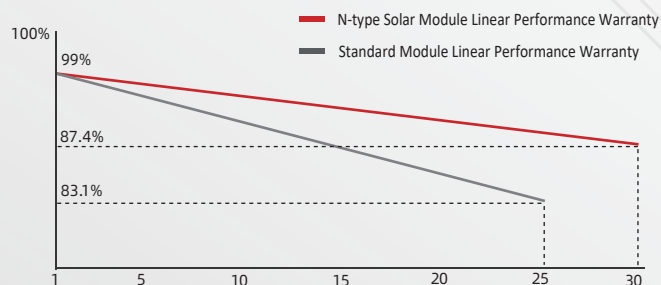
IEC61215:2021

IEC61730:2023

ISO9001:2015 Quality Management System

ISO14001:2015 Environmental Management System

ISO45001:2018 Occupational Health and Safety Management System



15-year product warranty



30-year linear power output warranty

*Note: The power warranty is only applied for front side under STC.

Manufacturer: HORAY SOLAR CO., LTD. (Made in CHINA)

Australian importer: Fastfish Service Pty Ltd

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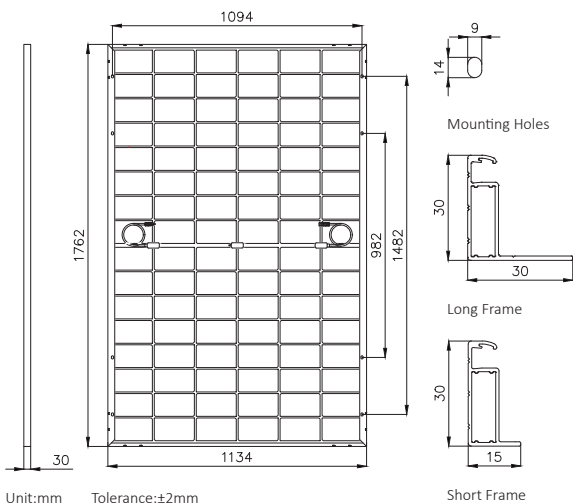
Web: www.horaysolar.com

Address: Unit2 138-140 ashley street, Underdale SA 5032

E-mail: info@fastfish.com.au Tel: +61452098655

Web: www.fastfish.com.au

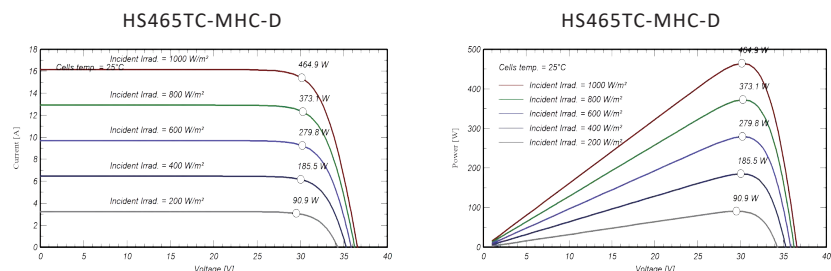
MECHANICAL DIAGRAMS



MECHANICAL PARAMETERS

Weight	24.5kg
Dimension	1762×1134×30mm
Cell Orientation	96 (6×16)
Junction Box	IP68, three diodes
Output Cable	4mm ² ,±1100mm (length can be customized)
Connector	WIN02 from Ningbo Win Solar Technology Co., Ltd.
Glass	2.0+2.0mm AR coated heat strengthened glass
Frame	Anodized aluminum alloy frame
Packaging	37pcs per pallet/962pcs per 40'HC

CURVES OF PV MODULE



ELECTRICAL CHARACTERISTICS AT STC

Module Type	HS440TC-MHC-D	HS445TC-MHC-D	HS450TC-MHC-D	HS455TC-MHC-D	HS460TC-MHC-D	HS465TC-MHC-D
Testing Condition	STC	STC	STC	STC	STC	STC
Maximum Power(Pmax ±3%/W)	440	445	450	455	460	465
Open Circuit Voltage(Voc ±3%/V)	35.69	35.87	36.04	36.21	36.39	36.56
Short Circuit Current(Isc ±3%/A)	15.66	15.77	15.87	15.97	16.07	16.16
Maximum Power Voltage(Vmp/V)	29.66	29.81	29.95	30.10	30.24	30.38
Maximum Power Current(Impp/A)	14.83	14.93	15.02	15.12	15.21	15.30
Module Efficiency(%)	22.0	22.3	22.5	22.8	23.0	23.3

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

ELECTRICAL CHARACTERISTICS AT BNPI & BSI

Module Type	HS440TC-MHC-D		HS445TC-MHC-D		HS450TC-MHC-D		HS455TC-MHC-D		HS460TC-MHC-D		HS465TC-MHC-D	
Testing Condition	BNPI	BSI	BNPI	BSI	BNPI	BSI	BNPI	BSI	BNPI	BSI	BNPI	BSI
Maximum Power(Pmax ±3%/W)	484	-	490	-	495	-	501	-	506	-	512	-
Open Circuit Voltage(Voc ±3%/V)	35.69	-	35.87	-	36.04	-	36.21	-	36.39	-	36.56	-
Short Circuit Current(Isc ±3%/A)	17.39	19.27	17.50	19.39	17.61	19.52	17.72	19.64	17.83	19.76	17.94	19.88
Maximum Power Voltage(Vmp/V)	29.66	-	29.81	-	29.95	-	30.10	-	30.24	-	30.38	-
Maximum Power Current(Impp/A)	16.32	-	16.42	-	16.53	-	16.63	-	16.73	-	16.83	-

* Bifacial Nameplate Irradiance(BNPI): front 1000W/m²,rear135W/m²; Bifacial Stress Irradiance(BSI): front 1000W/m²,rear 300W/m².

OPERATING PARAMETERS

Operational Temperature	-40°C~+85°C
Binning Tolerance	±5W
Maximum System Voltage	1500V
Maximum Series Fuse Rating	25A
Nominal Operating Cell Temperature	45±2°C
Protection Class	Class II
Fire Rating	Class A (according to UL 790)
Module [T98]max	70°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

*Refer to installation manual for load details.

BIFACIALITY & TEMPERATURE COEFFICIENT

Bifaciality Coefficient	φPmax=0.71(±5%) φVoc=0.99(±5%) φIsc=0.72(±5%)
Temperature Coefficient (STC)	Pmax:-0.28%/°C Voc:-0.23%/°C Isc:+0.04%/°C



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