HT-SOLAR

Delivering Solar Power since 1960



HT48-210R(ND)-F

DOUBLE GLASS BIFACIAL TOPCON PV MODULE

440-475W ALL BLACK

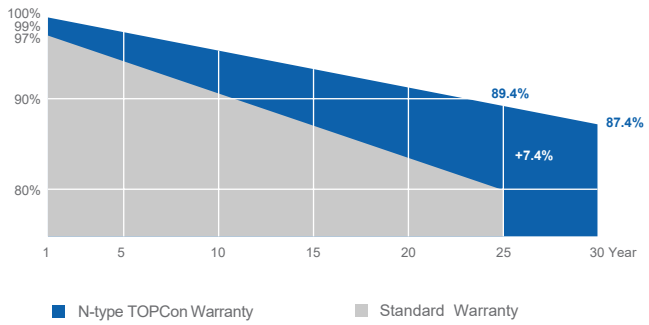
DESIGNED FOR AUSTRALIA

COMPOSITE FRAME MANUFACTURED WITH UP TO 30% RECYCLED MATERIALS

FEATURE

	Half-cut cell technology reduces internal power loss, improves power production and provides excellent heat dissipation to avoid hot spots.
	30 Year product warranty for rooftop installations **15 Year** for ground mounted.
30Yrs	**30 Year** power output warranty.
EL Tested	High quality control using double EL tests to ensure reliability and avoid microcracks.
	Certified to withstand extreme mechanical load 8000 Pa positive and 4000 Pa negative. 45mm hailstone at the speed of 23m/s tested by Dekra.
TOPCon	Optimised Super Multi-Busbar (SMBB) for maximum light absorption, lower resistance, better low-light response and improved current collection for enhanced reliability.
1500V	Designed for high voltage systems of up to 1500 VDC, increases string length and saves on BoS costs.
2%	All modules sorted and packaged by amperage reducing mismatch losses by average of 2% to enhance system output.
AntiPID	288hrs **enhanced PID test (IEC TS 62804)**, a performance with minimal power degradation and higher energy yield.
IEC Tests	IEC 61701 Salt Mist Corrosion Resistance IEC 62716 Ammonia Corrosion Resistance IEC 60068 Dust Resistance
Low Degradation Rate	0.4% annual degradation rate over 30 year power output.

WARRANTY



COMPREHENSIVE AND FIRST-RATE CERTIFICATION SYSTEM

IEC 61215, IEC 61730 Latest Standard
SA8000, ISO 9001, ISO 14001 and ISO 45001.
Strict quality control of the highest international standards.

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#DS1265

MULTIWAY+

BETTER CHOICE FOR HIGHER EFFICIENCY!

HT48-210R(ND)-F

440W /445W /450W /455W /460W /465W /470W /475W

ELECTRICAL CHARACTERISTICS (STC)

Module Type	HT48-210R(ND)-F							
Maximum Power (Pmax)	440W	445W	450W	455W	460W	465W	470W	475W
Open Circuit Voltage(Voc)	35.33V	35.52V	35.71V	35.90V	36.09V	36.28V	36.47V	36.66V
Short Circuit Current(Isc)	16.19A	16.22A	16.25A	16.28A	16.31A	16.34A	16.37A	16.40A
Maximum Power Voltage(Vmp)	28.86V	29.11V	29.36V	29.61V	29.86V	30.11V	30.36V	30.61V
Maximum Power Current(Imp)	15.25A	15.29A	15.33A	15.37A	15.41A	15.45A	15.49A	15.53A
Module Efficiency	22.0%	22.3%	22.5%	22.8%	23.0%	23.3%	23.5%	23.8%
Power Measurement Tolerances	±3%							
Power Measurement Tolerances	0~+3%							
Maximum System Voltage	1500V DC (IEC)							
Maximum Series Fuse Rating	30A							
Operating Temperature	-40-70°C, Module[T98] max :70°C							

STC: AM 1.5, Irradiance 1000W/m², module temperature 25℃

ELECTRICAL CHARACTERISTICS (NMOT)

Module Type	HT48-210R(ND)-F							
Maximum Power(Pmax)	334W	337W	341W	345W	349W	353W	356W	360W
Open Circuit Voltage(Voc)	33.74V	33.92V	34.10V	34.28V	34.47V	34.65V	34.83V	35.01V
Short Circuit Current(Isc)	13.06A	13.08A	13.11A	13.13A	13.16A	13.18A	13.20A	13.23A
Maximum Power Voltage(Vmp)	27.56V	27.80V	28.04V	28.28V	28.52V	28.76V	28.99V	29.23V
Maximum Power Current(Imp)	12.12A	12.12A	12.16A	12.20A	12.24A	12.27A	12.28A	12.32A

NMOT: Irradiance 800W/m², ambient temperature 20℃, wind speed 1m/s

ELECTRICAL RATINGS AT IRRADIANCE LEVEL AT BNPI

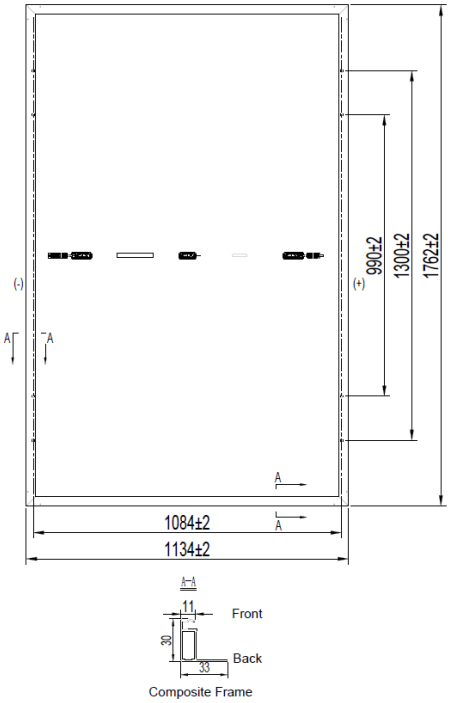
Rated Voc at BNPI [V] / tolerance ±5%	35.31	35.5	35.69	35.88	36.07	36.26	36.45	36.64
Rated Isc at BNPI [A] / tolerance ±5%	17.94	17.97	18.01	18.04	18.07	18.1	18.14	18.17
Rated Vmp at BNPI [V]	28.88	29.13	29.38	29.63	29.88	30.13	30.38	30.63
Rated Imp at BNPI [A]	16.9	16.94	16.99	17.03	17.07	17.12	17.16	17.21
Rated Pmax at BNPI [W] / tolerance ±3%	488	493.5	499	504.6	510.2	515.8	521.4	527.1

BIFACIALITY COEFFICIENT WITH TOLERANCE (BNPI)

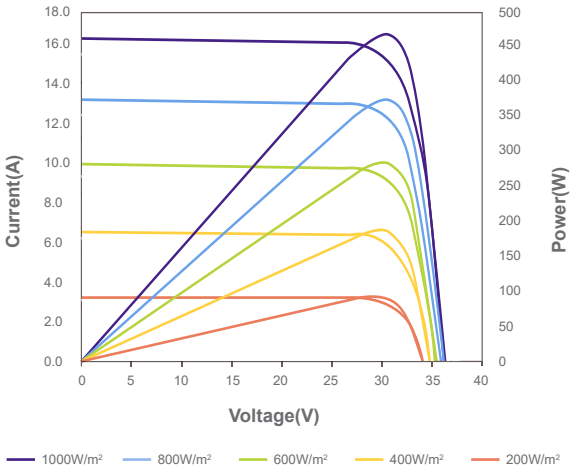
φPmax	80%±5%
φVoc	98%±5%
φIsc	80%±5%

Nominal Module Operating Temperature(NMOT)		43 ± 2°C
Temperature Coefficient of Pmax	γ(PM)	-0.29%/℃
Temperature Coefficient of Voc	β(Voc)	-0.25%/℃
Temperature Coefficient of Isc	α(Isc)	0.046%/℃
Solar Cells	Monocrystalline	
No.of Cells	96 (6x16)	
Dimensions	1762mm x 1134mm x 30mm	
Weight	24.0kg	
Glass	2mm Anti-Reflection Coating Heat Strengthened Glass	
Frame	Polymer Composite Frame: contains 30% recycled materials	
Junction Box/Connectors	IP68 / Stäubli MC4	
Cable	4mm²(IEC) length: (+) 1200mm, (-) 1200mm or customised	
Fire Class Rating	Class C	
Packaging Configuration	37 pcs/box: 962 pcs/ 40' HQ Container	

DIMENSIONS OF PV MODULE (MM)



IV CURVES



Shanghai Aerospace Automobile Electromechanical Co., Ltd.
(HT-SAAE)

Factory
Lianyungang Shenzhou New Energy Co., Ltd. (HT-Solar)

Australia office
Level 45, 680 George St, Sydney NSW 2000

Website: www.ht-saae.com.au

Made in China

Module recycling should be carried out by professionals.

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