瑞元天科
RAY TECH

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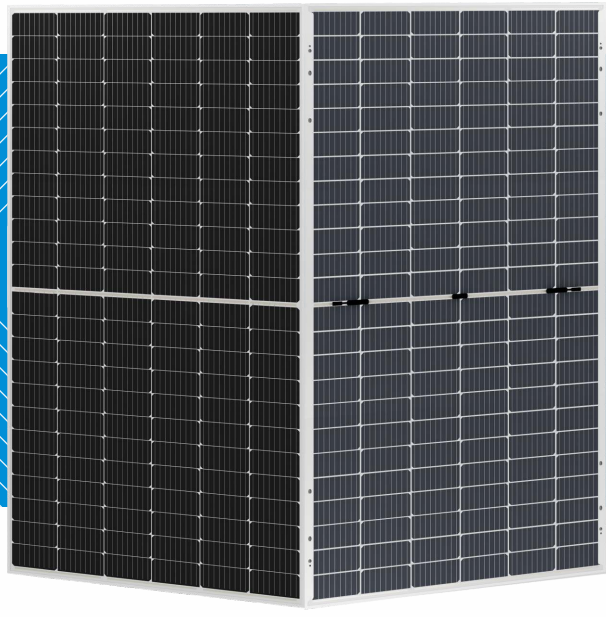
DOUBLE-GLASS BIFACIAL MODULE



72LAYOUT
P-TYPE/MONO/BIFACIAL

430–445W
POWER OUTPUT

20.1%
MAX. EFFICIENCY

OPTIONAL PRODUCTS
10% TRANSPARENCY
WHITE OPAQUE

30-YEAR LINEAR PERFORMANCE WARRANTY

12-YEAR PRODUCT WARANTY

COMPANY PROFILE

Ningbo Raytech New Energy Materials Co., Ltd. (hereinafter referred to as Raytech) is a comprehensive manufacturing enterprise integrating R&D, design, manufacturing, sales and services based on "new energy and new materials". Headquartered in Hangzhou Bay New Zone, Ningbo City, Zhejiang Province, China, Raytech is specialized in "photovoltaic power generation equipment manufacturing and system integration" and "smart home panel materials", and it is equipped with independent technology R&D team, national key laboratory and full-automatic production line in intelligent manufacturing. Its production scale, product types and product standards all take the lead in the industry.

Raytech's manufacturing capacity of photovoltaic power generation equipment is 1.2GW, producing single-sided and two-sided power generation equipment with the brand of Raytech. Its manufacturing capacity of intelligent panel materials is 1 million square meters, flexibly supporting diverse functions such as spatial separation, intelligent control, and light and temperature regulations, with the brand of Rayshine. Its production bases are located in Zhejiang, Jiangsu and Shandong, and its products have obtained German TüV certification, North America UL certification, Australia CEC certification,Brazil INMETRO certification, the first batch of front runner certification of double-glass modules in China, ISO9001 international quality system certification, national 3C compulsory certification in the construction industry, and other certifications of authorities.

By adhering to its development philosophy of centering on customer value and focusing on service, Raytech takes the responsibility of new energy business to"let the golden sunshine return to its natural color" and chases the dream on intelligent material business to "let modern science and technology perfectly integrate with the nature". Raytech forges ahead based on its own cultural concept of "pragmatism, inclusiveness, craftsmanship and innovation".

PRODUCT FEATURES

Optimized Power Gain
- 25% Max. Rear-side Power Gain;
- Half-Cell Cutting Technology to Lower the Output Power Losses Brought by Shading;
- Integrates Multiple-Busbar(MBB) Tech, Higher Power Output

Higher-Than-Ever ROI
- 1500V System Voltage, Lower BOS Cost;
- Annual Degradation < 0.5%, 30-year Linear Performance Warranty;

Working Condition Compatibility & Safety
- High Resistance to High Temp., High Humidity, Sand, Acid and Alkali Environment; 5400Pa Snow Loading, 2400Pa Wind Loading;
- Frames with Light Double Glass to meet customer's Requirements of Lightness and Safety

CERTIFICATION

TÜV SÜD · CQC · CLEAN ENERGY COUNCIL · INMETRO · CE · CCC · ISO

CONTACT US

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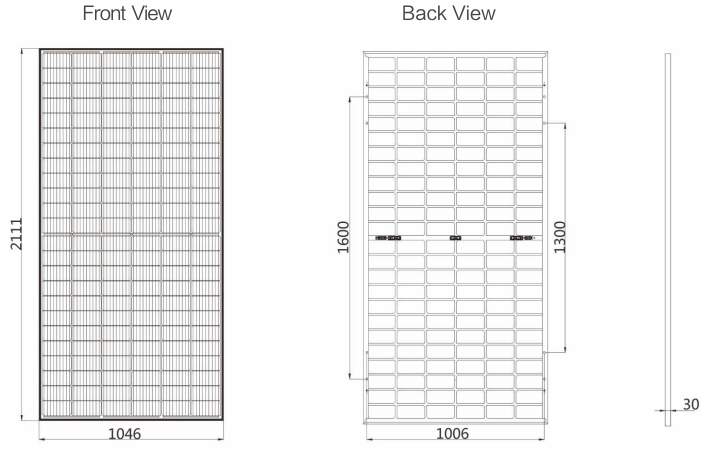
P-type Bifacial Double-Glass Module: **430-445W**

ENGINEERING DRAWING



MECHANICAL SPECIFICATIONS

Cell Type	Mono crystalline
Solar Cells	144(6*24)
Module Dimension [mm]	2111*1046*30mm
Weight [Kg]	27.0
Front Glass [mm]	2.0 Semi tempered coated glass
Interlayer	EVA/POE/PVB
Back Glass [mm]	2.0 Semi tempered glass
Junction Box	Ip67 Rated, 3 by-pass diodes
Connector	Multi-Contact MC4(or equivalent)
Frame	30mm Aluminum Frame
Maximum Load Capacity [Pa]	2400(wind load)/5400(snow load)

ELECTRICAL CHARACTERISTICS

		BPDMJ72H(S)-430		BPDMJ72H(S)-435		BPDMJ72H(S)-440		BPDMJ72H(S)-445	
		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Maximum Power at STC [Pmax]	[W]	430	321	435	325	440	329	445	333
Open Circuit Voltage [Voc]	[V]	48.79	45.6	49.01	45.8	49.29	46.0	49.54	46.3
Short Circuit Current [Isc]	[A]	11.18	9.02	11.24	9.06	11.29	9.10	11.33	9.14
Voltage at Maximum Power point[Vm]	[V]	40.47	37.2	40.76	37.4	41.06	37.7	41.33	37.9
Current at Maximum Power point[Im]	[A]	10.63	8.65	10.67	8.69	10.72	8.73	10.77	8.77
Power Tolerance	[%]	0~+3%							
Module Efficiency	[%]	19.4		19.7		19.9		20.1	

STC: Air Mass AM1.5,Ir-radiance 1000W/m² Cell temperature 25℃. NMOT: Air Mass AM1.5, Ir-radiance 800W/m² Ambient tempera-ture 20℃, wind speed 1m/s.

DOUBLE SIDES POWER OUTPUT (BACK GAIN)

5%	Maximum Power	[W]	445	450	455	461
10%	Maximum Power	[W]	460	465	471	476
15%	Maximum Power	[W]	475	481	486	492
20%	Maximum Power	[W]	490	496	502	507

Notes: Spectrum AM1.5, Irradiance Gcomp, Temperature 25℃ 。 Gcomp=(1+Albedo*Bifaciality)*1000W/m2 Bifaciality=Min(Isc_rear/Isc_front,Pmpp_rear/Pmpp_front)

WORKING CONDITIONS

Maximum System Voltage(With S)	[V]	1000 DC(IEC)
Maximum System Voltage(Without S)	[V]	1500 DC(IEC)
Operating Temperature	[℃]	-40~+85
Nominal Operating Cell Temperature	[℃]	45±3
Maximum rated current	[A]	20

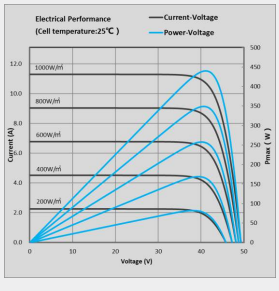
TEMPERATURE COEFFICIENTS

Temperature Coefficient of Pmax	[%/℃]	-0.42
Temperature Coefficient of Voc	[%/℃]	-0.33
Temperature Coefficient of Isc	[%/℃]	0.04

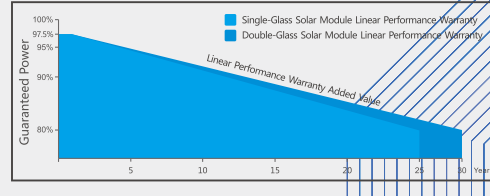
PACKAGE CONFIGURATION

Per box 35 pieces	40" HQ 770 pieces

ELECTRICAL CURVES



I-V Curve
P-V Curve

LINEAR PERFORMANCE WARRANTY

NO MORE THAN 0.5% ANNUAL DEGRADATION OVER 30 YEARS