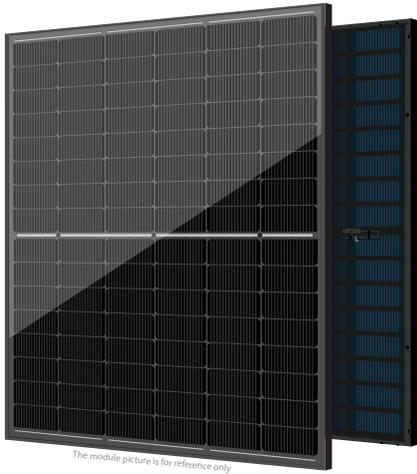


# ZXMR-UHLDD96 Series

SMBB HALF-CELL Black N-Type Bifacial Double Glass  
Monocrystalline PV Module



**430-455W**

**POWER RANGE**

**22.77%**

**MAXIMUM EFFICIENCY**

**0.40%**

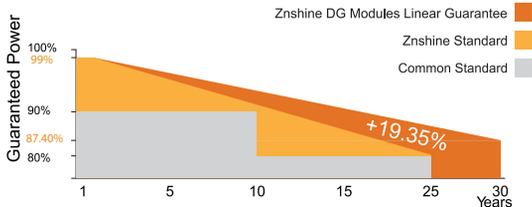
**YEARLY DEGRADATION**



**12 YEARS PRODUCT WARRANTY**



**30 YEARS OUTPUT GUARANTEE**



\*Please check the Limited Warranty for Standard PV Modules which is officially released by ZNSHINE PV-TECH Co.,Ltd.



IEC 61215/IEC 61730

ISO 14001: Environmental Management System

ISO 9001: Quality Management System

ISO45001: Occupational Health and Safety Management System

\*As there are different certification requirements in different markets, please contact your local znsline sales representative for the specific certificates applicable to the products in the region in which the products are to be used.

## KEY FEATURES



### Excellent Cells Efficiency

SMBB technology reduce the distance between busbars and finger grid line which is benefit to power increase.



### Better Weak Illumination Response

More power output in weak light condition, such as haze, cloudy, and early morning.



### Anti PID

Ensured PID resistance through the quality control of cell manufacturing process and raw materials.



### Adapt To Harsh Outdoor Environment

Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity environment.



### TIER 1

Global, Tier 1 bankable brand, with independently certified advanced automated manufacturing.



### Excellent Quality Management System

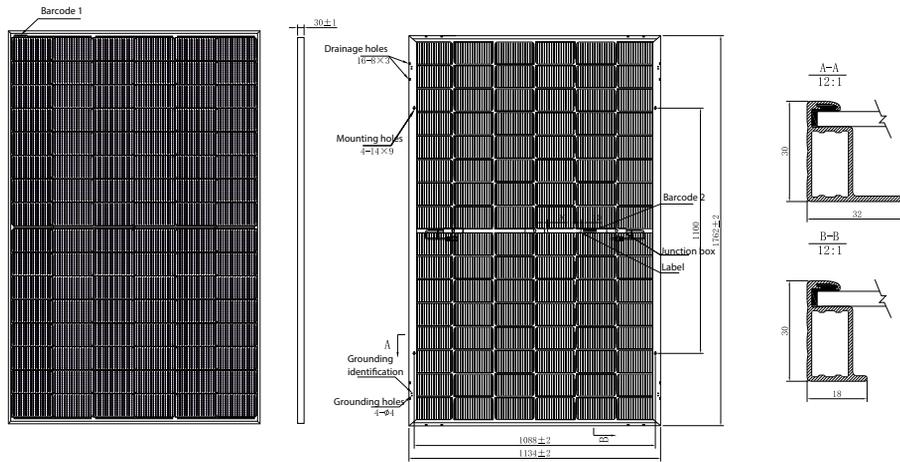
Warranted reliability and stringent quality assurances well beyond certified requirements.



### Bifacial Technology

Up to 25% additional power gain from back side depending on albedo.

**DIMENSIONS OF PV MODULE(mm)**

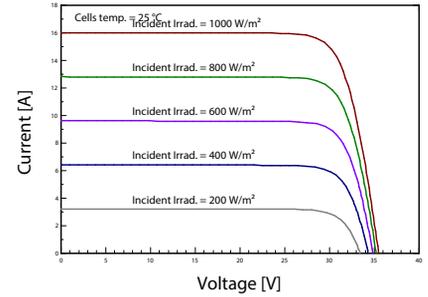


Front View

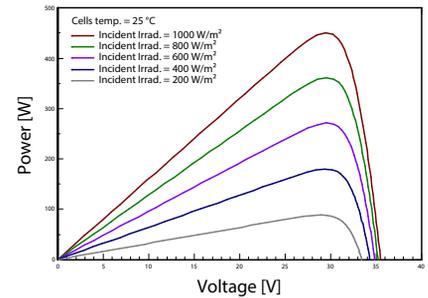
Back View

\*Remark: customized frame color and cable length available upon request

**I-V CURVES OF PV MODULE(450W)**



**P-V CURVES OF PV MODULE(450W)**



**ELECTRICAL CHARACTERISTICS | STC\***

Nominal Power Watt Pmax(W)*	430	435	440	445	450	455
Maximum Power Voltage Vmp(V)	29.00	29.20	29.40	29.60	29.80	30.00
Maximum Power Current Imp(A)	14.83	14.90	14.97	15.04	15.11	15.17
Open Circuit Voltage Voc(V)	34.70	34.90	35.10	35.30	35.50	35.70
Short Circuit Current Isc(A)	15.75	15.82	15.89	15.96	16.03	16.10
Module Efficiency (%)	21.52	21.77	22.02	22.27	22.52	22.77

\*The data above is for reference only and the actual data is in accordance with the practical testing  
 \*STC (Standard Test Condition): Irradiance 1000W/m<sup>2</sup>, Module Temperature 25±2°C, AM 1.5  
 \*Measuring uncertainty: ±3%, all the electrical characteristics such as Power, Im, Vm and FF are within ±3% tolerance.

**MECHANICAL DATA**

Solar cells	N-type Monocrystalline, Rectangular cells
Cells orientation	96 (6×16)
Module dimension	1762×1134×30 mm (With Frame)
Weight	21.0±1.0 kg
Glass	1.6mm+1.6mm, High Transmission, AR Coated Heat Strengthened Glass
Junction box	IP 68, 3 diodes
Cables	4 mm <sup>2</sup> , 1200mm (With Connectors)
Connectors*	MC4-EVO2 compatible

\*Please refer to regional datasheet for specified connector

**ELECTRICAL CHARACTERISTICS | NMOT\***

Maximum Power Pmax(Wp)	327.50	331.20	335.00	338.70	342.50	345.30
Maximum Power Voltage Vmpp(V)	27.10	27.30	27.50	27.70	27.90	28.00
Maximum Power Current Impp(A)	12.07	12.13	12.18	12.24	12.29	12.31
Open Circuit Voltage Voc(V)	32.90	33.10	33.30	33.50	33.60	33.80
Short Circuit Current Isc(A)	12.71	12.76	12.82	12.87	12.93	12.99

\*NMOT: Irradiance 800W/m<sup>2</sup>, Ambient Temperature 20°C, AM 1.5, Wind Speed 1m/s

**TEMPERATURE RATINGS**

NMOT	44°C ±2°C
Temperature coefficient of Pmax	(-0.28±0.028)/%°C
Temperature coefficient of Voc	-0.23%/°C
Temperature coefficient of Isc	0.045%/°C
Refer. Bifacial Factor	(80±10)%

**WORKING CONDITIONS**

Maximum system voltage	1500 V DC
Operating temperature	-40°C~+85°C
Maximum series fuse	30 A
Front Side Maximum Static Loading	Up to 5400Pa
Rear Side Maximum Static Loading	Up to 2400Pa

\*Remark: Do not connect Fuse in Combiner Box with two or more strings in parallel connection

**ELECTRICAL CHARACTERISTICS (REAR POWER GAIN) \***

5%	Maximum Power: Pmax(W)	452	457	462	467	473	478
	Module Efficiency(%)	22.60	22.86	23.12	23.38	23.65	23.91
15%	Maximum Power: Pmax(W)	495	500	506	512	518	523
	Module Efficiency(%)	24.75	25.04	25.32	25.61	25.90	26.19
25%	Maximum Power: Pmax(W)	528	544	550	556	563	569
	Module Efficiency(%)	26.90	27.21	27.53	27.84	28.15	28.64

\*Bifacial Gain: The additional gain from the back 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.

**PACKAGING CONFIGURATION \***

Piece/Box	36
Piece/Container(40'HQ)	936

\*Customized packaging is available upon request.

\*Caution: Please be kindly advised that PV modules should be handled and installed by qualified people who have professional skills and please carefully read the safety and installation instructions before using our PV modules.

\*Remark: Electrical data in this catalog do not refer to a single module and they are not part of the offer. They only serve for comparison among different module types.