

Swan series

Double Glass BiFacial N-Type TOPCon Solar Module

440~465W

Model: UL-***M-96DDGN

Maximum Efficiency: **23.27%**



Bifacial Mono Module

Capable of generating power at back side, 80±5% efficiency of the front side



Longer Term Reliability

Passed the IEC63209-1:2021 standard test (With testing standards 2 to 3 times stricter than regular IEC requirements)



Outstanding Mechanical load Resistance

2mm+2mm front and back sides tempered glass, sturdy and durable, resistant to hail impact, with a snow load of 5400Pa and a wind load of 2400Pa



Anti-PID(potential induced degradation)

Passed anti-PID test under 85°C damp heat 85% relative humidity for 192 hours



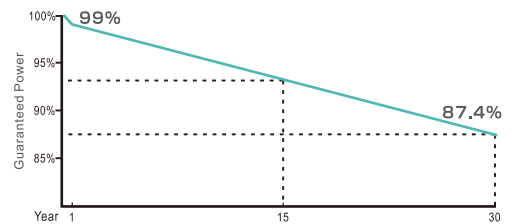
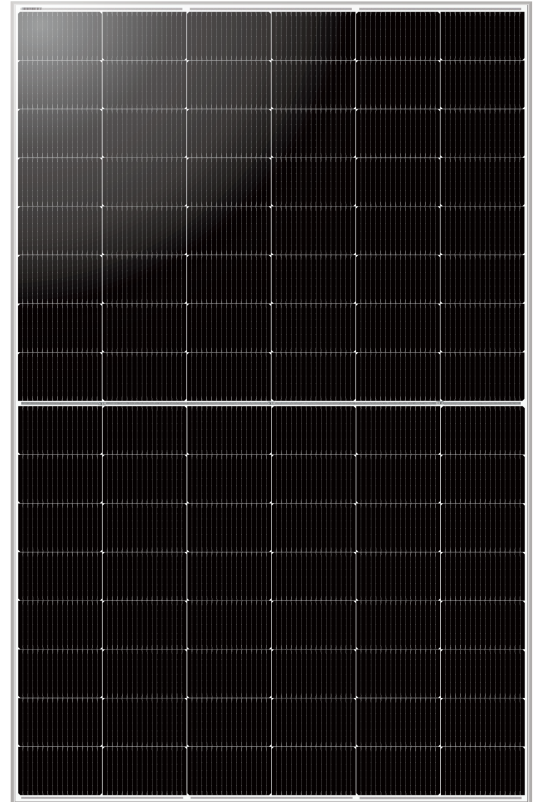
Lower LCOE

Lower shading and resistive loss Lower temperature coefficient



Full-Scenario Resilience

Proven through rigorous resistance tests for salt mist, ammonia corrosion, sand & dust, and LeTID degradation



15 Year Product Warranty **1%** Power Degradation In The First Year

30 Year Linear Power Warranty **0.4%** Linear Power Degradation

IEC 61215, IEC 61730

ISO 9001: 2015(Quality management systems)

ISO 14001: 2015 (Environmental management systems)

ISO45001: 2018 (Occupational health and safety)

UNI 9177 Fire Test: Class 1



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ELECTRICAL SPECIFICATIONS

Module Type	UL-440M-96DDGN		UL-445M-96DDGN		UL-450M-96DDGN		UL-455M-96DDGN		UL-460M-96DDGN		UL-465M-96DDGN		
	STC*	NOCT*	STC*	NOCT*	STC*	NOCT*	STC*	NOCT*	STC*	NOCT*	STC*	NOCT*	
Maximum Power(Pmax)	W	440	333	445	337	450	341	455	345	460	349	465	352
Maximum Power Voltage(Vmp)	V	29.35	27.00	29.48	27.12	29.61	27.24	29.75	27.37	29.85	27.46	29.95	27.55
Maximum Power Current(Imp)	A	14.99	12.35	15.09	12.43	15.20	12.52	15.30	12.60	15.41	12.69	15.53	12.79
Open-circuit Current(Voc)	V	34.84	31.70	35.00	31.85	35.14	31.98	35.29	32.11	35.36	32.18	35.42	32.23
Short-circuit Current(Isc)	A	16.00	12.91	16.05	12.95	16.10	12.99	16.15	13.03	16.23	13.09	16.33	13.17
Module Efficiency STC	%	22.02		22.27		22.52		22.77		23.02		23.27	

*STC:Cell temperature:25°C,Irradiance:1000W/m²,Ari mass:1.5G,Power measurement tolerance: ±3%
 *NOCT:Air temperature:20°C,Irradiance:1000W/m²,Ari mass:1.5G,Wind speed:1m/s

OPERATING PARAMETERS

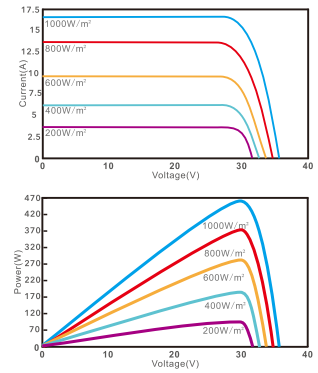
Operating Temperature	-40°C~85°C
Maximum system voltage	DC1500V(IEC)
Maximum series fuse rating	30A
Nominal operating cell temperature	43±2°C
Power tolerance	0~+5Watt

TEMPERATURE RATINGS

Temperature coefficients of Pmax	-0.29%/°C
Temperature coefficients of Voc	-0.25%/°C
Temperature coefficients of Isc	0.046%/°C

I-V CURVE

I-V characteristics at different irradiances (reference to 465 W)

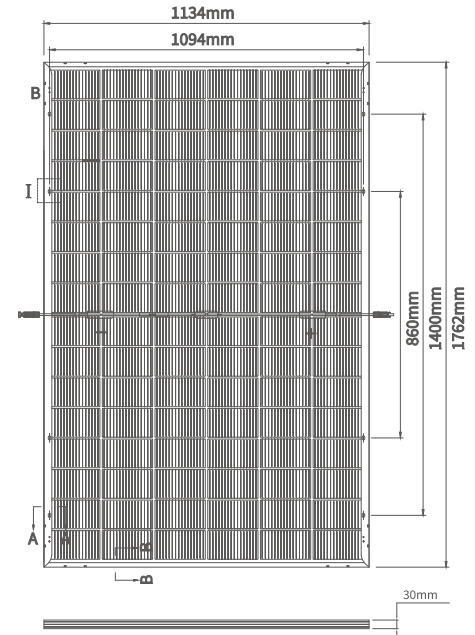


REAR SIDE POWER GAIN(REFERENCE TO 465W FRONT SIDE)

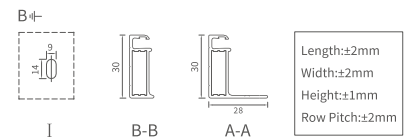
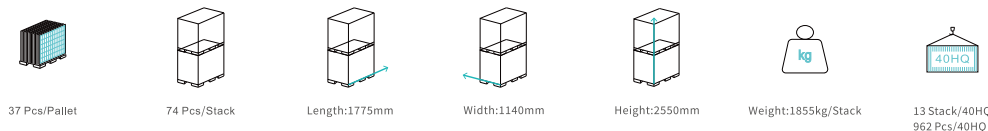
Pmax/W	465	488	512	535	558	581	605
Pmax gain	0%	5%	10%	15%	20%	25%	30%
Voc/V	35.42	35.42	35.42	35.42	35.42	35.42	35.42
Isc/A	16.33	17.15	17.96	18.78	19.60	20.41	21.23
Vmp/V	29.95	29.95	29.95	29.95	29.95	29.95	29.95
Imp/A	15.53	16.31	17.08	17.86	18.64	19.41	20.19

SPECIFICATIONS

Cell Type	N-type TOPCon Mono Half Cell	
No.of cells	96(6×8×2)	
Dimensions	1762*1134*30mm	
Weight	24.2kg	
Front Glass	2.0mm,Anti-Reflection Coating,High Transmission,Low Iron,Tempered Glass	
Back Glass	2.0mm,High Transmission,Low Iron,Tempered Glass	
Frame	Anodized Aluminium Alloy	
Junction Box	IP68,3diodes	
Connector	MC4 Compatible:PV-UL608 or others _____	Original:MC4-EVO2A
Cable Length (Including Connector)	4mm² Short Cable:(+)400/(-)200mm or Long Cable:(+)1200/(-)1200mm or Customized Length _____	



PACKAGING INFORMATION



Specifications included in this datasheet are subject to change without notice.

Ulica Solar reserves the right of final interpretation.

Version number: UL-1762-96DDGNBB-30-EN-V3.1