

Under Shanshan Group, Top 500 Enterprise in China, Ningbo Ulica Solar Co., Ltd. produces our own high quality solar cells and modules starting from August 2005. Our product range covers all from off-grid panels to on-grid panels, both mono-crystalline and poly-crystalline, suitable for all types of installation from residential to commercial projects

## MONO HALF-CELL TOPCON



**12% more power than conventional modules**



**Lower power degradation**  
**Lower internal current**  
**Lower hot spot temperature**



**Cell crack risk limited in small region,**  
**enhance the module reliability**



**Outstanding mechanical load resistance**  
 Snow load 5400Pa (Frontside), and Wind load 3800Pa (Backside)



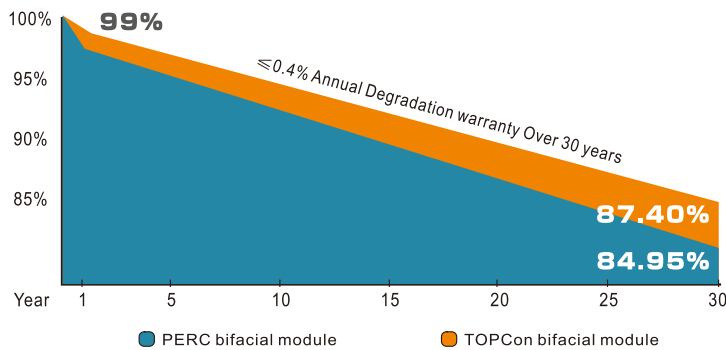
**High performance under low light conditions**  
 Cloudy days, Rainy days



**Double EL test before and after lamination**  
 Highly control the micro cracks and invisible defects.



**World famous insurance**  
 CHUBB(USA), Solar Insurance&Finance(Netherlands)



15-year product warranty

30-year linear power output

Certificate Holder Name : Ningbo Ulica Solar Co.,Ltd



## ELECTRICAL PERFORMANCE

Module Type		UL-445M-108BDGN		
		STC	BNPI	BSI
Power Output	P <sub>max</sub> W	445	490	
Power Tolerance	ΔP <sub>max</sub> W	±3%	±3%	
Module Efficiency	η <sub>m</sub> %	22.27	24.52	
Voltage at P <sub>max</sub>	V <sub>m</sub> V	33.02	33.02	
Current at P <sub>max</sub>	I <sub>m</sub> A	13.48	14.84	
Open-Circuit Voltage	V <sub>oc</sub> V	39.58 ± 3%	39.58 ± 3%	
Short-Circuit Current	I <sub>sc</sub> A	14.30 ± 3%	15.89 ± 3%	17.52
STC : AM=1.5, E=1000W/m <sup>2</sup> , TC=25°C		Bifaciality coefficient of P <sub>max</sub>		85±5%
BNPI : E=1000W/m <sup>2</sup> , rear=135W/m <sup>2</sup>		Bifaciality coefficient of V <sub>oc</sub>		99±5%
BSI : E=1000W/m <sup>2</sup> , rear=300W/m <sup>2</sup>		Bifaciality coefficient of I <sub>sc</sub>		86±5%
Remark : Sorting tolerance as 0~+5W in our factory.				

## THERMAL CHARACTERISTICS

Nominal Operating Cell Temperature	NOCT	°C	43±2
Temperature Coefficient of P <sub>max</sub>	γ	%/°C	-0.290
Temperature Coefficient of V <sub>oc</sub>	β <sub>voc</sub>	%/°C	-0.250
Temperature Coefficient of I <sub>sc</sub>	α <sub>isc</sub>	%/°C	0.046

## OPERATING CONDITIONS

Max. System Voltage	1500V
Max. Series Fuse Rating	30A
Operating Temperature Range	-40°C ~ 85°C
Max static snow load	5400Pa
Max static wind load	3800Pa
Safety Class	II
Fire class rating	Class C

## CONSTRUCTION MATERIALS

Front Cover(material/type/thickness)	Dual glass, 2.0+2.0mm low-iron tempered glass
Cell(quantity/material/type/dimension)	108/N Type monocrystalline/182X94mm
Encapsulant(material)	ethylene vinyl acetate(EVA)
Frame(material/anodization color)	anodized aluminum alloy/silver
Junction Box(Protection degree)	IP68
Cable(length/cross-sectional area)	400mm/4mm <sup>2</sup>
Plug Connector	DC1500*PV-ZH202B/PV-JM608/PV-CY20L, Made in China

## GENERAL CHARACTERISTICS

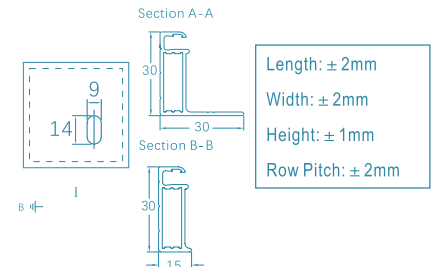
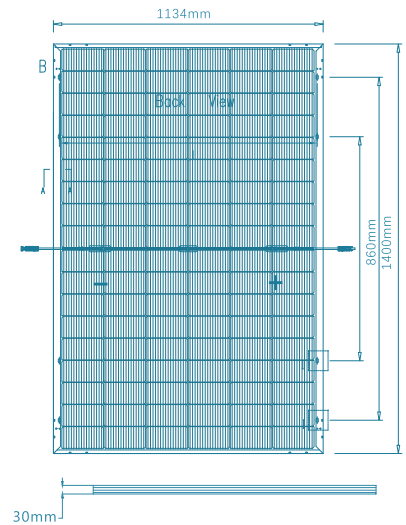
Dimension(L/W/H)	1762x1134x30mm
Weight	24.8kg

## PACKING CONFIGURATION

Pieces per Box	36pcs
Pieces per Pallet	72pcs
Pieces per Container	936pcs

## INTERNATIONAL CERTIFICATES

- TÜV SÜD, CE, MCS, CQC, IMERTRO
- ISO9001: 2015
- ISO14001: 2015
- ISO45001: 2018



Please read the installation manual in its entirety before handing, installing, and operating Ulica Solar modules.  
Due to continuous innovation, research and improvement, the specification is subject to change without prior notice.