



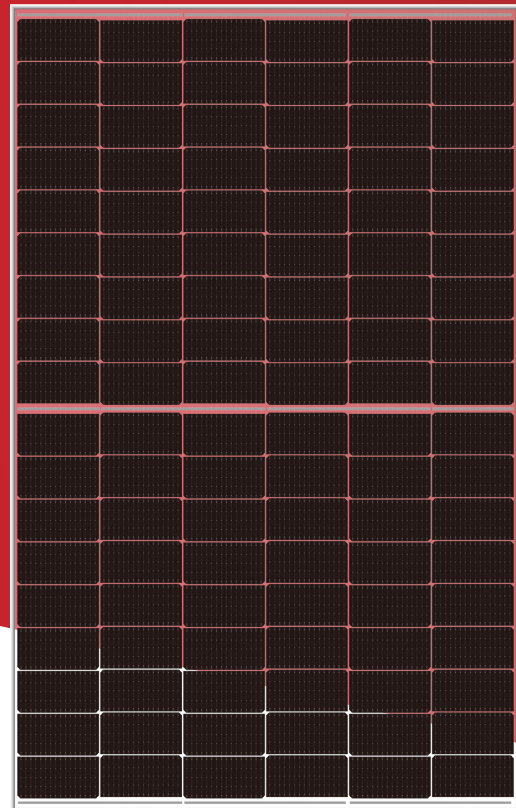
# SUNOVA SOLAR

Leading one-stop PV Supplier

## thor 4x

# 410-430W

N-type Bifacial Double Glass Mono Module



Bifacial technology enables additional energy harvesting from rear side (up to 30%)



30 years lifespan brings 10-30% additional power generation comparing with conventional P-type module



N-type solar cell has no LID naturally which can increase power generation



Excellent low irradiance performance.



Better light trapping and current collection to improve module power output and reliability.



Industry leading lowest thermal co-efficient of power.



Optimized electrical design and lower operating current for reduced hot spot loss and better temperature coefficient.

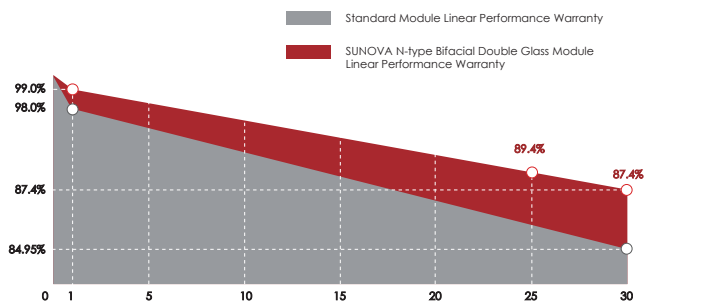


Certified to withstand: wind load (2400 Pa) and snow load (5400 Pa).



100% triple EL test enabling remarkable reduction of hidden crack rate of modules

## LINEAR PERFORMANCE WARRANTY



**15** years

Product quality & process guarantee

**30** years

Linear power guarantee

**0.40** %

Annual Degradation

## COMPREHENSIVE CERTIFICATES



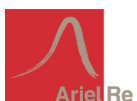
ISO 9001: Quality Management System

ISO 14001: Environmental Management System Standard

ISO 45001: International Occupational Health and Safety Assessment System Standard

\* Different markets have different certification requirements. Also, the products are under rapid innovation. Please confirm the certification status with regional sales representatives.

## PERFORMANCE INSURANCE



## ELECTRIC CHARACTERISTICS

Model of modules	SS-BG410-54MDH(T)		SS-BG415-54MDH(T)		SS-BG420-54MDH(T)		SS-BG425-54MDH(T)		SS-BG430-54MDH(T)	
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum power — $P_{mp}$ (W)	410	308	415	312	420	316	425	320	430	323
Open-circuit voltage — $V_{oc}$ (V)	37.76	35.87	37.95	36.05	38.14	36.23	38.33	36.41	38.52	36.59
Short-circuit current — $I_{sc}$ (A)	13.9	11.22	13.98	11.28	14.06	11.35	14.14	11.43	14.22	11.48
Maximum power voltage — $V_{mp}$ (V)	31.16	29.07	31.35	29.24	31.54	29.37	31.73	29.54	31.95	29.66
Maximum power current — $I_{mp}$ (A)	13.16	10.60	13.24	10.67	13.32	10.75	13.4	10.83	13.47	10.9
Module efficiency — $\eta_m$ (%)	20.5%		20.7%		21.0%		21.3%		22.0%	

**STC** (Standard Testing Conditions): Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25 °C, Spectra at AM1.5

**NOCT** (Nominal Operating Cell Temperature): Irradiance 800W/m<sup>2</sup>, Ambient Temperature 20°C, Spectra at AM1.5, Wind at 1m/s

## WITH DIFFERENT POWER GENERATION GAIN (REGARDING 415W AS AN EXAMPLE)

Power Gain (%)	10	15	20	25	30
Peak Power (Pmax) (W)	448	465	481	495	515
MPP Voltage ( $V_{mp}$ ) (V)	31.7	31.7	31.7	31.7	31.8
MPP Current ( $I_{mp}$ ) (A)	14.13	14.65	15.17	15.69	16.20
Open Circuit Voltage ( $V_{oc}$ ) (V)	37.7	37.7	37.7	37.7	37.8
Short Circuit Current ( $I_{sc}$ ) (A)	14.99	15.54	16.08	16.62	17.16

## STRUCTURAL CHARACTERISTICS

Module size (L*W*H)	1722 x 1134 x 30 mm (67.80 x 44.65 x 1.18 inch)
Weight	24.5 kg (54.01 lbs)
Number of cells	108 cells
Cell	N-type Monocrystalline 182 x 91 mm (7.17 x 3.58 inch)
Glass	2.0 mm High Transmission, Antireflection Coating
Frame	Anodized aluminum alloy
Junction box	IP68, 3 diodes
Output wire	4.0 mm <sup>2</sup>
Wire length	300mm/customized
Connector	MC4 Compatible
Packing Specification	36pcs/Pallet; 936 pcs/40'HQ

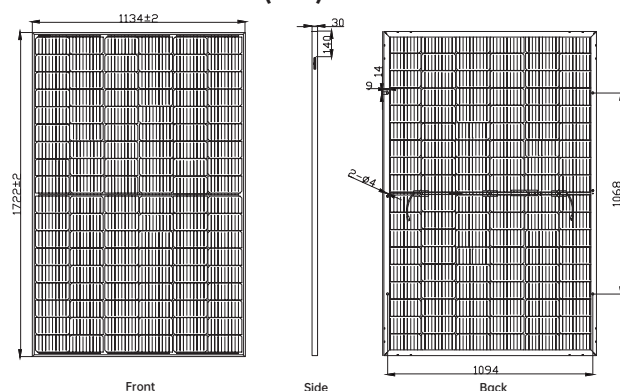
## OPERATING PARAMETERS

Power tolerance (W)	(0,+5)
Maximum system voltage (V)	1500
Maximum rated fuse current (A)	30
Current operating temperature (°C)	-40~+85 °C
Mechanical load	5400 Pa / 2400 Pa

## TEMPERATURE RATINGS

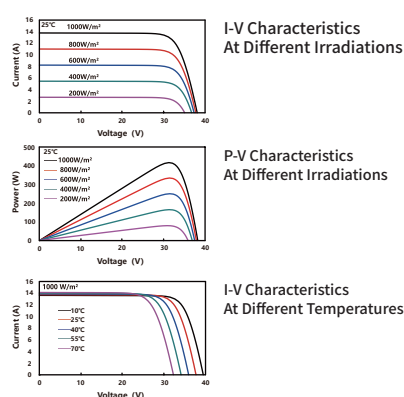
Temperature coefficient ( $P_{max}$ )	-0.310%/°C
Temperature coefficient ( $V_{oc}$ )	-0.260 %/°C
Temperature coefficient ( $I_{sc}$ )	+0.046 %/°C
Nominal operating cell temperature	42 ± 2 °C

## MODULE DIMENSIONS (MM)



\* The unmarked tolerance is ±1 mm  
Length shown in mm

## Characteristic Curves(415W)



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\* The technical parameters contained in this datasheet may deviate slightly, Sunova Solar does not guarantee that they are completely accurate. Varying optional data could be for different regions or prices. Please contact commercial people for confirmation. Due to continuous innovation, research and development and product improvement, Sunova Solar reserves the right to adjust the information in this datasheet at any time without prior notice. The customer should obtain the latest version of datasheet when signing the contract and make it an integral part of the binding contract signed by both parties. The Chinese (or other language) translation files of this datasheet are for reference only. If there is any inconsistency between the English version and the Chinese version (or other language versions), the English version shall prevail.