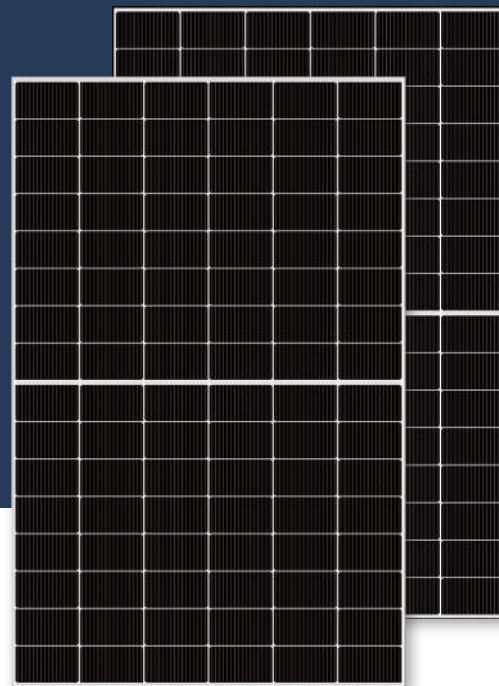


440-445W

N-type high density bifacial double glass mono module

TS-BGT48-G11



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



30-year lifespan delivers 10-30% more power compared with conventional P-type modules



The natural lack of LID in the N-type solar cell 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 coefficient



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



Certified to withstand 2400 Pa of wind load and 5400 Pa of snow load



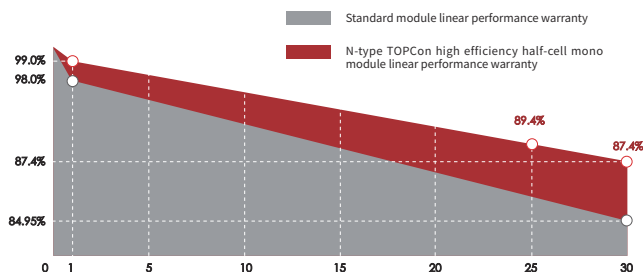
100% triple EL test, which greatly reduces the hidden cracks rate

WARRANTY INSURANCE



* Optional performance warranty insurance. Please contact our local sales staff for more information.

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
 SA8000: 2014 Social Accountability Management System

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

ELECTRICAL CHARACTERISTICS

Model of modules	TS-BGT48(440)-G11		TS-BGT48(445)-G11	
	STC	NOCT	STC	NOCT
Maximum power — P_{mp} (W) ±3%	440	331	445	335
Open-circuit voltage — V_{oc} (V) ±3%	34.67	32.94	34.85	33.11
Short-circuit current — I_{sc} (A) ±3%	15.95	12.88	16.00	12.92
Maximum power voltage — V_{mp} (V)	29.72	27.68	29.90	27.88
Maximum power current — I_{mp} (A)	14.81	11.96	14.89	12.02
Module efficiency — η_m (%)	22.0		22.3	

STC (Standard Testing Conditions): Irradiance 1000W/m², Cell Temperature 25 °C, Spectra at AM1.5

NOCT (Nominal Operating Cell Temperature): Irradiance 800W/m², Ambient Temperature 20 °C, Spectra at AM1.5, Wind at 1m/s

ELECTRICAL CHARACTERISTICS WITH DIFFERENT POWER BIN (REFERENCE TO 13.5% IRRADIANCE RATIO)

Peak Power (P_{max}) (W)	488	493
Open Circuit Voltage (V_{oc}) (V)	34.67	34.85
Short Circuit Current (I_{sc}) (A)	17.67	17.73
MPP Voltage (V_{mp}) (V)	29.72	29.90
MPP Current (I_{mp}) (A)	16.41	16.50

Bifaciality Coefficient $\phi P_{max}=80\% \pm 10\%$, $\phi V_{oc}=100\% \pm 10\%$, $\phi I_{sc}=80\% \pm 10\%$

STRUCTURAL CHARACTERISTICS

Module size (L*W*H)	1762 x 1134 x 30 mm
Weight	24.3 kg
Cell	96 cells, N-type monocrystalline
Front glass	2.0mm, anti-reflection coating
Back glass	2.0mm, heat strengthened glass
Frame	Anodized aluminum alloy (Silver/Black)
Junction box	IP68, 3 diodes
Output wire	4.0 mm ²
Wire length	300mm/1200mm/customized
Connector	PV-KST4-EVO 2/xy_UR,PV-KBT4-EVO 2/xy_UR
Connector Manufacturer	Staubli Electrical Connectors AG
Packing Specification	36pcs/pallet; 936 pcs/40'HQ

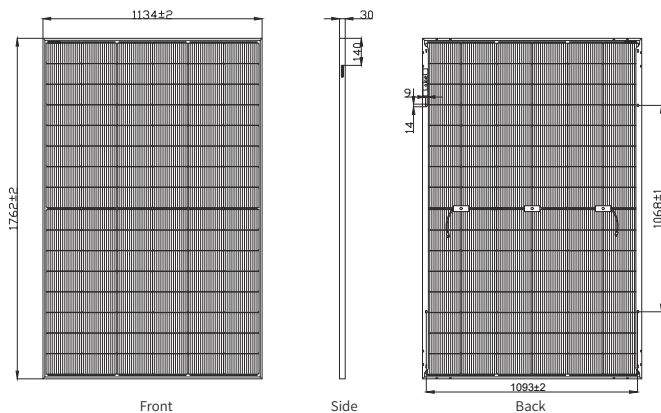
OPERATING PARAMETERS

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 PERFORMANCE RATINGS

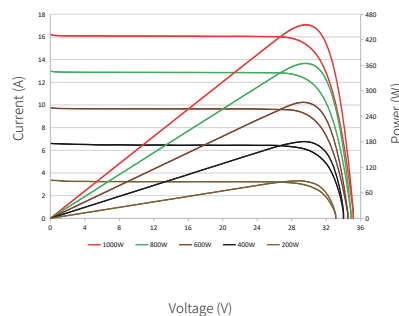
TANGRA temperature coefficient (P_{max})	-0.30 %/°C
Temperature coefficient (V_{oc})	-0.28 %/°C
Temperature coefficient (I_{sc})	+0.04 %/°C
Nominal operating cell temperature	43±2 °C
Fire safety class	A

MODULE DIMENSIONS (MM)

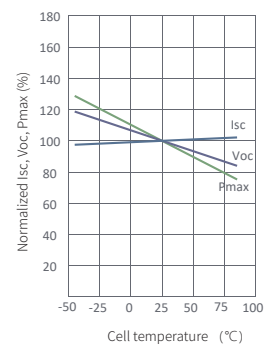


* The unma rance is ±1 mm
Length shown in mm

Characteristic curves (445W)



Temperature Dependence of I_{sc}, V_{oc}, P_{max}



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E-mail: info@thornovasolar.com

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