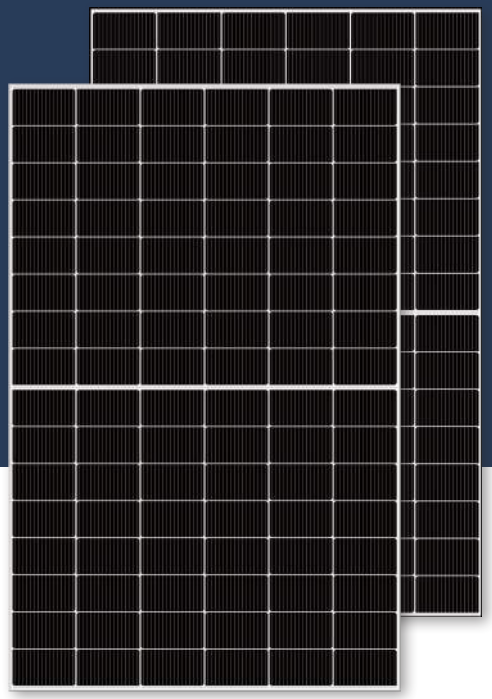
THORNOVA solar | TIER 1 BloombergNEF

440-445W

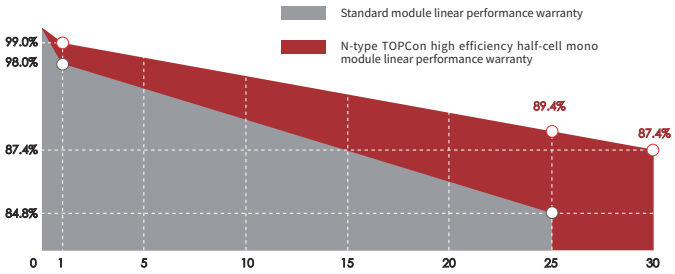
N-type high density half-cell mono module

TS-BBT48-G11



- 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

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.

WARRANTY INSURANCE

Ariel Re | LLOYD'S Underwriters | Munich RE | 中国平安 PING AN P&C INSURANCE CO CN SZN

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

MADE IN CHINA

www.thornovasolar.com

ELECTRICAL CHARACTERISTICS

96 cells

Model of modules	TS-BBT48(440)-G11		TS-BBT48(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	
Power tolerance (W)	(0,+5)			
Maximum system voltage (V)	1500			
Maximum rated fuse current (A)	25			
Current operating temperature (℃)	-40~+85 ℃			

STC (Standard Testing Conditions): Irradiance 1000W/m^2, Cell Temperature 25 ℃ , Spectra at AM1.5
NOCT (Nominal Operating Cell Temperature): Irradiance 800W/m^2, Ambient Temperature 20℃ , Spectra at AM1.5, Wind at 1m/s

STRUCTURAL CHARACTERISTICS

Module dimensions (L*W*H)	1762 x 1134 x 30 mm
Weight	21.7 kg
Number of cells	96 cells
Cell	N-type monocrystalline
Glass	Tempered, 3.2 mm AR, high transmittance, low iron
Frame	Anodized aluminum alloy (Silver/Black)
Junction box	IP68, 3 bypass 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
Mechanical load	Snow load: 5400 Pa ❄ / Wind load: 2400 Pa

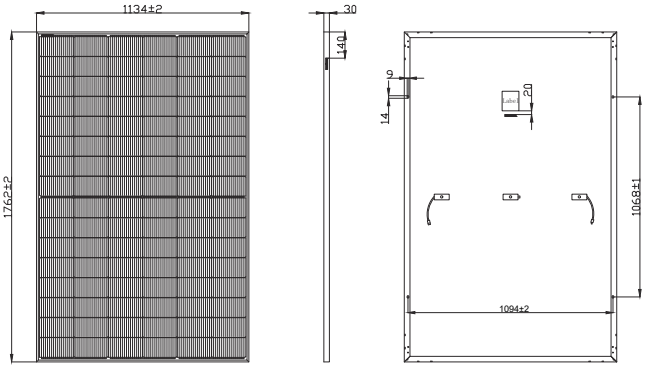
TEMPERATURE PERFORMANCE RATINGS

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

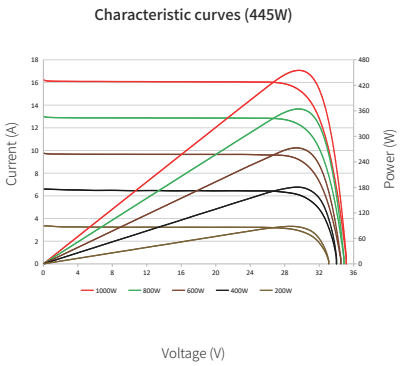
PACKAGING CONFIGURATION

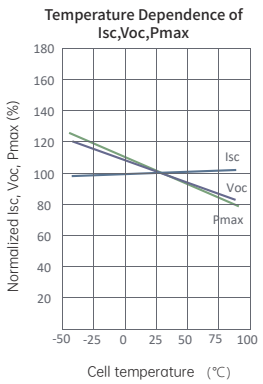
Container	40HQ
Quantity/pallet	36
Pallets/container	26
Quantity/container	936

MODULE DIMENSIONS (MM)



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





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