



BIPRO

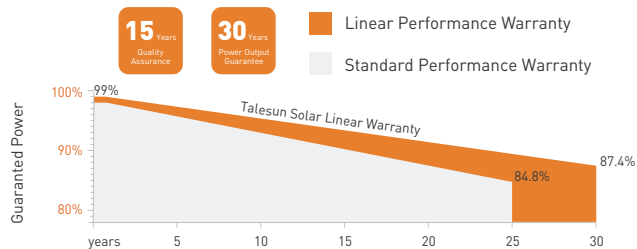
TM3G48M **96**-

430 - 450W

16BB Half-cut N-type
Full Black



- IEC 61215 / IEC 61730 / UL 61730
- ISO 9001: 2015 Quality Management System
- ISO 14001: 2015 Environment Management System
- ISO 45001: 2018 Occupational Health and Safety Management Systems



16BB Lower LID/LeTID degradation and better low light performance
Attenuation $\leq 1\%$ (1st year) / $\leq 0.4\%$ (Linear)



Bifacial TOPCon cell technology,
Dual-sided power generation gain from back side depending on albedo, significantly reduce LCOE



192 hours Anti-PID test



No water-permeability and high wear-resistance,
can be widely used in high-humid, windy and dusty area



High waterproof level

Electrical Characteristics (STC, NMOT)

Testing Condition	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Maximum Power (Pmax/W)	430	327	435	330	440	334	445	338	450	342
Operating Voltage (Vmpp/V)	28.92	27.30	29.22	27.50	29.52	27.70	29.79	28.00	30.09	28.20
Operating Current (Impp/A)	14.87	11.97	14.89	12.00	14.91	12.05	14.94	12.09	14.96	12.12
Open-Circuit Voltage (Voc/V)	34.76	33.00	34.98	33.20	35.20	33.40	35.42	33.60	35.64	33.80
Short-Circuit Current (Isc/A)	15.72	12.67	15.76	12.71	15.80	12.74	15.83	12.76	15.86	12.79
Module Efficiency (%)	21.50		21.80		22.00		22.30		22.50	

STC: Irradiance 1000W/m², Spectra at AM1.5, Module Temperature 25°C. Power output tolerance: 0~+5W, Test uncertainty for Pmax: ±3%
 NMOT: Irradiance 800W/m², Spectra at AM1.5, Ambient Temperature 20°C, Wind speed 1m/s

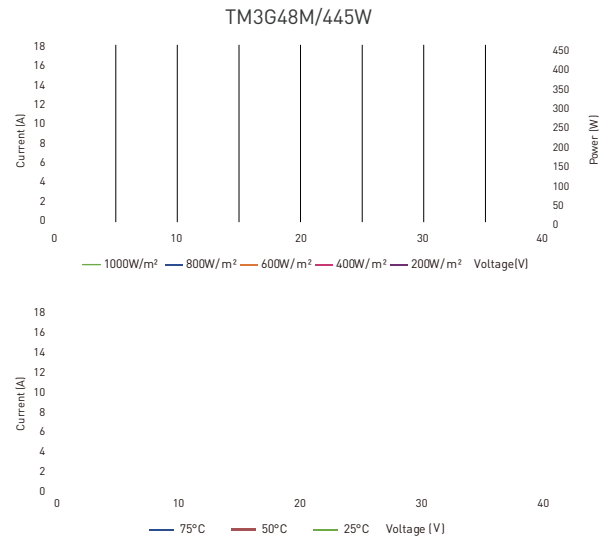
Electrical Characteristics (Pmax gain vs Irradiance)

Parameter	5%	10%	15%	20%	25%
Pmax gain	5%	10%	15%	20%	25%
Pmax/W	467	490	512	534	556
Vmpp/V	29.79	29.79	29.79	29.79	29.79
Impp/A	15.69	16.43	17.18	17.93	18.68
Voc/V	35.42	35.42	35.42	35.42	35.42
Isc/A	16.62	17.41	18.20	19.00	19.79

Electrical Characteristics (Mechanical)

Cell Type	N-type Mono-Crystallin (16Busbar)
No. of Cells	96pcs in series (6*16)
Module Dimensions	1762*1134*30mm (69.37*44.65*1.18inches)
Weight	24.7kg (54.45lbs.)
Front Glass	2.0mm AR Coating Semi-tempered Glass
Back Glass	2.0mm Glazed Semi-tempered Glass
Frame	Anodized Aluminium Alloy
Junction Box	IP68, 3 Bypass Diodes
Output Cables	4mm ² (IEC), 12AWG(UL) 350mm(+),250mm(-) or Customized Length
Connectors	T01/LJQ-3-CSY/MC4/MC4-EV02

Electrical Characteristics (I-V and P-V Curves)



Electrical Characteristics (System)

Maximum System Voltage	1500V/DC
Operating Temperature	-40°C~+85°C
Maximum Series Fuse	35A
Safety Protection Class	Class II
Mechanical Load	Front side 5400Pa, Back side 2400Pa
Refer. Bifaciality Factor	80%±5%

Electrical Characteristics (Temperature Coefficients)

Temperature Coefficient of Pmax	-0.29%/°C
Temperature Coefficient of Voc	-0.24%/°C
Temperature Coefficient of Isc	+0.043%/°C
Nominal Module Operating Temperature(NMOT)	43±2°C

Physical Characteristics

Pieces Per Pallet	36	36(USA)
Pieces Per Container(40'HQ)	936	720

1087
1134



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