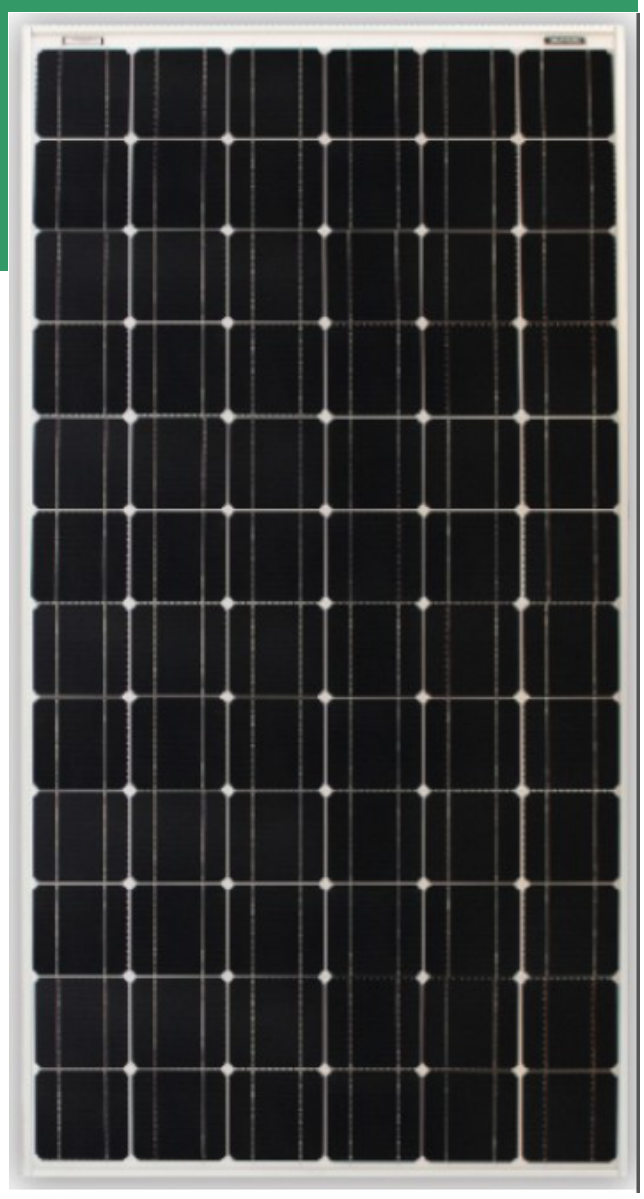
TBEA 特变电工

160-195W Monocrystalline photovoltaic modules

TBEA41XXTS



Also available in black.

High Transmission Glass
High transmission glass delivers up to 4% more energy than standard glass.

Reliable electrical connections
Special technology for cooler diode operation and optimal performance.

Reliable module package
Better cell protection thanks to robust frame and durable materials.Withstand extrems snow lands (5400Pascal).

Verified power output
Our energy ratings factor the initial degradation (LID effect) to maximize your investment.

Our products incorporate a number of unique features to ensure highest production yields and make solar your brightest investment ever.

TÜV SÜD · CE · IEC · c UL us PHOTOVALTAIC MODULE LISTED 4ML8 · ETL LISTED · APPROVED PRODUCT MCS BABT · ISO 9001 ISO 14001

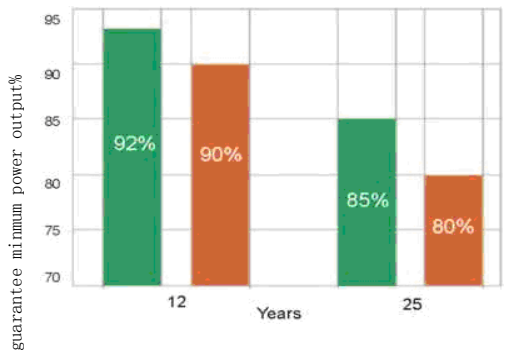
Warranty

- Free from defects in materials and workmanship for 10 years
- 92% min.power output over 12 years
- 85% min.power output over 25 years

Enhanced warranty

TBEA provides an industry leading warranty, guaranteeing lower degradation rates on modules manufactured beginning January 1st, 2010. Our superior long-term performance is proven by internal testing standards that go well beyond international requirements.

Leaders in dependability



Specifications are subjected to change without prior notice

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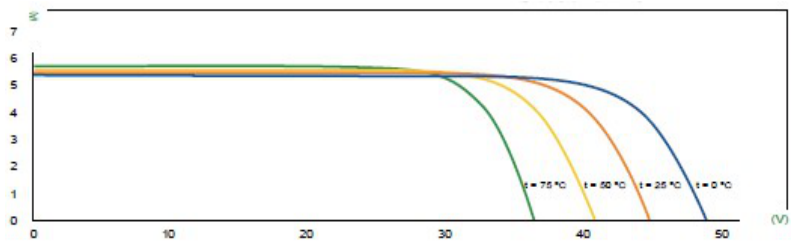
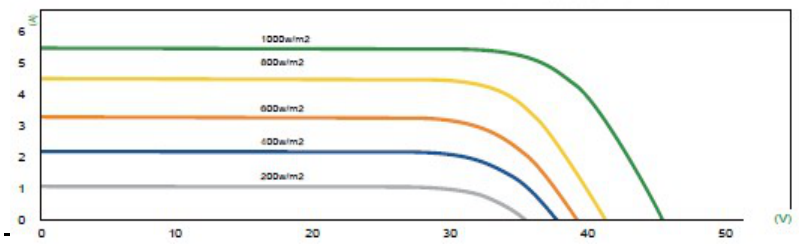
180,185,190 and 195W Monocrystalline photovoltaic modules

Dependence of the temperature



Dependence of the irradiance



Electrical Data

STC	TBEA 4160	TBEA 4165	TBEA 4170	TBEA 4175	TBEA 4180	TBEA4185	TBEA4190	TBEA4195
Nominal Maximum Power(Pmax)	160W	165W	170W	175W	180W	185W	190W	195W
Optimum Operating Voltage(Vmp)	34.2V	34.8V	35.4V	35.6V	35.8V	36.3V	36.6V	36.8V
Optimum Operating Current(Imp)	4.68A	4.75A	4.82A	4.92A	5.04A	5.1A	5.2A	5.3A
Open Circuit Voltage(Voc)	43.0V	43.6V	43.8V	44.1V	44.2V	44.6V	44.8V	44.9V
Short Circuit(Isc)	5.24A	5.3A	5.36A	5.42A	5.5A	5.52A	5.6A	5.7A
Module Efficiency	12.80%	13.20%	13.60%	14.00%	14.40%	14.80%	15.30%	15.70%
Operating Temperature	‘-40°C ~ +85°C							
Maximum System Voltage	600V (U.S. NEC) 1000V (IEC 61730:2007)							
Maximum Series Fuse Rating	15 A							
Application Classification	Class A							
Power Tolerance	±3%(Or follow customer requirements）							

Under Standard Test Conditions(STC)of irradiance of 1000W/m^2 ,spectrum AM 1.5 and cell temperature of 25℃

NOCT	TBEA 4160	TBEA 4165	TBEA 4170	TBEA 4175	TBEA 4180	TBEA4185	TBEA4190	TBEA4195
Nominal Maximum Power(Pmax)	117.2W	120.2W	123.1W	126.5W	129.6W	129.8W	133.2W	141W
Optimum Operating Voltage(Vmp)	31.7V	31.7V	31.8V	31.8V	31.9V	32.1V	33.1V	33.7V
Optimum Operating Current(Imp)	3.72A	3.80A	3.88A	3.95A	4.02A	4.09A	4.16A	4.23A
Open Circuit Voltage(Voc)	37.0V	37.9V	37.9V	38.8V	39.7V	40.6V	41.3V	41.3V
Short Circuit Current(Isc)	4.48A	4.49A	4.50A	4.50A	4.52A	4.52A	4.56A	4.55A

Under Normal Operating Cell Temperature, Irradiance of 800 W/m^2, ambient temperature 20℃,wind speed 1 m/s.

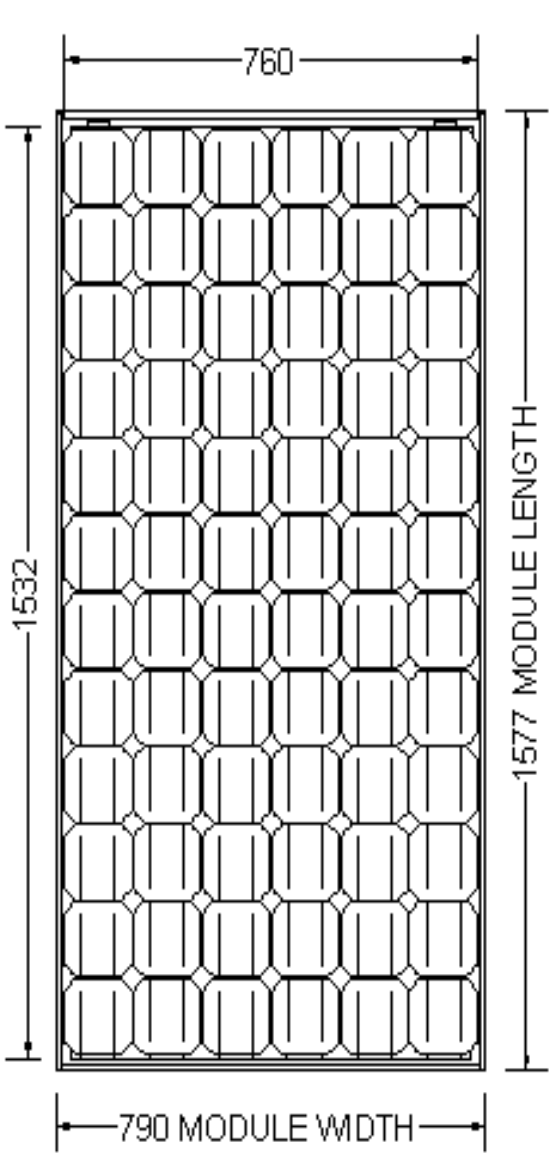
Mechanical characteristics

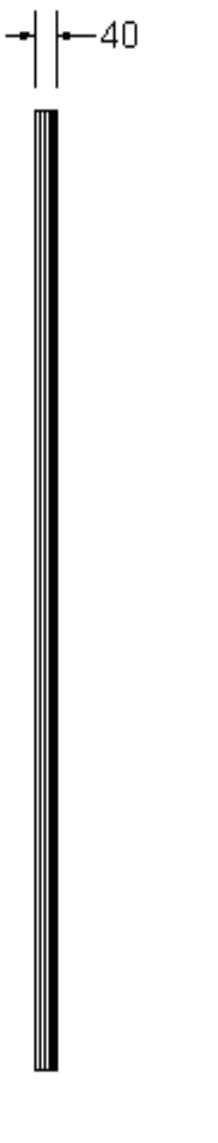
Cell Type	**Monocrystalline 5” silicon cells(125x125mm)**
Cell Arrangement	72 (6 x 12)
Dimensions	1577x790x40mm / 62.09x31.10x1.57in
Weight	**14.5kg / 31.97 lbs**
Front Cover	**High transmission 3.2mm**
Encapsulant	**EVA**
Back cover	**White or black polyester TPT/TPE**
Frame	**Silver or black anodized aluminum**
Junction box	**IP65 / IP67**
Cable	**4mm^2(IEC)/12AWG(UL),lengths:(+)900mm(35.43in)/(-)900mm(35.43in)**
	Certified as PV Wire according to UL4703 and PV1-F according to VDE EPV 01:2008-02 standards
Connectors	**MC4 or MC4 Comparable connectors**
Standard Packaging	**25 pcs (Modules per Pallet)**
Module Pieces	**700 pcs per container(40 ft .HQ Container)**

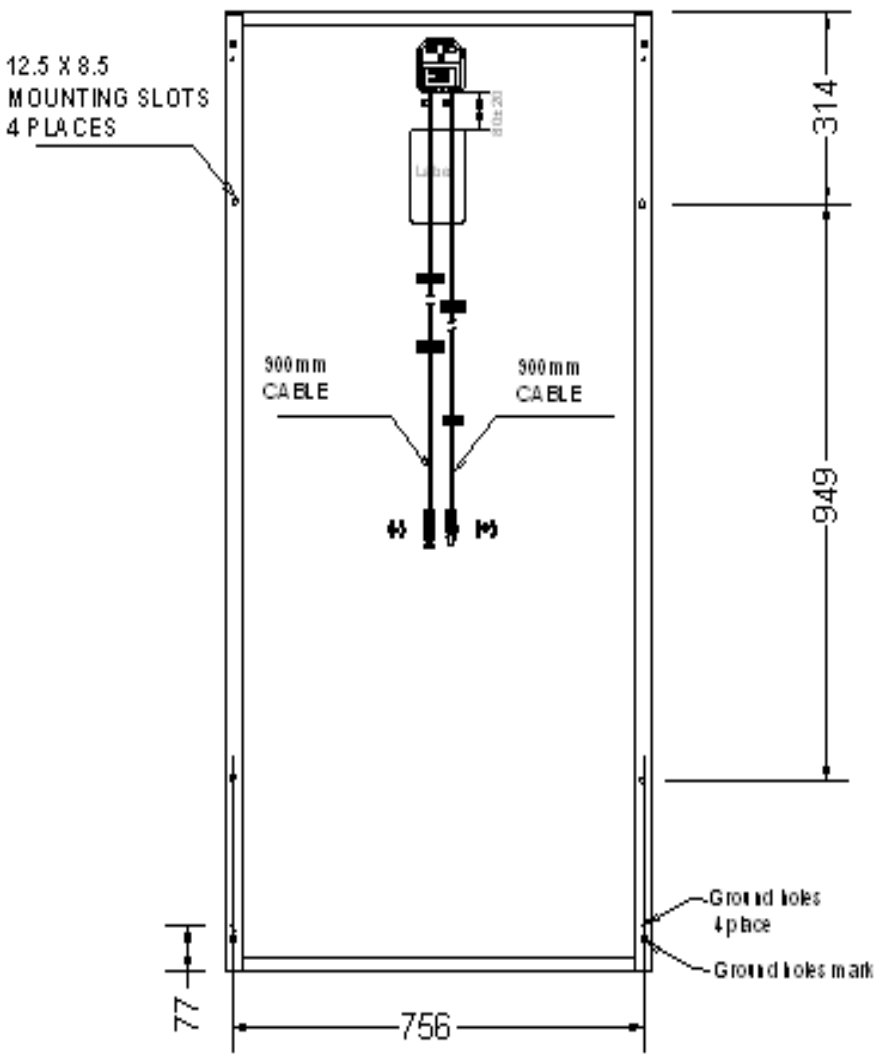
Temperature Characteristics

Nominal Operating Cell Temperature (NOCT)	45±2°C
Temperature Coefficient of Pmax	-(0.5±0.05)%/°C
Temperature Coefficient of Voc	-(0.36±0.05)%/°C
Temperature Coefficient of Isc	(0.065±0.015)%/°C

Module dimensions (mm)







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