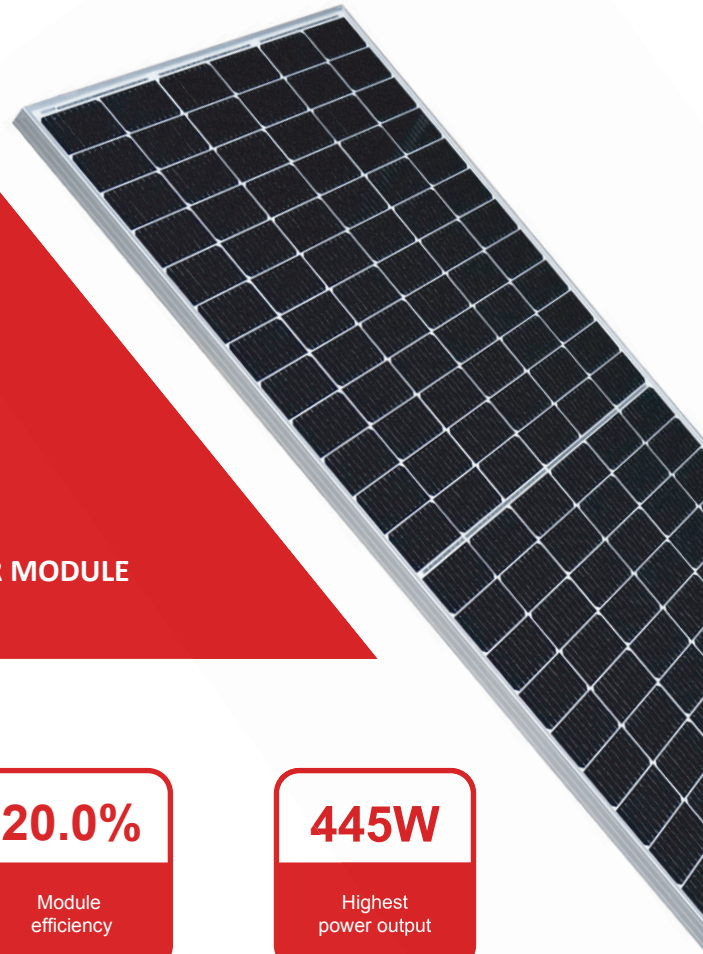




POWERTRONIK®
Renewable Technologies



TPVS-144

166 Half Cell Series

425-445w

144-CELL HALF CUT MONOCRYSTALLINE SOLAR MODULE

Product Advantages



High Power Output

Compared to 158.75mm module, the power output can increase 25W-30W



High Reliability

Passed 3*IEC standard test



Low Hot-spot Risk

1/2 current, reducing the hot spot temperature



Excellent loading capability

2400Pa wind loads, 5400Pa snow loads, 8000Pa extra support



Low NMOT

As low as 43°C, improving the power generation efficiency



Half Cell, MBB Technology

Series-then-parallel cell connection design, more reliable soldering technology

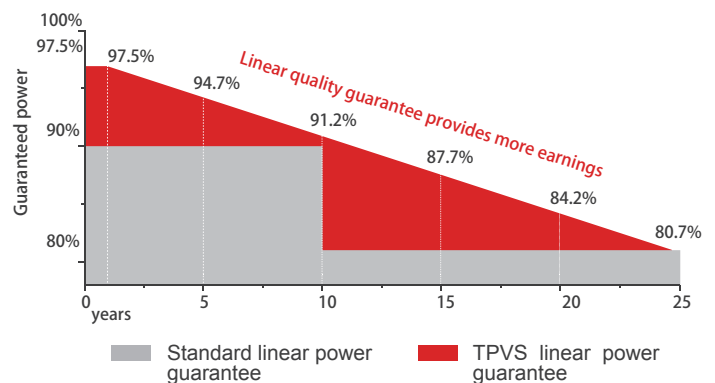
20.0%

Module efficiency

445W

Highest power output

Product Guarantee



-2.50%

First year power degradation

-0.50%

Annual degradation

12
Years

Materials and workmanship warranty

25
Years

Linear power warranty

Product Certification



TPVS-144

Electrical Characteristics

STC	445	440	435	430	425
Maximum Power at STC (Pmax)	445W	440W	435W	430W	425W
Optimum Operating Voltage (Vmp)	41.2V	41.V	40.8V	40.6V	40.4V
Optimum Operating Current (Imp)	10.81A	10.74A	10.67A	10.6A	10.52A
Open Circuit Voltage (Voc)	49.V	48.8V	48.6V	48.4V	48.2V
Short Circuit Current (Isc)	11.54A	11.47A	11.4A	11.32A	11.25A
Module Efficiency	20.0%	19.8%	19.6%	19.3%	19.1%
Operating Module Temperature	-40 °C to +85 °C				
Maximum System Voltage	1500 V DC (IEC)				
Maximum Series Fuse Rating	20 A				
Power Tolerance	0/+5W				

STC: Irradiance 1000 W/m², module temperature 25 °C, AM=1.5; Tolerances of P_{max}, V_{oc} and I_{sc} are all within +/- 5%.

NMOT	445	440	435	430	425
Maximum Power at NMOT (Pmax)	335W	331.2W	327.5W	323.8W	319.7W
Optimum Operating Voltage (Vmp)	38.5V	38.3V	38.1V	37.9V	37.8V
Optimum Operating Current (Imp)	8.7A	8.65A	8.59A	8.53A	8.47A
Open Circuit Voltage (Voc)	46.8V	46.6V	46.4V	46.2V	46.0V
Short Circuit Current (Isc)	9.19A	9.14A	9.08A	9.03A	8.96A

NMOT: Irradiance 800 W/m², ambient temperature 20 °C, AM=1.5, wind speed 1 m/s;

Temperature Characteristics

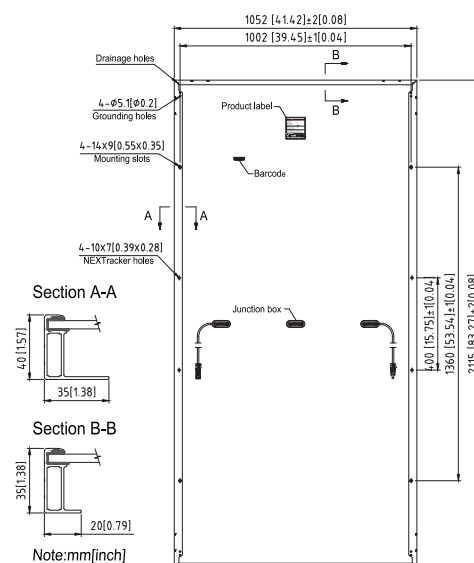
Nominal Module Operating Temperature(NMOT)	42 ± 2 °C
Temperature Coefficient of Pmax	-0.37 %/°C
Temperature Coefficient of Voc	-0.304%/°C
Temperature Coefficient of Isc	0.050 %/°C

Mechanical Characteristics

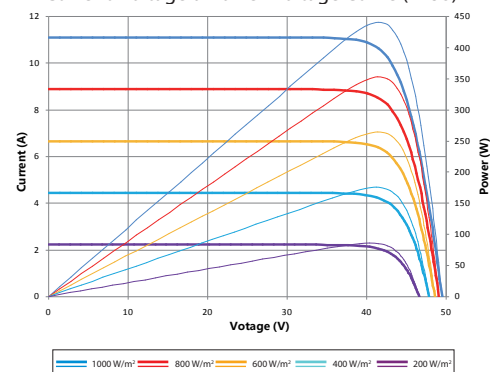
Solar Cell	Monocrystalline silicon 166 mm
No. of Cells	144 (6 × 24)
Dimensions	2115 × 1052 × 40 mm
Weight	24 kgs
Front Glass	3.2 mm tempered glass
Frame	Anodized aluminium alloy
Junction Box	IP68 rated (3 bypass diodes)
Output Cables	4.0 mm ² , symmetrical lengths (-) 1400mm and (+) 1400 mm

Packing Configuration

Container	20' GP	40' HC
Pieces per pallet	27	27+2
Pallets per container	5	22
Pieces per container	135	638



Current-Voltage & Power-Voltage Curve (445S)





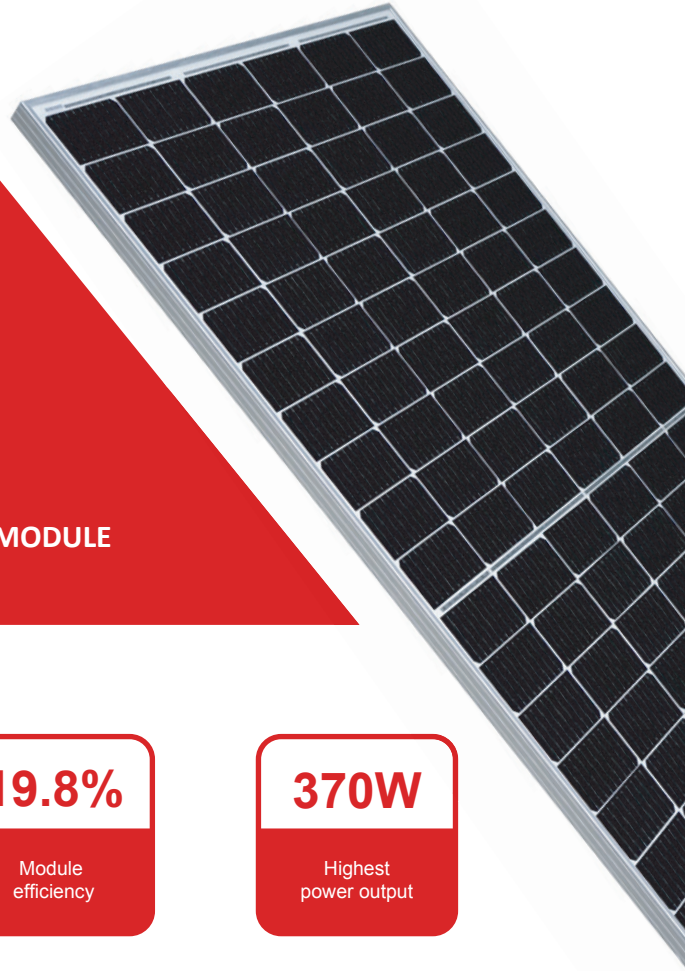
POWERTRONIK®
Renewable Technologies

TPVS-120

166 Half Cell Series

350-370w

120-CELL HALF CUT MONOCRYSTALLINE SOLAR MODULE



Product Advantages



High Power Output

Compared to 158.75mm module, the power output can increase 25W-30W



High Reliability

Passed 3*IEC standard test



Low Hot-spot Risk

1/2 current, reducing the hot spot temperature



Excellent loading capability

2400Pa wind loads, 5400Pa snow loads, 8000Pa extra support



Low NMOT

As low as 43°C, improving the power generation efficiency



Half Cell, MBB Technology

Series-then-parallel cell connection design, more reliable soldering technology

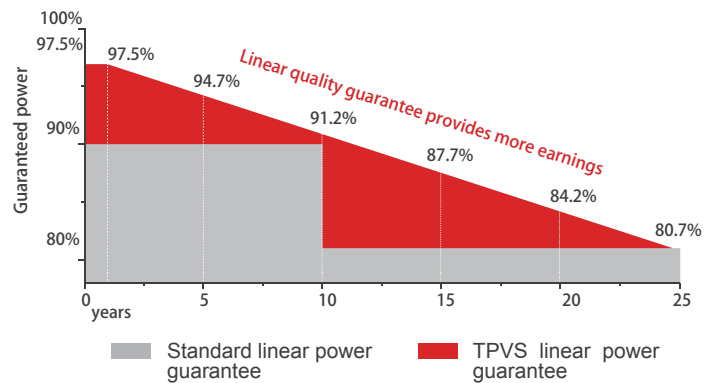
19.8%

Module efficiency

370W

Highest power output

Product Guarantee



-2.50%

First year power degradation

-0.50%

Annual degradation

12
Years

Materials and workmanship warranty

25
Years

Linear power warranty

Product Certification



TPVS-120

Electrical Characteristics

STC	370	365	360	355	350
Maximum Power at STC (Pmax)	370W	365W	360W	355W	350W
Optimum Operating Voltage (Vmp)	34.3V	34.1V	33.9V	33.7V	33.5V
Optimum Operating Current (Imp)	10.79A	10.71A	10.62A	10.54A	10.46A
Open Circuit Voltage (Voc)	40.9V	40.7V	40.5V	40.3V	40.1V
Short Circuit Current (Isc)	11.49A	11.42A	11.35A	11.28A	11.21A
Module Efficiency	19.8%	19.5%	19.3%	19.0%	18.7%
Operating Module Temperature	-40 °C to +85 °C				
Maximum System Voltage	1500 V DC (IEC)				
Maximum Series Fuse Rating	20 A				
Power Tolerance	0/+5W				

STC: Irradiance 1000 W/m², module temperature 25 °C, AM=1.5; Tolerances of Pmax, Voc and Isc are all within +/- 5%.

NMOT	370	365	360	355	350
Maximum Power at NMOT (Pmax)	278.2W	274.3W	270.7W	266.8W	263.3W
Optimum Operating Voltage (Vmp)	32.V	31.8V	31.6V	31.5V	31.3V
Optimum Operating Current (Imp)	8.69A	8.62A	8.56A	8.48A	8.42A
Open Circuit Voltage (Voc)	38.7V	38.5V	38.4V	38.2V	38.V
Short Circuit Current (Isc)	9.17A	9.1A	9.04A	8.96A	8.89A

NMOT: Irradiance 800 W/m², ambient temperature 20 °C, AM=1.5, wind speed 1 m/s;

Temperature Characteristics

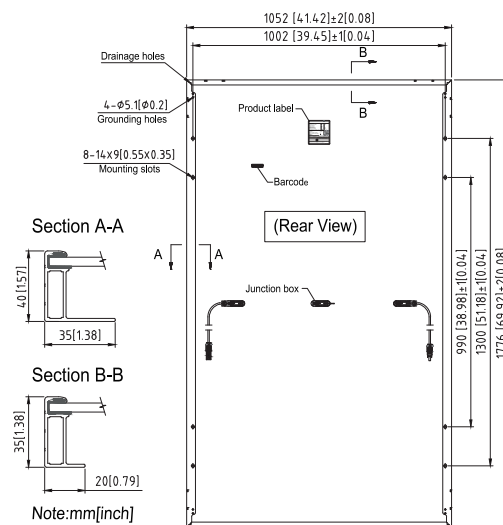
Nominal Module Operating Temperature(NMOT)	42±2°C
Temperature Coefficient of Pmax	-0.37 %/°C
Temperature Coefficient of Voc	-0.304 %/°C
Temperature Coefficient of Isc	0.050 %/°C

Mechanical Characteristics

Solar Cell	Monocrystalline silicon 166 mm
No. of Cells	120 (6 × 20)
Dimensions	1776 × 1052 × 40 mm
Weight	20.0 kgs
Front Glass	3.2 mm
Frame	Anodized aluminium alloy
Junction Box	IP68 rated (3 bypass diodes)
Output Cables	4.0 mm ² , symmetrical lengths (-) 1200mm and (+) 1200 mm

Packing Configuration

Container	20' GP	40' HC
Pieces per pallet	27	27+2
Pallets per container	6	26
Pieces per container	162	758



Current-Voltage & Power-Voltage Curve (370S)

