

# Vertex S

BACKSHEET MONOCRYSTALLINE MODULE

PRODUCT: TSM-DE09.05  
POWER RANGE: 380-400 W

## 400 W+

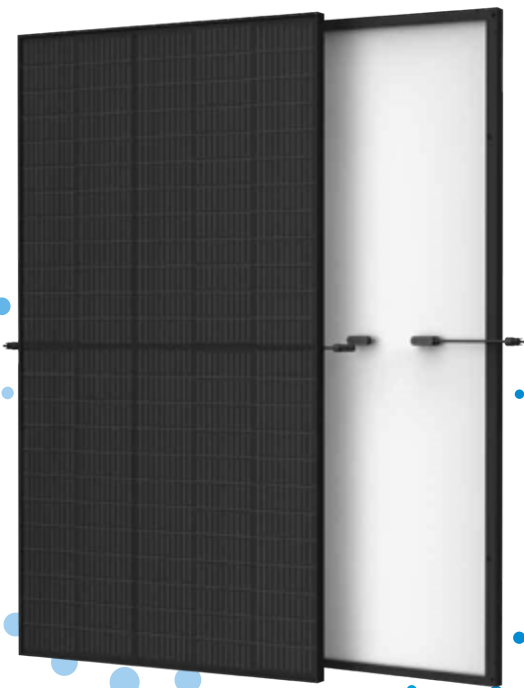
MAXIMUM POWER OUTPUT

## 0/+5 W

POSITIVE POWER TOLERANCE

## 20.8 %

MAXIMUM EFFICIENCY



### Outstanding Visual Appearance

- Designed with aesthetics in mind
- Ultra-thin, virtually invisible busbars
- Excellent cell color control by machine selection



### Small in size, big on power

- Generates up to 400 W, 20.8 % module efficiency with high density interconnect technology
- Multi-busbar technology for better light trapping, lower series resistance, improved current collection and enhanced reliability
- Excellent low light performance (IAM) with cell process and module material optimization



### Universal solution for residential and C&I rooftops

- Designed for compatibility with existing mainstream inverters, optimizers and mounting systems
- Perfect size and low weight for easy handling. Optimized transportation cost
- Reduces installation cost with higher power bin and efficiency
- Flexible installation solutions for system deployment



### High Reliability

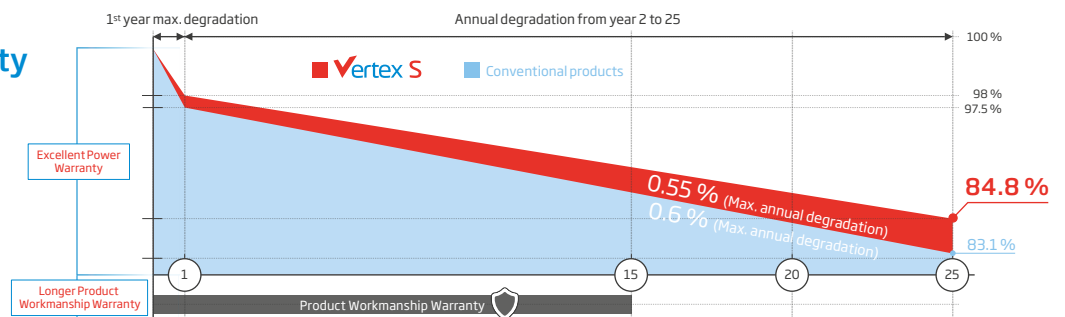
- 6,000 Pa snow load (test load)
- 4,000 Pa wind load (test load)

## Extended Vertex S Warranty

**2 %**  
1<sup>st</sup> year max. degradation

**0.55 %**  
Max. annual degradation from year 2 to 25

**15 Years**  
Product Workmanship Warranty

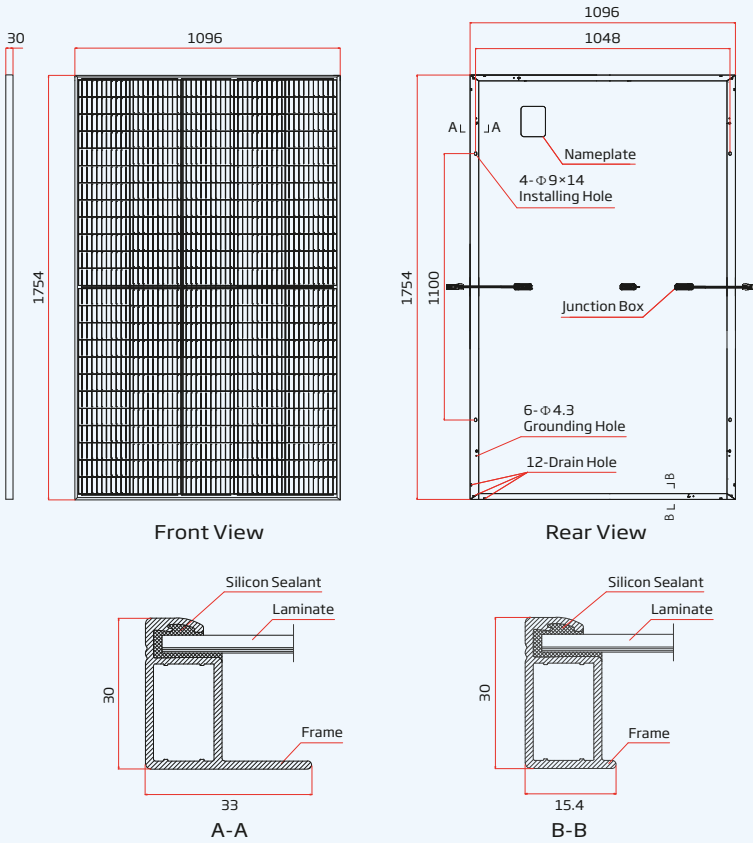


## Comprehensive Product and System Certificates

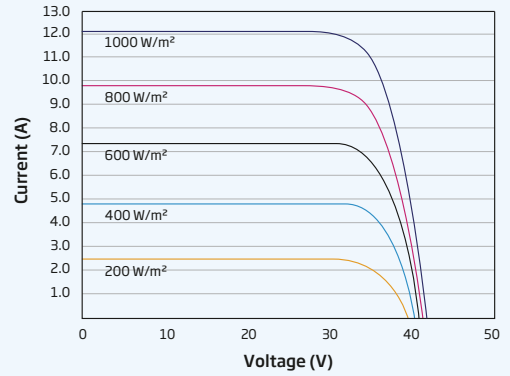


IEC61215/IEC61730/IEC61701/IEC62716  
ISO 9001: Quality Management System  
ISO 14001: Environmental Management System  
ISO14064: Greenhouse Gases Emissions Verification  
ISO45001: Occupational Health and Safety Management System

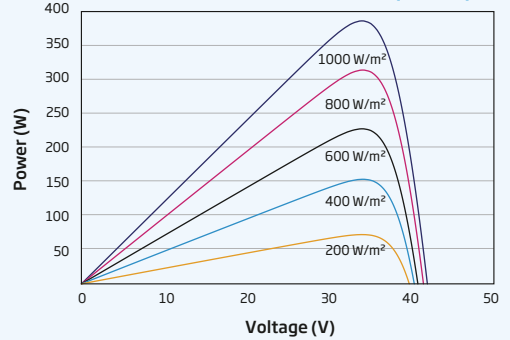
### DIMENSIONS OF PV MODULE (mm)



### I-V CURVES OF PV MODULE (390 W)



### P-V CURVES OF PV MODULE (390 W)



### ELECTRICAL DATA (STC)

	TSM-380 DE09.05	TSM-385 DE09.05	TSM-390 DE09.05	TSM-395 DE09.05	TSM-400 DE09.05
Peak Power Watts-P <sub>MAX</sub> (Wp)*	380	385	390	395	400
Power Tolerance-P <sub>MAX</sub> (W)	0/+5	0/+5	0/+5	0/+5	0/+5
Maximum Power Voltage-V <sub>MPP</sub> (V)	33.4	33.6	33.8	34.0	34.2
Maximum Power Current-I <sub>MPP</sub> (A)	11.38	11.46	11.54	11.62	11.70
Open Circuit Voltage-V <sub>oc</sub> (V)	40.4	40.6	40.8	41.0	41.2
Short Circuit Current-I <sub>sc</sub> (A)	12.00	12.07	12.14	12.21	12.28
Module Efficiency η <sub>m</sub> (%)	19.8	20.0	20.3	20.5	20.8

STC: Irradiance 1000 W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5 \*Measuring tolerance: ±3%

### MECHANICAL DATA

Solar Cells	Monocrystalline
No. of cells	120 cells
Module Dimensions	1754×1096×30 mm
Weight	21.0 kg
Glass	3.2 mm, High Transmission, AR Coated Heat Strengthened Glass
Encapsulant material	EVA/POE
Backsheet	Black-White
Frame	30 mm Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0 mm <sup>2</sup> Landscape: 1100/1100 mm Portrait: 280/280 mm*
Connector	TS4/MC4 EVO2*

\*Special order only

### ELECTRICAL DATA (NOCT)

	TSM-380 DE09.05	TSM-385 DE09.05	TSM-390 DE09.05	TSM-395 DE09.05	TSM-400 DE09.05
Maximum Power-P <sub>MAX</sub> (Wp)	286	290	294	298	302
Maximum Power Voltage-V <sub>MPP</sub> (V)	31.4	31.6	31.8	31.9	32.1
Maximum Power Current-I <sub>MPP</sub> (A)	9.12	9.18	9.24	9.32	9.38
Open Circuit Voltage-V <sub>oc</sub> (V)	38.0	38.2	38.4	38.6	38.8
Short Circuit Current-I <sub>sc</sub> (A)	9.67	9.73	9.78	9.84	9.90

NOCT: Irradiance at 800 W/m<sup>2</sup>, Ambient Temperature 20°C, Wind Speed 1m/s.

### TEMPERATURE RATINGS

NOCT(Nominal Operating Cell Temperature)	43°C (±2 K)
Temperature Coefficient of P <sub>MAX</sub>	-0.34%/K
Temperature Coefficient of V <sub>oc</sub>	-0.25%/K
Temperature Coefficient of I <sub>sc</sub>	0.04%/K

### MAXIMUM RATINGS

Operational Temperature	-40 to +85°C
Maximum System Voltage	1500 V DC (IEC)
Max Series Fuse Rating	20 A

### WARRANTY

- 15 Year product workmanship warranty
- 25 Year power warranty
- 2% First year degradation
- 0.55% Annual power degradation

(Please refer to the applicable limited warranty for details)

### PACKAGING CONFIGURATION

Modules per box	36 pieces
Modules per 40' container	936 pieces