

# Vertex S

BACKSHEET MONOCRYSTALLINE MODULE

SPINELLI INOX

PRODUCT: TSM-DE09R.08W  
POWER RANGE: 415-435 W

**435 W+**

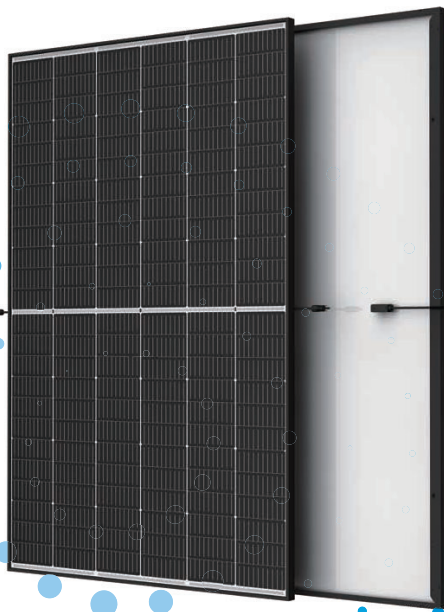
MAXIMUM POWER OUTPUT

**0/+5 W**

POSITIVE POWER TOLERANCE

**21.8 %**

MAXIMUM EFFICIENCY



### Small in size, big on power

- Generates up to 435 W, 21.8 % 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

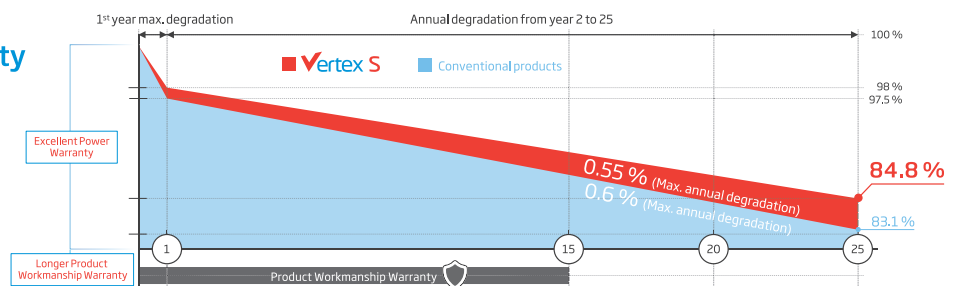


### High Reliability

- Positive load up to 6,000 Pa (snow)
- Negative load up to 4,000 Pa (wind)

### 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

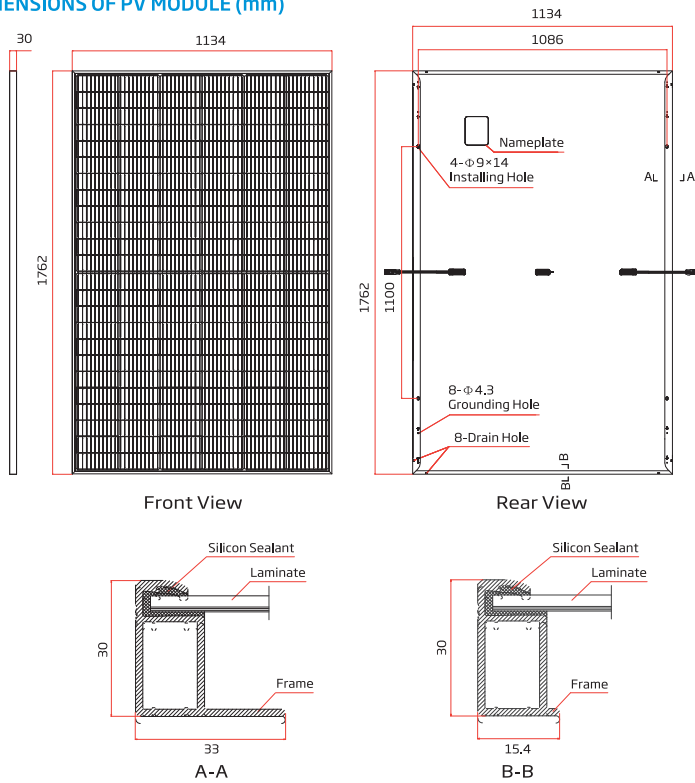


IEC61215/IEC61730/IEC61701/IEC62716  
ISO 9001: Quality Management System  
ISO 14001: Environmental Management System  
ISO14064: Greenhouse Gases Emissions Verification  
ISO45001: Occupational Health and Safety Management System

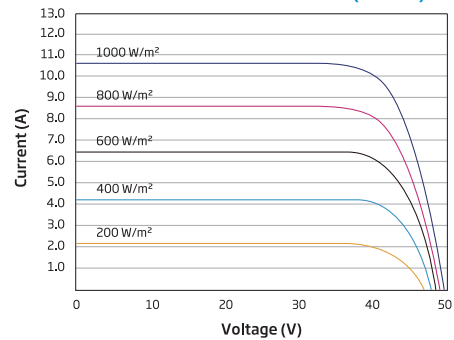


Trinasolar

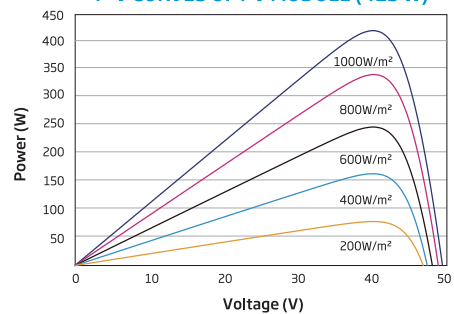
### DIMENSIONS OF PV MODULE (mm)



### I-V CURVES OF PV MODULE (425 W)



### P-V CURVES OF PV MODULE (425 W)



### ELECTRICAL DATA (STC)

	TSM-415 DE09R.08W	TSM-420 DE09R.08W	TSM-425 DE09R.08W	TSM-430 DE09R.08W	TSM-435 DE09R.08W
Peak Power Watts- $P_{MAX}$ (Wp)*	415	420	425	430	435
Power Tolerance- $P_{MAX}$ (W)	0/+5	0/+5	0/+5	0/+5	0/+5
Maximum Power Voltage- $V_{MPP}$ (V)	41.7	42.0	42.2	42.3	42.5
Maximum Power Current- $I_{MPP}$ (A)	9.94	10.01	10.08	10.17	10.24
Open Circuit Voltage- $V_{oc}$ (V)	50.0	50.1	50.2	50.3	50.4
Short Circuit Current- $I_{sc}$ (A)	10.55	10.58	10.61	10.64	10.67
Module Efficiency $\eta_m$ (%)	20.8	21.0	21.3	21.5	21.8

STC: Irradiance 1000 W/m², Cell Temperature 25°C, Air Mass AM1.5 \*Measuring tolerance:  $\pm 3\%$

### MECHANICAL DATA

Solar Cells	Monocrystalline
No. of cells	144 cells
Module Dimensions	1762x1134x30 mm
Weight	21.8 kg
Glass	3.2 mm, High Transmission, AR Coated Heat Strengthened Glass
Encapsulant material	EVA/POE
Backsheet	White
Frame	30 mm Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0 mm² Landscape: 1100/1100 mm Portrait: 280/350 mm*
Connector	TS4/MC4 EVO2*

\*Special order only

### ELECTRICAL DATA (NOCT)

	TSM-415 DE09R.08W	TSM-420 DE09R.08W	TSM-425 DE09R.08W	TSM-430 DE09R.08W	TSM-435 DE09R.08W
Maximum Power- $P_{MAX}$ (Wp)	312	317	321	325	329
Maximum Power Voltage- $V_{MPP}$ (V)	38.7	39.2	39.5	39.7	40.0
Maximum Power Current- $I_{MPP}$ (A)	8.07	8.10	8.13	8.17	8.23
Open Circuit Voltage- $V_{oc}$ (V)	47.1	47.1	47.2	47.4	47.5
Short Circuit Current- $I_{sc}$ (A)	8.50	8.53	8.55	8.60	8.65

NOCT: Irradiance at 800 W/m², Ambient Temperature 20°C, Wind Speed 1m/s.

### TEMPERATURE RATINGS

NOCT (Nominal Operating Cell Temperature)	43°C ( $\pm 2$ K)
Temperature Coefficient of $P_{MAX}$	-0.34%/K
Temperature Coefficient of $V_{oc}$	-0.25%/K
Temperature Coefficient of $I_{sc}$	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