

Vertex S

BACKSHEET MONOCRYSTALLINE MODULE

PRODUCT: TSM-DE09.08
POWER RANGE: 390-410 W

410 W+

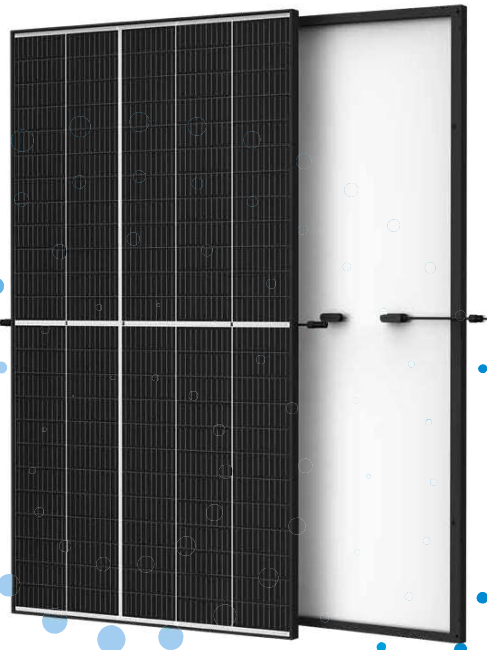
MAXIMUM POWER OUTPUT

0/+5 W

POSITIVE POWER TOLERANCE

21.3 %

MAXIMUM EFFICIENCY



Small in size, big on power

- Generates up to 410 W, 21.3 % 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

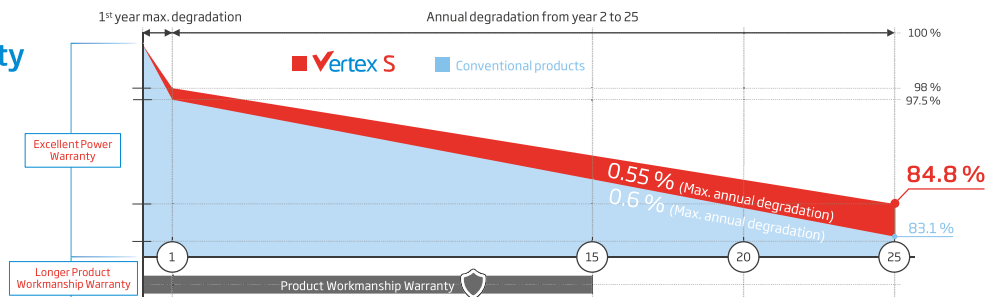
- 6,000 Pa snow load (test load)
- 4,000 Pa wind load (test load)

Extended Vertex S Warranty

2 %
1st year max. degradation

0.55 %
Max. annual degradation from year 2 to 25

15 Years
Product Workmanship Warranty

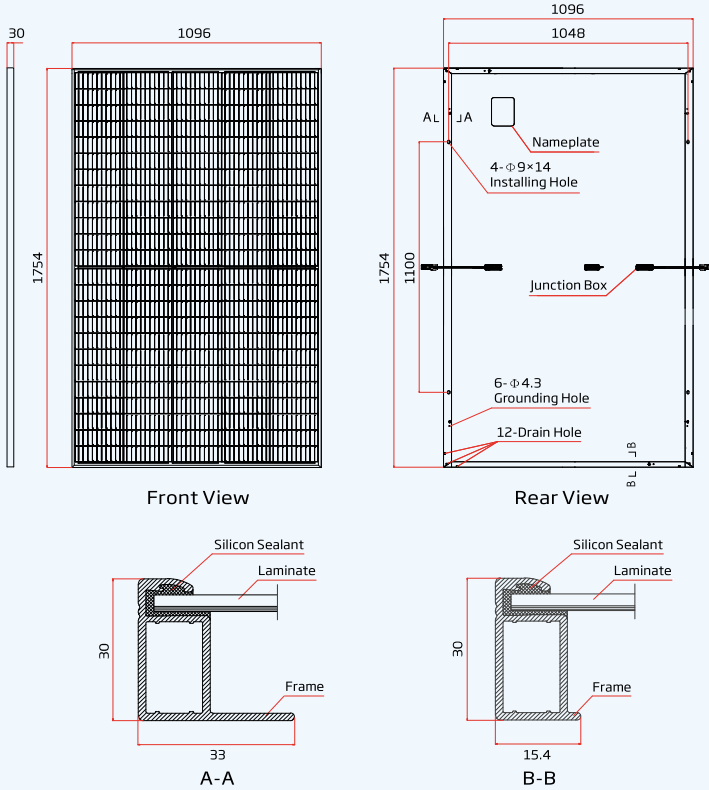


Comprehensive Product and System Certificates

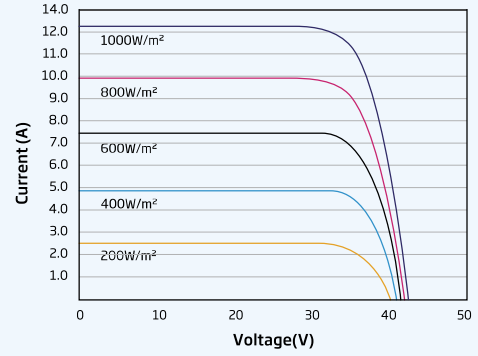


IEC61215/IEC61730/IEC61701/IEC62716
ISO 9001: Quality Management System
ISO 14001: Environmental Management System
ISO14064: Greenhouse Gases Emissions Verification
ISO45001: Occupational Health and Safety Management System

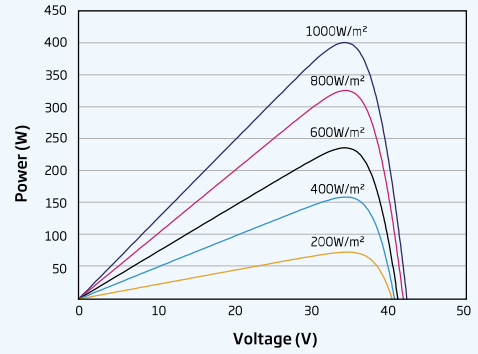
DIMENSIONS OF PV MODULE (mm)



I-V CURVES OF PV MODULE (400 W)



P-V CURVES OF PV MODULE (400 W)



ELECTRICAL DATA (STC)

	TSM-390 DE09.08	TSM-395 DE09.08	TSM-400 DE09.08	TSM-405 DE09.08	TSM-410 DE09.08
Peak Power Watts- P_{MAX} (Wp)*	390	395	400	405	410
Power Tolerance- P_{MAX} (W)	0/+5	0/+5	0/+5	0/+5	0/+5
Maximum Power Voltage- V_{MPP} (V)	33.8	34.0	34.2	34.4	34.6
Maximum Power Current- I_{MPP} (A)	11.54	11.62	11.70	11.77	11.85
Open Circuit Voltage- V_{oc} (V)	40.8	41.0	41.2	41.4	41.6
Short Circuit Current- I_{sc} (A)	12.14	12.21	12.28	12.34	12.40
Module Efficiency η_m (%)	20.3	20.5	20.8	21.1	21.3

STC: Irradiance 1000 W/m², Cell Temperature 25 °C, Air Mass AML5 *Measuring tolerance: \pm 3%

MECHANICAL DATA

Solar Cells	Monocrystalline
No. of cells	120 cells
Module Dimensions	1754 \times 1096 \times 30 mm
Weight	21.0 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 mm ² Landscape: 1100/1100 mm Portrait: 280/280 mm*
Connector	TS4/MC4 EVO2*

*Special order only

ELECTRICAL DATA (NOCT)

	TSM-390 DE09.08	TSM-395 DE09.08	TSM-400 DE09.08	TSM-405 DE09.08	TSM-410 DE09.08
Maximum Power- P_{MAX} (Wp)	295	298	302	306	310
Maximum Power Voltage- V_{MPP} (V)	31.8	32.0	32.2	32.5	32.8
Maximum Power Current- I_{MPP} (A)	9.26	9.32	9.38	9.41	9.46
Open Circuit Voltage- V_{oc} (V)	38.4	38.6	38.8	38.9	39.1
Short Circuit Current- I_{sc} (A)	9.78	9.84	9.90	9.95	9.99

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