Vertex S+

BIFACIAL DUAL GLASS N type i-TOPCon MODULE

PRODUCT: TSM-NEG9RC.27

POWER RANGE: 410-440 W

440 W
MAXIMUM POWER OUTPUT

0/+5 W
POSITIVE POWER TOLERANCE

22.0 %
MAXIMUM EFFICIENCY



Small in size, bigger on power

- Generates up to 440 W, 22.0 % module efficiency with high density interconnect technology
- Boost performance at high temperature environments with better thermal behavior

Transparent Dual-glass Design

- Designed with aesthetics in mind
- Excellent fire rating and resistance to harsh environmental conditions
- 5,400 Pa snow load and 4,000 Pa wind load (test loads)

Maximize Energy Harvest

- Higher bifaciality up to 85 %
- Up to 25 years product warranty and 30 years power warranty
- 1 % first-year degradation and 0.4 % annual degradation enabled by N-type technology

Universal solution for residential and C&I rooftops

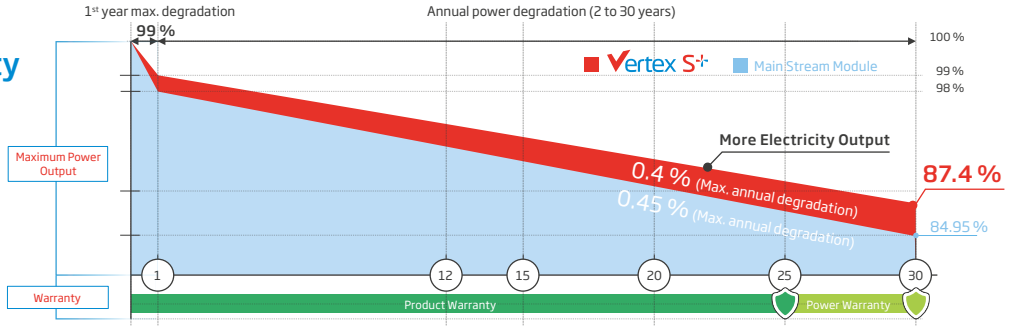
- Designed for compatibility with existing mainstream inverters, optimizers and mounting systems
- Perfect size and low weight for easy handling

Extended Vertex S+ Warranty

1 %
1st year max. degradation

0.4 %
Max. annual degradation from year 2 to 30

25 Years
Product Workmanship Warranty



Comprehensive Products and System Certificates

IEC61215/IEC61730/IEC61701/IEC62716/UL61730
ISO 9001: Quality Management System
ISO 14001: Environmental Management System
ISO14064: Greenhouse Gases Emissions Verification
ISO45001: Occupational Health and Safety Management System

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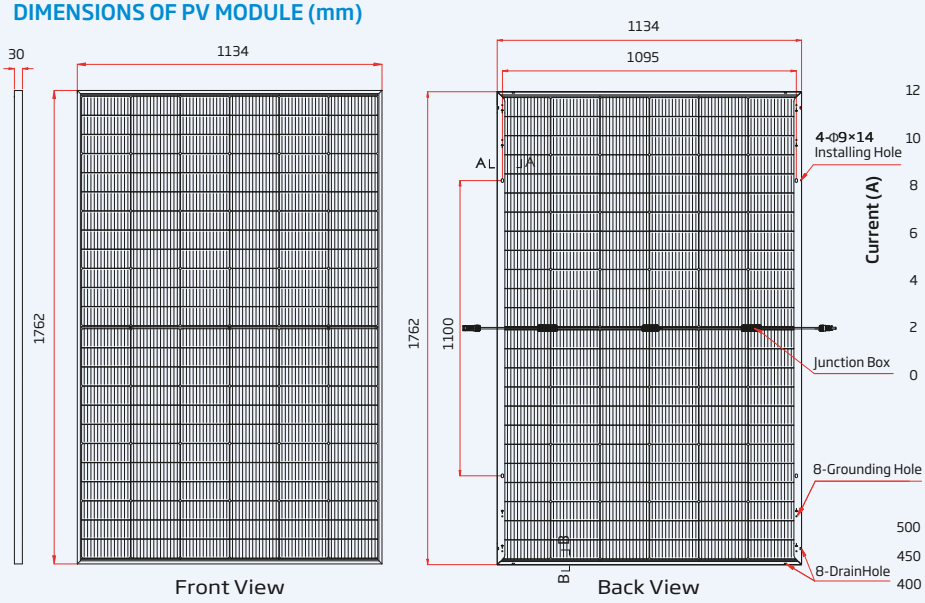
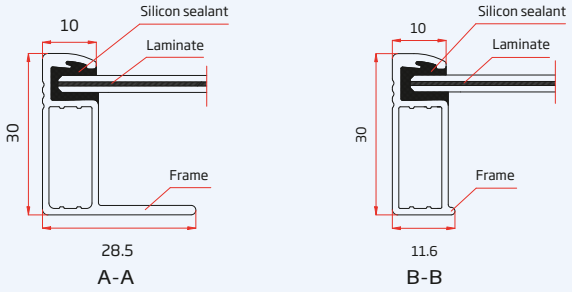
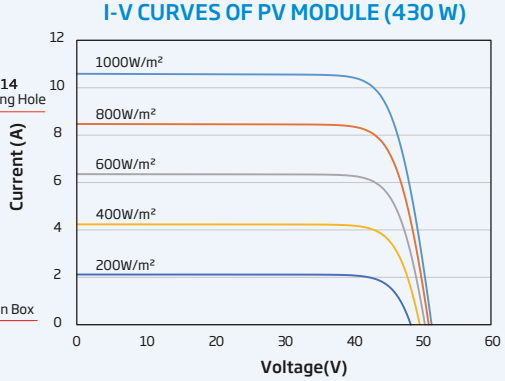
DIMENSIONS OF PV MODULE (mm)

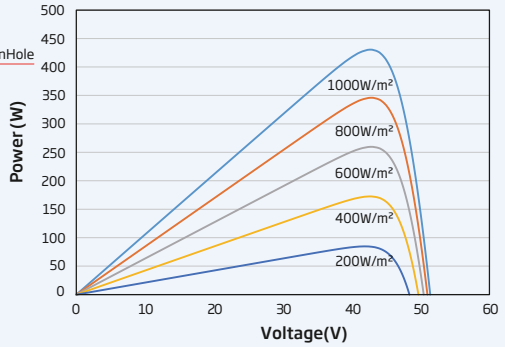




I-V CURVES OF PV MODULE (430 W)



P-V CURVES OF PV MODULE (430 W)



ELECTRICAL DATA (STC)

	TSM-415 NEG9RC.27	TSM-420 NEG9RC.27	TSM-425 NEG9RC.27	TSM-430 NEG9RC.27	TSM-435 NEG9RC.27	TSM-440 NEG9RC.27
Peak Power Watts-PMAX (Wp)*	415	420	425	430	435	440
Power Tolerance-PMAX (W)	0/+5					
Maximum Power Voltage-VMPP (V)	42.1	42.5	42.9	43.2	43.6	44.0
Maximum Power Current-IMPP (A)	9.86	9.89	9.92	9.96	9.99	10.01
Open Circuit Voltage-VOC (V)	50.1	50.5	50.9	51.4	51.8	52.2
Short Circuit Current-ISC (A)	10.50	10.53	10.56	10.59	10.64	10.67
Module Efficiency η m (%)	20.8	21.0	21.3	21.5	21.8	22.0

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

Electrical characteristics with different power bin (reference to 10% Irradiance ratio)

Total Equivalent power -PMAX (Wp)	448	454	459	464	470	475
Maximum Power Voltage-VMPP (V)	42.1	42.5	42.9	43.2	43.6	44.0
Maximum Power Current-IMPP (A)	10.65	10.68	10.71	10.76	10.79	10.81
Open Circuit Voltage-VOC (V)	50.1	50.5	50.9	51.4	51.8	52.2
Short Circuit Current-ISC (A)	11.34	11.37	11.40	11.44	11.49	11.52
Irradiance ratio (rear/front)	10 %					

Power Bifaciality: 80 ±5 %.

ELECTRICAL DATA (NOCT)

	TSM-415 NEG9RC.27	TSM-420 NEG9RC.27	TSM-425 NEG9RC.27	TSM-430 NEG9RC.27	TSM-435 NEG9RC.27	TSM-440 NEG9RC.27
Maximum Power-PMAX (Wp)	316	320	324	328	332	335
Maximum Power Voltage-VMPP (V)	39.3	39.7	40.0	40.4	40.7	41.0
Maximum Power Current-IMPP (A)	8.03	8.07	8.09	8.11	8.15	8.17
Open Circuit Voltage-VOC (V)	47.5	47.8	48.2	48.7	49.1	49.4
Short Circuit Current-ISC (A)	8.46	8.49	8.51	8.53	8.57	8.60

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

MECHANICAL DATA

Solar Cells	Monocrystalline
No. of cells	144 cells
Module Dimensions	1762×1134×30 mm
Weight	21.0 kg
Front Glass	1.6 mm, High Transmission, AR Coated Heat Strengthened Glass
Encapsulant material	POE/EVA
Back Glass	1.6 mm, High Transmission, Heat Strengthened Glass
Frame	30 mm Anodized Aluminium Alloy, Black
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

TEMPERATURE RATINGS

NOCT(Nominal Operating Cell Temperature)	43 °C (±2 K)
Temperature Coefficient of PMAX	-0.30 %/ K
Temperature Coefficient of VOC	-0.24 %/ K
Temperature Coefficient of ISC	0.04 %/ K

MAXIMUM RATINGS

Operational Temperature	-40 to +85 °C
Maximum System Voltage	1500 V DC (IEC)
Max Series Fuse Rating	25 A

WARRANTY

25 year Product Workmanship Warranty

30 year Power Warranty

1 % first year degradation

0.4 % Annual Power Attenuation

(Please refer to product warranty for details)

PACKAGING CONFIGURATION

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

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CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.

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