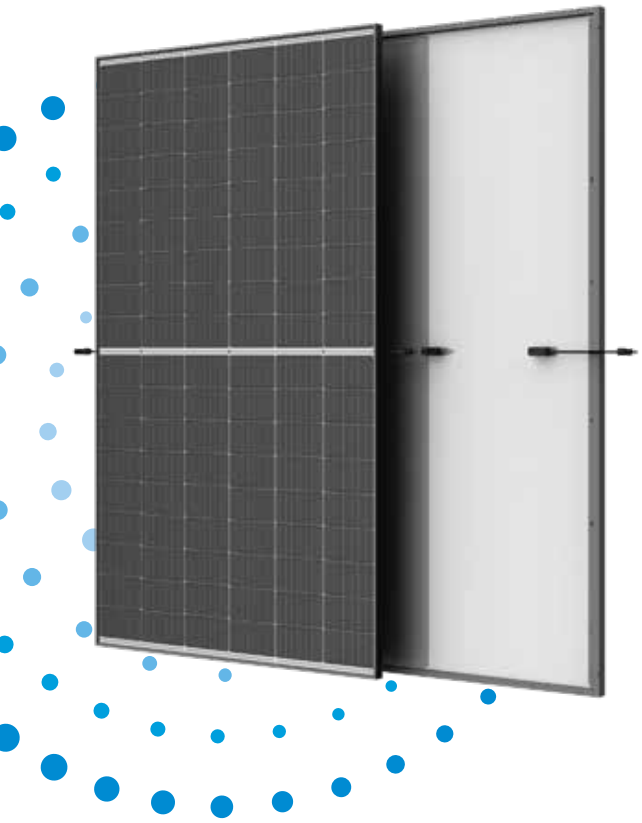
Vertex S+

DUAL GLASS N type i-TOPCon MODULE

PRODUCT: TSM-NEG18R.28

POWER RANGE: 475-505 W

505 W	0/+5 W	22.7 %
MAXIMUM POWER OUTPUT	POSITIVE POWER TOLERANCE	MAXIMUM EFFICIENCY



Optimal Size for Commercial & Industrial Rooftops

- Compact module design with medium size for lower total system cost and shorter payback time
- Low voltage design for high string power

Lightweight Dual-glass Design, High Reliability

- Excellent fire resistance; durability in harsh environmental conditions and high temperature or high humidity areas
- Up to 5,400 Pa snow load and 2,400 Pa wind load (test loads)
- 25 years product warranty

Maximized Energy Harvest

- High module power: Up to 505 W, 22.7 % module efficiency with n type i-TOPCon technology
- Maximum 1 % first-year degradation and 0.4 % annual degradation
- 30 years power warranty

Universal Solution for Rooftop Systems

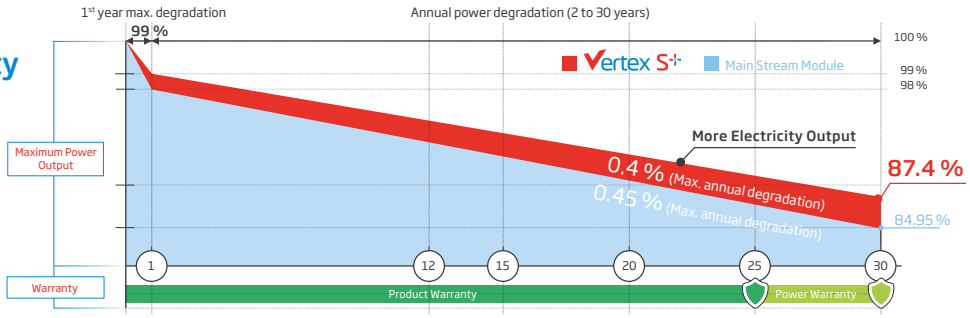
- Designed for compatibility with existing mainstream inverters, optimizers and mounting systems
- Easy to handle (length below 2 meters) and install on roofs with excellent size and light weight
- Flexible installation solutions for system deployment

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
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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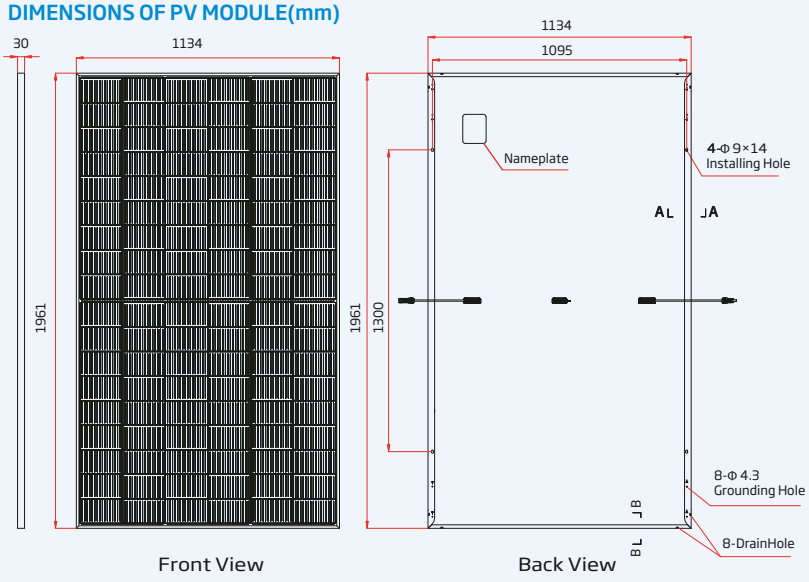
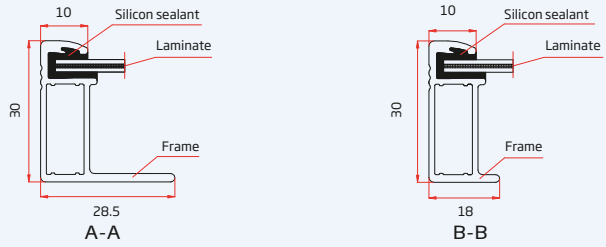
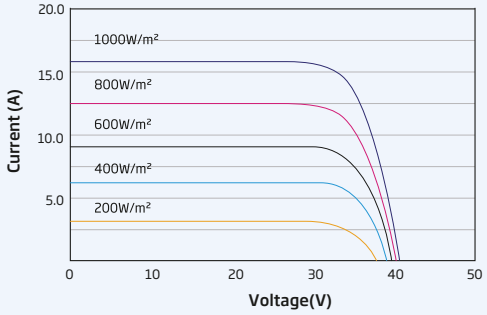
DIMENSIONS OF PV MODULE(mm)

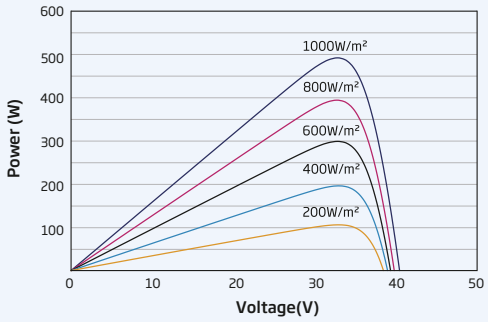




I-V CURVES OF PV MODULE (490 W)



P-V CURVES OF PV MODULE (490 W)



ELECTRICAL DATA (STC)

	TSM-475 NEG18R.28	TSM-480 NEG18R.28	TSM-485 NEG18R.28	TSM-490 NEG18R.28	TSM-495 NEG18R.28	TSM-500 NEG18R.28	TSM-505 NEG18R.28
Peak Power Watts-PMAX (Wp)*	475	480	485	490	495	500	505
Power Tolerance-PMAX (W)				0/+5			
Maximum Power Voltage-VMPP (V)	32.3	32.5	32.7	32.9	33.1	33.3	33.5
Maximum Power Current-IMPP (A)	14.72	14.77	14.84	14.91	14.97	15.03	15.09
Open Circuit Voltage-VOC (V)	39.0	39.2	39.4	39.6	39.8	40.1	40.3
Short Circuit Current-ISC (A)	15.68	15.72	15.76	15.80	15.83	15.86	15.89
Module Efficiency η m (%)	21.4	21.6	21.8	22.0	22.3	22.5	22.7

STC: Irradiance 1000 W/m², Cell Temperature 25 °C, Air Mass AM 1.5. *Measuring tolerance: ±3 %.

ELECTRICAL DATA (NOCT)

	TSM-475 NEG18R.28	TSM-480 NEG18R.28	TSM-485 NEG18R.28	TSM-490 NEG18R.28	TSM-495 NEG18R.28	TSM-500 NEG18R.28	TSM-505 NEG18R.28
Maximum Power-PMAX (Wp)	363	367	371	375	378	382	386
Maximum Power Voltage-VMPP (V)	30.4	30.6	30.8	31.0	31.3	31.5	31.8
Maximum Power Current-IMPP (A)	11.94	11.98	12.02	12.06	12.08	12.11	12.15
Open Circuit Voltage-VOC (V)	36.9	37.2	37.4	37.6	37.7	38.0	38.3
Short Circuit Current-ISC (A)	12.64	12.67	12.70	12.74	12.76	12.78	12.81

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

MECHANICAL DATA

Solar Cells	Monocrystalline
No. of cells	108 cells
Module Dimensions	1961×1134×30 mm
Weight	23.5 kg
Front Glass	1.6 mm, High Transmission, AR Coated Heat Strengthened Glass
Encapsulant material	POE/EVA
Back Glass	1.6 mm, Heat Strengthened Glass
Frame	30 mm Anodized Aluminium Alloy, Black
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0 mm² Landscape: 1300/1300 mm Portrait: 280/350 mm*
Connector	TS4 / MC4 EVO2*

*Special order only.

TEMPERATURE RATINGS

NOCT (Nominal Operating Cell Temperature)	43°C (±2°C)
Temperature Coefficient of PMAX	-0.29%/°C
Temperature Coefficient of VOC	-0.24%/°C
Temperature Coefficient of ISC	0.04%/°C

MAXIMUM RATINGS

Operational Temperature	-40 to +85 °C
Maximum System Voltage	1500 V DC (IEC)
Max Series Fuse Rating	30 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:	864 pieces

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

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Version number: TSM_EN_2024_A

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