

# Vertex S+

## DUAL GLASS MONOCRYSTALLINE MODULE

PRODUCT: TSM-NEG9R.28

PRODUCT RANGE: 420~435W

# 435W

MAXIMUM POWER OUTPUT

# 0~+5W

POSITIVE POWER TOLERANCE

# 21.8%

MAXIMUM EFFICIENCY



### Small in size, bigger on power

- 고밀도 인터커넥트 기술로 최대 21.8%의 모듈 효율
- 뛰어난 빛 가둠효과와 더 낮은 직렬 저항 및 향상된 전류 수집을 위한 멀티버스바 기술 적용
- 고출력 고효율 모듈로 설치비용 감소
- 낮은 온도계수로 더운 계절에도 뛰어난 성능



### Dual-glass Design, more secure and sustainable

- 듀얼글라스 사용으로 모듈 후면 내구성 상승
- 듀얼글라스 사용 및 혁신적인 셀 커팅 기술로 모듈 내구성 상승
- 염분, 암모니아, 모래, 고온, 습도 등 가혹한 환경에 대한 뛰어난 내성



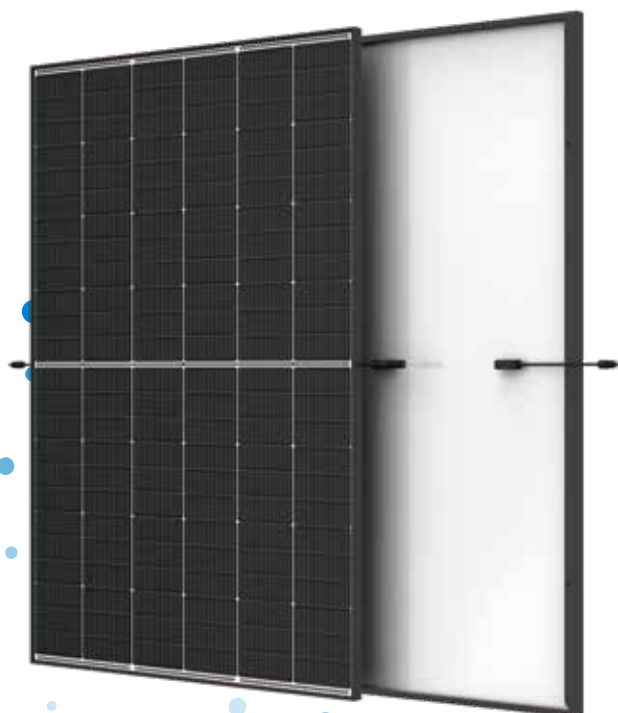
### Ultra-low Degradation, longer warranty, higher output

- First-year degradation 1% and annual degradation at 0.4%
- Up to 15 years product warranty and 30 years power warranty

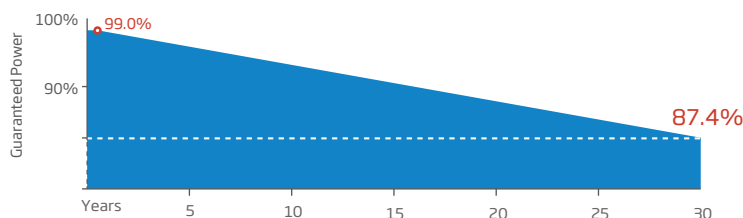


### Universal solution for residential and C&I rooftops

- 다양한 Mounting 시스템 및 인버터들과의 뛰어난 호환성
- 설치 및 취급에 최적화된 모듈 크기 및 무게
- 지붕형 태양광 시스템에 최적화된 모듈



### Trina Solar's Dual Glass Performance Warranty



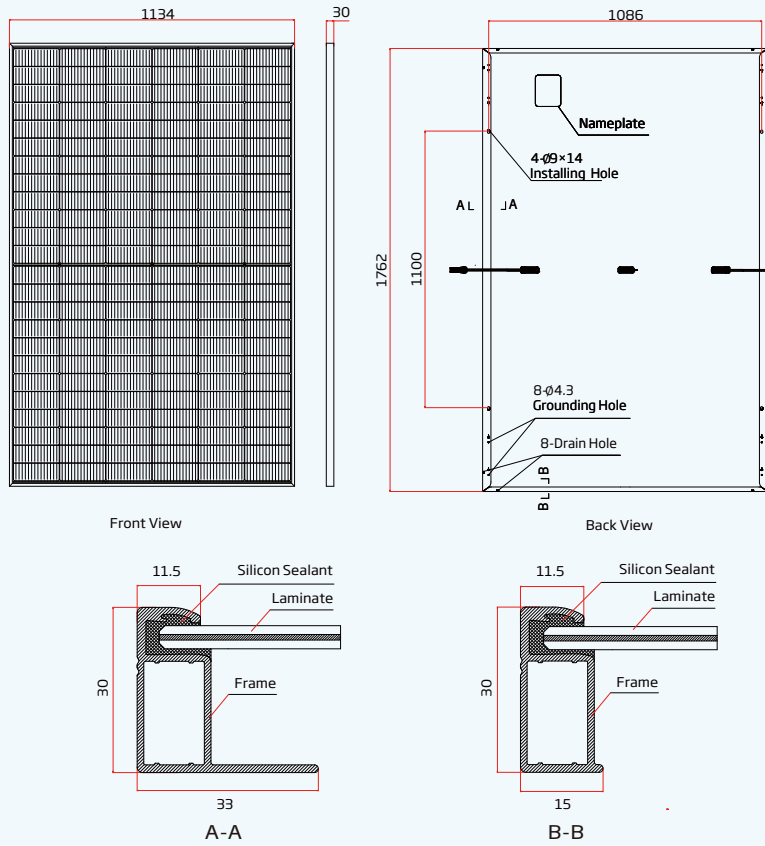
### Comprehensive Products and System Certificates



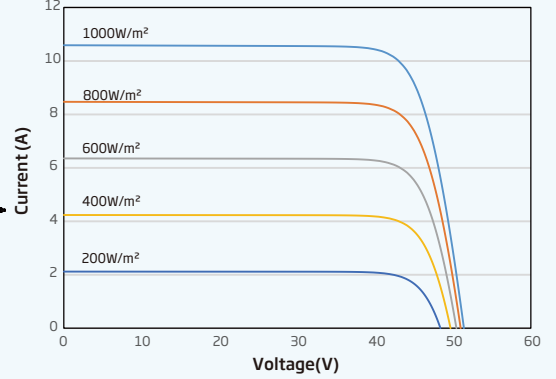
IEC61215/IEC61730/IEC61701/IEC62716/UL61730  
 ISO 9001: Quality Management System  
 ISO 14001: environmental Management System  
 ISO 14064: Greenhouse Gases Emissions Verification  
 ISO 45001: Occupational Health and Safety Management System



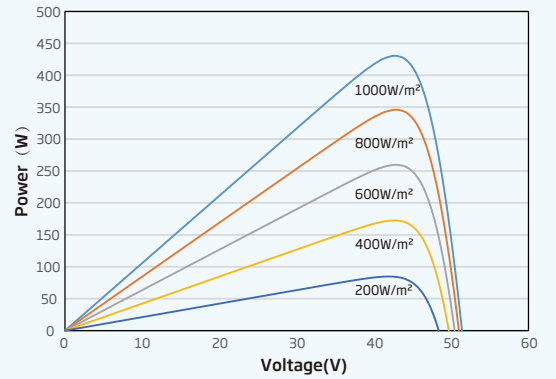
**DIMENSIONS OF PV MODULE(mm)**



**I-V CURVES OF PV MODULE(430W)**



**P-V CURVES OF PV MODULE(430W)**



**ELECTRICAL DATA (STC)**

최대출력-P <sub>MAX</sub> (Wp)*	420	425	430	435
출력 공차-P <sub>MAX</sub> (W)	0 ~ +5			
최대출력 동작전압-V <sub>MPP</sub> (V)	42.5	42.9	43.2	43.6
최대출력 동작전류-I <sub>MPP</sub> (A)	9.89	9.92	9.96	9.99
개방전압-V <sub>oc</sub> (V)	50.5	50.9	51.4	51.8
단락전류-I <sub>sc</sub> (A)	10.53	10.56	10.59	10.64
모듈 효율 η <sub>m</sub> (%)	21.0	21.3	21.5	21.8

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

**ELECTRICAL DATA (NOCT)**

최대출력-P <sub>MAX</sub> (Wp)*	320	324	328	332
최대출력 동작전압-V <sub>MPP</sub> (V)	39.7	40.0	40.4	40.7
최대출력 동작전류-I <sub>MPP</sub> (A)	8.07	8.09	8.11	8.15
개방전압-V <sub>oc</sub> (V)	47.8	48.2	48.7	49.1
단락전류-I <sub>sc</sub> (A)	8.49	8.51	8.53	8.57

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

**MECHANICAL DATA**

Solar Cells	N type
No. of cells	144 cells
Module 치수	1762×1134×30 mm
Weight	21.1kg
Front Glass	1.6 mm, High Transmission, AR 코팅 강화 유리
Encapsulant material	EVA/POE
Back Glass	1.6mm, 강화 유리
Frame	30mm Anodized Aluminium Alloy, Black
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm <sup>2</sup> Portrait: 350/280 mm Landscape: 1400/1400 mm
Connector	TS4

**TEMPERATURE RATINGS**

NOCT(Nominal Operating Cell Temperature)	43°C (±2°C)
P <sub>MAX</sub> 온도계수	-0.30%/°C
V <sub>oc</sub> 온도계수	-0.24%/°C
I <sub>sc</sub> 온도계수	0.04%/°C

**MAXIMUM RATINGS**

작업온도	-40~+85°C
최대시스템전압	1500V DC (IEC)
최대퓨즈정격전류	20A

**WARRANTY**

15 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