



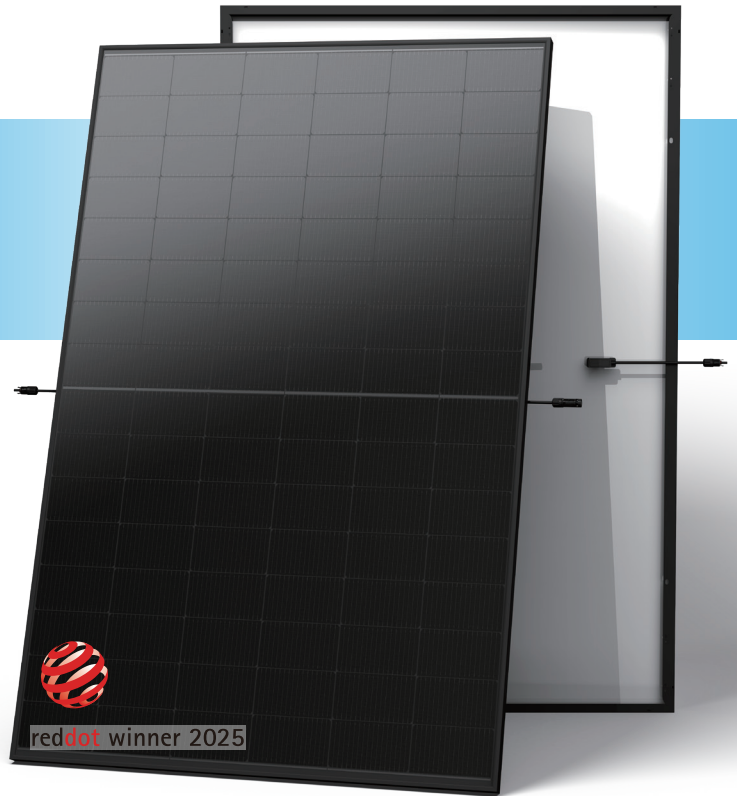
N-type TOPCon

DUAL GLASS MONOCRYSTALLINE MODULE

TSM-NEG9RH.25 420-445W

445W / MAXIMUM POWER OUTPUT

22.3% / MAXIMUM EFFICIENCY



High Customer Value

- Full black, designed with aesthetics in mind, suitable for residential and C&I rooftop
- Perfect size and low weight for handling and installation
- Compatible with mainstream inverters and diverse mounting systems
- Mechanical test load up to 5400 Pa front side and 5400 Pa back side
- Certified lifetime carbon footprint assessment



High reliability with light double glass

- Less prone to micro-cracks and scratches on the back side
- Excellent fire rating, weather resistance, sustainable in harsh environments and extreme weather conditions
- Certified resistance against salt spray, sand dust, ammonia, PID
- Up to 25 years product warranty and 30 years power warranty



High power up to 445W

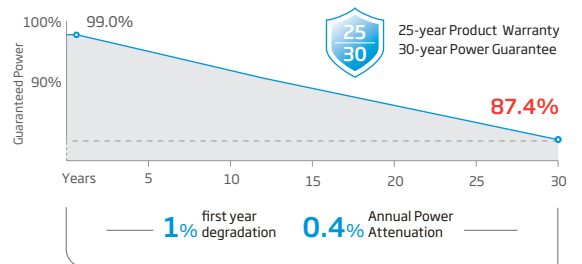
- Up to 22.3% module efficiency, on 210 innovative platform
- Patented TOPCon technology with continuous efficiency improvement, including contact resistance reduction, rear reflection enhancement and edge quality repairment



High energy yield

- Excellent low irradiation performance, validated by 3rd party
- Lower temperature efficient (-0.29%/°C) and lower working temperature

Performance Warranty



* Please refer to product warranty for details

Comprehensive Products and System Certificates

IEC61215/IEC61730/UL61730

ISO 9001: Quality Management System

ISO 14001: Environmental Management System

ISO14064: Greenhouse Gases Emissions Verification

ISO45001: Occupational Health and Safety Management System



ELECTRICAL DATA (STC)

| | | | | | | |
|-------------------------------------|--------|-------|-------|-------|-------|-------|
| Peak Power Watts- $P_{MAX}(W_p)^*$ | 420 | 425 | 430 | 435 | 440 | 445 |
| Power Selection (W)** | 0 ~ +5 | | | | | |
| Maximum Power Voltage- $V_{MPP}(V)$ | 28.4 | 28.7 | 29.0 | 29.3 | 29.6 | 29.9 |
| Maximum Power Current- $I_{MPP}(A)$ | 14.79 | 14.81 | 14.83 | 14.85 | 14.87 | 14.89 |
| Open Circuit Voltage- $V_{oc}(V)$ | 34.7 | 34.9 | 35.1 | 35.3 | 35.5 | 35.7 |
| Short Circuit Current- $I_{sc}(A)$ | 15.64 | 15.68 | 15.72 | 15.76 | 15.80 | 15.84 |
| Module Efficiency $\eta_m(\%)$ | 21.0 | 21.3 | 21.5 | 21.8 | 22.0 | 22.3 |

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

ELECTRICAL DATA (NOCT)

| | | | | | | |
|-------------------------------------|-------|-------|-------|-------|-------|-------|
| Peak Power Watts- $P_{MAX}(W_p)$ | 322 | 325 | 329 | 333 | 337 | 341 |
| Maximum Power Voltage- $V_{MPP}(V)$ | 27.0 | 27.2 | 27.4 | 27.7 | 27.9 | 28.1 |
| Maximum Power Current- $I_{MPP}(A)$ | 11.91 | 11.96 | 12.00 | 12.04 | 12.08 | 12.12 |
| Open Circuit Voltage- $V_{oc}(V)$ | 33.0 | 33.1 | 33.3 | 33.5 | 33.7 | 33.9 |
| Short Circuit Current- $I_{sc}(A)$ | 12.61 | 12.64 | 12.67 | 12.71 | 12.74 | 12.77 |

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

TEMPERATURE RATINGS

| | |
|---|-------------|
| NOCT (Nominal Operating Cell Temperature) | 43°C (±2°C) |
| Temperature Coefficient of P_{MAX} | -0.29%/°C |
| Temperature Coefficient of V_{oc} | -0.24%/°C |
| Temperature Coefficient of I_{sc} | 0.04%/°C |

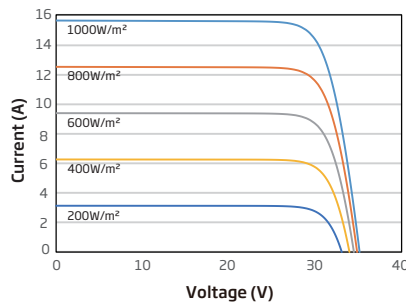
Due to different testing methods, the actual performances might differ from the declared specifications.

APPLICATION CONDITIONS

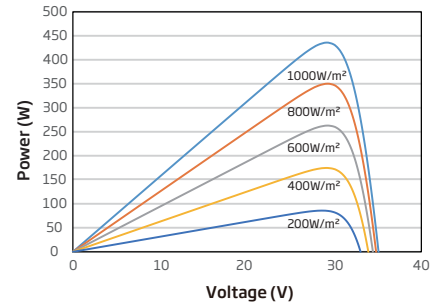
| | |
|------------------------|---------------------------------|
| Operating Temperature | -40 ~ +85°C |
| Maximum System Voltage | 1500V DC (IEC) 1500V DC (UL) |
| Max Series Fuse Rating | 30A |

CURVES OF PV MODULE

I-V CURVES OF PV MODULE (435W)

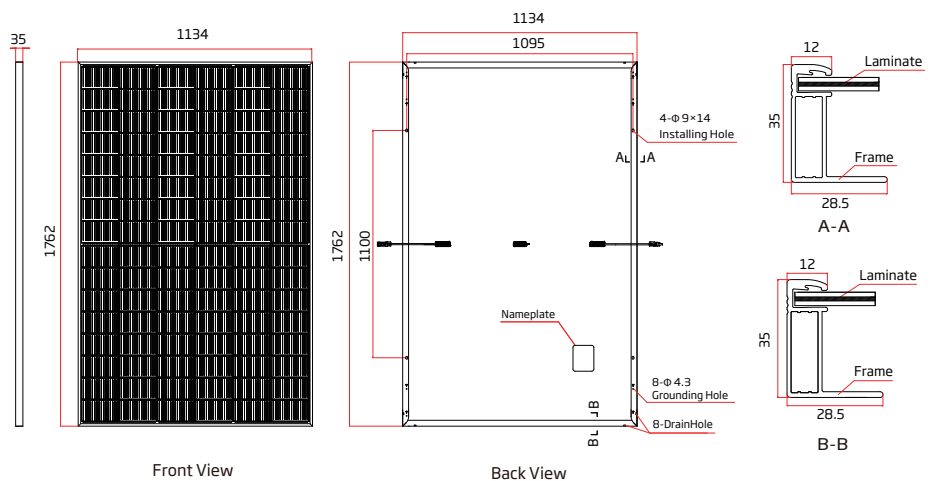


P-V CURVES OF PV MODULE (435W)



MECHANICAL DATA

| | |
|-------------------|---|
| Solar Cells | N-type TOPCon Monocrystalline |
| No. of cells | 96 cells |
| Module Dimensions | 1762×1134×35 mm (69.37×44.65×1.38 inches) |
| Weight | 22.0 kg (48.50lb) |
| Front Glass | 1.6 mm (0.06 inches), AR Coating Heat Strengthened Glass |
| Back Glass | 1.6 mm (0.06 inches), Heat Strengthened Glass |
| Frame | 35mm (1.38 inches) Anodized Aluminium Alloy, Black |
| J-Box | IP 68 rated |
| Cables | Photovoltaic Technology Cable 4.0mm ² (0.006 inches ²) Landscape: 1100 mm/1100 mm (43.31/43.31 inches) Length can be customized |
| Connector | TS4 Plus / TS4 / MC4 EVO2* |
| Fire Type | Type 3B |
| Packaging | Modules per box: 31 pieces Modules per 40/53' container: 806 pieces Pallet Weight: 722.0 kg (1591.74lb) Pallet Dimension: 1800×1135×1259 mm (708.67×446.85×495.67 inches) |



*The connector names listed are general names; specific types are subject to the certification documents.



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