

SCHEDE TECNICHE PANNELLI FOTOVOLTAICI

Impianto fotovoltaico "Green Power for Rail" - Stazione Elettrica di Villanova Cepagatti
(PE)

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|--------------------------------|----|------------|---|---|------------|-----------|
| REVISIONI | 03 | 13/12/2017 | Cambio pannello | M. Penazzo | M. Penazzo | I. Giacon |
| | 02 | 28/06/2017 | Modifica secondo note mail del 28/06/2017 | M. Penazzo | M. Penazzo | I. Giacon |
| | 01 | 28/04/2017 | Revisione tipologie | M. Penazzo | M. Penazzo | I. Giacon |
| | 00 | 15/02/2017 | Emissione per approvazione. | M. Penazzo | M. Penazzo | I. Giacon |
| | N. | DATA | DESCRIZIONE | ELABORATO | VERIFICATO | APPROVATO |
| CODIFICA ELABORATO APPALTATORE | | | Timbro e firma Appaltatore | Logo Appaltatore  | | |
| | | | | | | |



Storia delle revisioni

| | | |
|---------|-----|------------------|
| Rev. 00 | del | Prima emissione. |
|---------|-----|------------------|

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|---------------------------|------------|---------------------------|------------|-----------|-----------|
| Elaborato | | Esaminato | | | Accettato |
| C & G Engineering Service | M. Penazzo | C & G Engineering Service | M. Penazzo | I. Giacon | ING/TAM |

SunPower® Performance Series 1500 Volt | P19

SunPower® Performance Series 1500 Volt panels are designed to deliver consistent performance for many decades in advanced 1500 Volt power plant applications.

Increased Energy Production

The Performance Series modules' linear shading response enables true-tracking in single-axis tracking systems, generating more energy than conventional systems that require backtracking.¹

Design Tip: When modeling P-Series energy performance be sure to use linear shading losses. For more detailed guidance please visit <https://us.sunpower.com/sites/sunpower/files/media-library/manuals/mn-sunpower-p-series-modeling-guide.pdf>

Higher Efficiency

The Performance Series design minimizes white space between solar cells, eliminates reflective metal lines on the cells, and lowers electrical resistance between cells, increasing efficiency compared to Conventional Commercial Panels.²

Optimized for the Oasis Power Plant

From the mounting hardware, to the electrical design within the panel, to the connectors and the 1500 V rating, everything is designed as an integral part of the Oasis Power Plant.

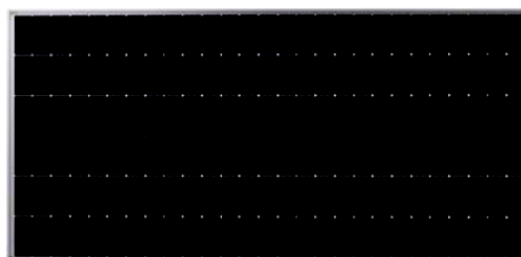
High Reliability

Innovative panel design uses flexible and redundant electrical connections between solar cells to deliver enhanced reliability.

SunPower Quality

Tested to SunPower's rigorous quality standards, and backed by the industry's best Combined Power and Product Warranty.

High Performance & Excellent Reliability

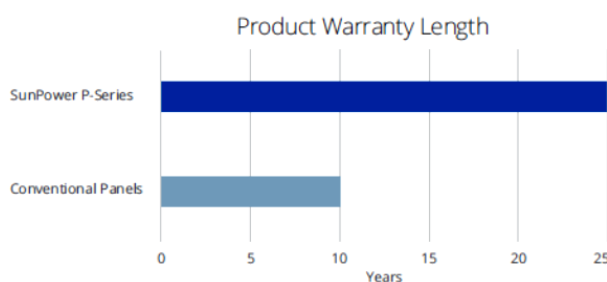


SPR-P19-405-COM

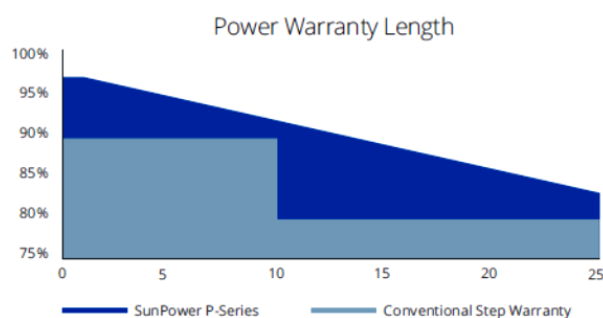


25 Year Combined Warranty

Protect your investment



SunPower provides the best 25 year Combined Power and Product warranty in the industry, providing coverage regardless of product defect or power loss.



SunPower's Performance Series is warranted to produce more than 97% power in the first year, then declining by 0.6% per year, ending at 82.6% power after 25 years.

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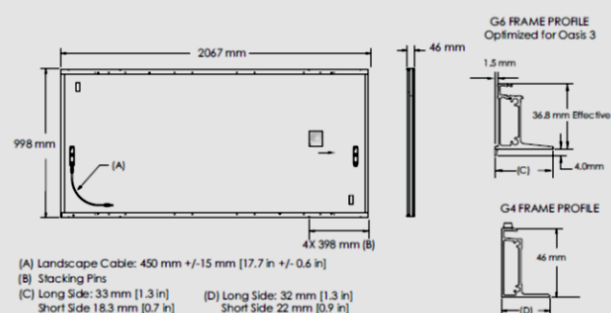
| Electrical Data, STC ³ | | | | | |
|--|------------------------|-----------------|-----------------|-----------------|-----------------|
| Model | SPR-P19-405-COM | SPR-P19-400-COM | SPR-P19-395-COM | SPR-P19-390-COM | SPR-P19-385-COM |
| Nominal Power (P _{nom}) | 405 W | 400 W | 395 W | 390 W | 385 W |
| Power Tolerance | +5/-0% | +5/-0% | +5/-0% | +5/-0% | +5/-0% |
| Efficiency | 19.6% | 19.4% | 19.1% | 18.9% | 18.7% |
| Rated Voltage (V _{mpp}) | 43.6 V | 43.4 V | 43.2 V | 43.1 V | 42.8 V |
| Rated Current (I _{mpp}) | 9.28 A | 9.21 A | 9.14 A | 9.06 A | 8.99 A |
| Open-Circuit Voltage (V _{oc}) | 52.9 V | 52.7 V | 52.5 V | 52.3 V | 52.0 V |
| Short-Circuit Current (I _{sc}) | 9.87 A | 9.79 A | 9.72 A | 9.64 A | 9.57 A |
| Power Temp. Coef. | -0.37% / ° C | | | | |
| Voltage Temp. Coef. | -0.29% / ° C | | | | |
| Current Temp. Coef. | 0.05% / ° C | | | | |
| Maximum System Voltage | 1500 V IEC & 1500 V UL | | | | |
| Maximum Series Fuse | 15 A | | | | |

| Operating Condition And Mechanical Data | |
|---|--|
| Temperature | -40° F to +185° F (-40° C to +85° C) |
| Impact Resistance | 1 inch (25 mm) diameter hail at 52 mph (23 m/s) |
| Appearance | Class B |
| Solar Cells | Monocrystalline |
| Tempered Glass | High-transmission tempered anti-reflective |
| Junction Box | IP-67, landscape and portrait cable options / TE (PV4S) |
| Weight | 23,1 kg |
| Max. Load | G6 Frame: Wind: 2400 Pa, 244 kg/m ² front & back Snow: 2400 Pa, 244 kg/m ² front G4 Frame: Wind: 2400 Pa, 244 kg/m ² front & back Snow: 5400 Pa, 550 kg/m ² front |
| Frame | Class 2 silver anodised; stacking pins |

| Tests And Certifications | |
|-----------------------------|--|
| Standard Tests ⁴ | IEC 61215, IEC 61730 Rated to 1500 V, UL 1703 (Type 2 Fire Rating) |
| Quality Certs | ISO 9001:2008, ISO 14001:2004 |
| EHS Compliance | OHSAS 18001:2007, PV Cycle |
| Ammonia Test | IEC 62716 |
| Desert Test | 10.1109/PVSC.2013.6744437 |
| Salt Spray Test | IEC 61701 (maximum severity) |
| PID Test | Potential-Induced Degradation free: 1500 V |
| Available Listings | TUV, UL, CEC, FSEC |

REFERENCES:

- 1 Independent Shade Study by CFV Laboratory.
- 2 Compared to a Conventional Commercial Panel (310 W, 16% efficient, approx. 1.93 m²).
- 3 Measured at Standard Test Conditions (STC): irradiance of 1000 W/m², AM 1.5, and cell temperature 25° C.
- 4 Type 2 fire rating per UL1703:2013, Class C fire rating per UL1703:2002 and IEC 61730.



Read safety and installation instructions before using this product.