
Power Optimizer

For North America

P320 / P340 / P370 / P400 / P401 / P405 / P485 / P505

POWER OPTIMIZER



PV power optimization at the module-level

- Specifically designed to work with SolarEdge inverters
- Up to 25% more energy
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch losses, from manufacturing tolerance to partial shading
- Flexible system design for maximum space utilization
- Fast installation with a single bolt
- Next generation maintenance with module-level monitoring
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)
- Module-level voltage shutdown for installer and firefighter safety

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| Optimizer model (typical module compatibility) | P320 (for 60-cell modules) | P340 (for high-power 60-cell modules) | P370 (for higher-power 60 and 72-cell modules) | P400 (for 72 & 96-cell modules) | P401 (for high power 60 and 72 cell modules) | P405 (for high-voltage modules) | P485 (for high-voltage modules) | P505 (for higher current modules) | |
|---|--|---------------------------------------|--|----------------------------------|--|--------------------------------------|---------------------------------|-----------------------------------|---------|
| INPUT | | | | | | | | | |
| Rated Input DC Power ⁽¹⁾ | 320 | 340 | 370 | 400 | | 405 | 485 | 505 | W |
| Absolute Maximum Input Voltage (Voc at lowest temperature) | 48 | | 60 | 80 | 60 | 125 ⁽²⁾ | | 83 ⁽²⁾ | Vdc |
| MPPT Operating Range | 8 - 48 | | 8 - 60 | 8 - 80 | 8-60 | 12.5 - 105 | | 12.5 - 83 | Vdc |
| Maximum Short Circuit Current (Isc) | 11 | | | 10.1 | 11.75 | 11 | | 14 | Adc |
| Maximum DC Input Current | 13.75 | | | 12.5 | 14.65 | 12.5 | | 17.5 | Adc |
| Maximum Efficiency | 99.5 | | | | | | | | % |
| Weighted Efficiency | 98.8 | | | | | | | 98.6 | % |
| Overtoltage Category | II | | | | | | | | |
| OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREEDGE INVERTER) | | | | | | | | | |
| Maximum Output Current | 15 | | | | | | | | Adc |
| Maximum Output Voltage | 60 | | | | | 85 | | | Vdc |
| OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREEDGE INVERTER OR SOLAREEDGE INVERTER OFF) | | | | | | | | | |
| Safety Output Voltage per Power Optimizer | 1 ± 0.1 | | | | | | | | Vdc |
| STANDARD COMPLIANCE | | | | | | | | | |
| EMC | FCC Part15 Class B, IEC61000-6-2, IEC61000-6-3 | | | | | | | | |
| Safety | IEC62109-1 (class II safety), UL1741 | | | | | | | | |
| Material | UL94 V-0, UV Resistant | | | | | | | | |
| RoHS | Yes | | | | | | | | |
| INSTALLATION SPECIFICATIONS | | | | | | | | | |
| Maximum Allowed System Voltage | 1000 | | | | | | | | Vdc |
| Compatible inverters | All SolarEdge Single Phase and Three Phase inverters | | | | | | | | |
| Dimensions (W x L x H) | 129 x 153 x 27.5 / 5.1 x 6 x 1.1 | | | 129 x 153 x 33.5 / 5.1 x 6 x 1.3 | 129 x 153 x 29.5 / 5.1 x 6 x 1.16 | 129 x 159 x 49.5 / 5.1 x 6.3 x 1.9 | | 129 x 162 x 59 / 5.1 x 6.4 x 2.3 | mm / in |
| Weight (including cables) | 630 / 1.4 | | | 750 / 1.7 | 655 / 1.5 | 845 / 1.9 | | 1064 / 2.3 | gr / lb |
| Input Connector | MC4 ⁽³⁾ | | | | | Single or dual MC4 ⁽³⁾⁽⁴⁾ | MC4 ⁽³⁾ | | |
| Input Wire Length | 0.16 / 0.52 | | | | | | | | m / ft |
| Output Wire Type / Connector | Double Insulated / MC4 | | | | | | | | |
| Output Wire Length | 0.9 / 2.95 | | | 1.2 / 3.9 | | | | | m / ft |
| Operating Temperature Range ⁽⁵⁾ | -40 - +85 / -40 - +185 | | | | | | | | °C / °F |
| Protection Rating | IP68 / NEMA6P | | | | | | | | |
| Relative Humidity | 0 - 100 | | | | | | | | % |

(1) Rated power of the module at STC will not exceed the optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed

(2) NEC 2017 requires max input voltage be not more than 80V

(3) For other connector types please contact SolarEdge

(4) For dual version for parallel connection of two modules use P485-4NMDMRM. In the case of an odd number of PV modules in one string, installing one P485 dual version power optimizer connected to one PV module. When connecting a single module seal the unused input connectors with the supplied pair of seals.

(5) For ambient temperature above +85°C / +185°F power de-rating is applied. Refer to Power Optimizers Temperature De-Rating Technical Note for more details.

| PV System Design Using a SolarEdge Inverter ⁽⁶⁾⁽⁷⁾ | Single Phase HD-Wave | Single phase | Three Phase for 208V grid | Three Phase for 277/480V grid | |
|---|---|--------------|---------------------------|-------------------------------|---|
| Minimum String Length (Power Optimizers) | P320, P340, P370, P400, P401 | 8 | 10 | 18 | |
| | P405, P485, P505 | 6 | 8 | 14 | |
| Maximum String Length (Power Optimizers) | | 25 | 25 | 50 ⁽⁸⁾ | |
| Maximum Power per String | 5700 (6000 with SE7600-US - SE11400-US) | 5250 | 6000 ⁽⁹⁾ | 12750 ⁽¹⁰⁾ | W |
| Parallel Strings of Different Lengths or Orientations | Yes | | | | |

(6) For detailed string sizing information refer to: http://www.solaredge.com/sites/default/files/string_sizing_na.pdf

(7) It is not allowed to mix P405/P485/P505 with P320/P340/P370/P400/P401 in one string

(8) A string with more than 30 optimizers does not meet NEC rapid shutdown requirements; safety voltage will be above the 30V requirement

(9) For 208V grid: it is allowed to install up to 6,500W per string when the maximum power difference between each string is 1,000W

(10) For 277/480V grid: it is allowed to install up to 15,000W per string when the maximum power difference between each string is 2,000W