



# SolarEdge System Overview



SolarEdge provides next generation power conversion electronics that effectively remove all known system constraints across the photovoltaic energy space. Our Smart DC ASIC technology and active electronics enable increased production of clean, grid-ready energy at a lower cost per watt than any other competitive offering.

Traditional photovoltaic installations suffer from a broad range of limitations that prevent them from reaching their full potential. Module mismatch and partial shading prevent systems from achieving their optimum. System design is made complex due to numerous constraints, such as the inability to leverage full roof real estate, to combine strings of different lengths, or to easily address differing roof facets. Traditional systems lack monitoring and analysis capabilities, as well as critical safety features. The systems can pose risks to workers installing or maintaining the system, as well as to firefighters dealing with fires in the vicinity of a PV installation. SolarEdge Technologies presents a unique, patent-pending distributed power harvesting system, combining more efficient power harvesting, a highly reliable inverter, and comprehensive module level monitoring.

**THE SOLAREEDGE SYSTEM IS COMPRISED OF THREE KEY ELEMENTS:**

- **SolarEdge PowerBox™:** The SolarEdge PowerBox is integrated into each module, replacing the traditional junction box. The PowerBox optimizes energy output and enables performance tracking for each module. Further, the PowerBoxes automatically maintain a fixed string voltage, giving installers greater flexibility to design optimal PV systems, and providing higher fault tolerance.
- **SolarEdge Inverter:** The SolarEdge Inverter is a highly reliable centralized inverter. Because MPPT and voltage management are handled separately for each module, the inverter is only responsible for DC to AC inversion. Consequently, it is a less complicated, more reliable device. The fixed string voltage ensures operation at the highest efficiency at all times, independent of string length and temperature.
- **SolarEdge Monitoring Portal:** A web-based application provides module-level, string-level and system-wide monitoring. The software automatically provides alerts to a

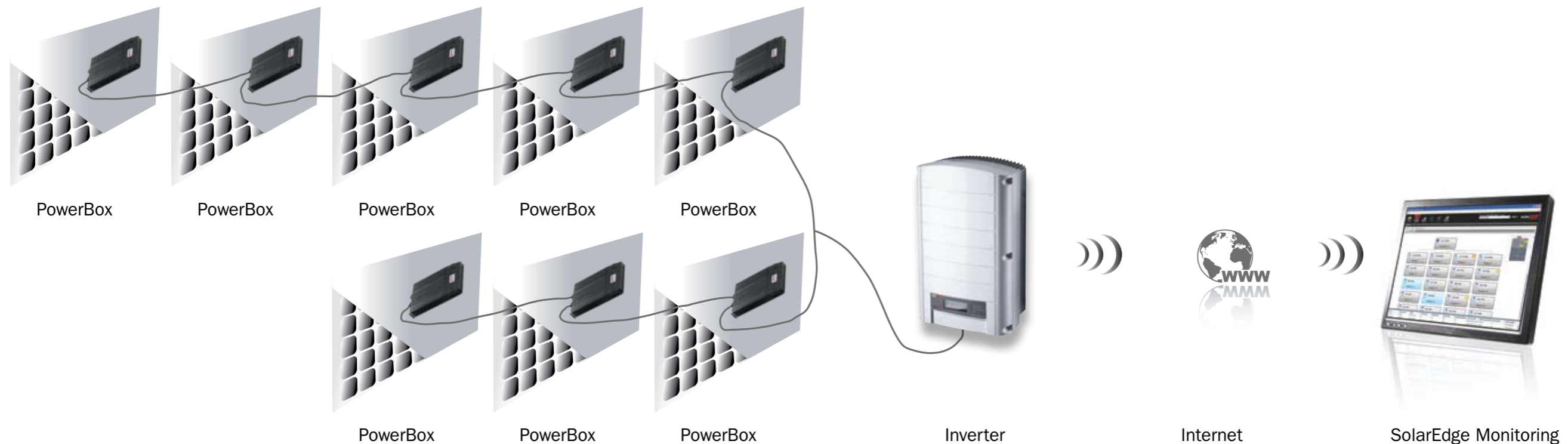
wide range of issues affecting energy generation that might otherwise go undetected. SolarEdge monitoring can be deployed in conjunction with the PowerBox, or separately to monitor existing solar installations.

SolarEdge's technology marries traditional photovoltaic workflows and installation methods with a groundbreaking holistic system approach. It is a quiet revolution that is at once disruptive because of its profound benefits in changing the manner in which energy is harvested, deployed, managed and delivered and complementary because it fits into the current photovoltaic workflow.

We believe the PV delivery chain is ultimately only as strong as its weakest link. By adopting a "system first" philosophy that identifies and eliminates the Achilles heel at each step of the process, we enable a constraint-free delivery of sun harvested energy.

**A SUPERIOR APPROACH TO MAXIMIZING THE THROUGHPUT OF PHOTOVOLTAIC SYSTEMS USING MODULE EMBEDDED ACTIVE ELECTRONICS**

- Simple, safe, error-free system design and installation
- Up to 25% increase in power output
- Cost savings on labor, wiring, diodes, fuses and other hardware
- Next generation maintenance with module level monitoring
- Advanced anti-theft capability
- Unprecedented installer and fireman safety
- Superior reliability



**For module manufacturers, integrators, installers and the systems owners they serve, SolarEdge makes good on the inherent promise of PV – sunlight into grid-ready electricity with maximum power utilization, minimum bottlenecks and best-of-class cost efficiency.**

#### MODULE MANUFACTURERS

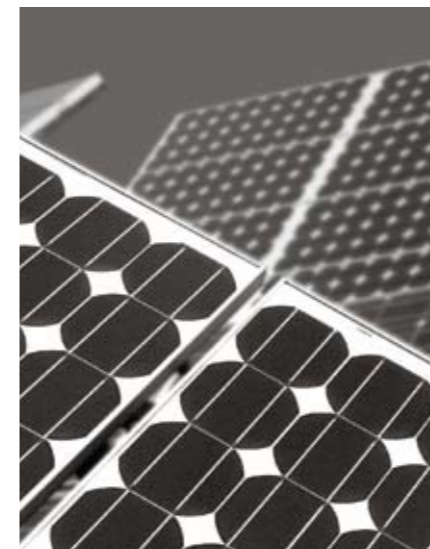
- Create a superior PV module - key differentiator
- Added value to increase market penetration and revenues
- Module production line improvement enables higher currents from existing modules
- Remove manufacturing limitations - no more temperature variance, cell mismatches and manufacturing variations
- Simplifies module inventory considerations by avoiding unnecessary stockpiling of specific models. Enables the design and delivery of a system per customer with speed and efficiency
- Easier vertical integration to the BoS market segment

#### INTEGRATORS AND INSTALLERS

- Ideal for residential, commercial and large field installers
- Lower installation costs with faster design, less wiring, diodes, fuses and better maintenance
- Simple installation – use the same installation methods as exist today with all the SolarEdge added benefits
- Immediate installation feedback for faster site commissioning
- Scalable installation – adding modules to existing installations is simple and straightforward, therefore systems can be expanded as needed
- Full safety solution – electrocution risk eliminated with safe voltages during installation and maintenance

#### SYSTEM OWNERS AND MAINTENANCE PROVIDERS

- Effective remote monitoring – easier maintenance that costs less
- Enhanced system troubleshooting
- Create maintenance reports and log maintenance progress
- Theft prevention mechanism
- Better fireman safety – reduce insurance premiums



**Good design always requires a holistic viewpoint. Take a step back, consider all the details from above, and you get a better perspective on how to deal with problems up close. That's precisely how SolarEdge developed its system-centric approach which maximizes Solar PV performance.**

### SOLAREGE SYSTEM BENEFITS

#### Maximum Power Harvesting (up to 25% More Power)

- No partial shading sensitivity
- No module mismatch losses
- No undervoltage losses
- Improved MPP tracking performance

#### Simple, Plug and Play, Error-Free System Design & Installation

- Cuts installation time and cost by 15% to 25%
- Removes traditional design constraints with SolarEdge flexible architecture
- Simplifies installation by connecting different length strings to a single inverter
- Allows for multi-facet installation with a single inverter
- Scalable installation for future needs

#### Module-level Monitoring & Troubleshooting

- Real time monitoring revolutionizes installation feedback and troubleshooting
- In-module monitoring system continuously tracks module power and status
- Communication over the existing power lines, without additional wires
- Data analysis software automatically detects and locates faults

#### Installer & Firefighter Safety

- Electrocuting risk eliminated due to low module voltage during installation
- Maximizes safety by enabling module shutdown during service
- Protects firefighters by automatic module shutdown

#### Extraordinary Reliability

- Designed for extreme outdoor conditions
- Module-level reliability
- 25 year warranty for PowerBox

### POWERBOX HIGHLIGHTS

- Fully functioning and certified Junction Box
- In-module embedded SolarEdge solution - part of SolarEdge's patented Smart-DC system
- Module-level MPPT - Optimizes each module separately
- Fixed DC voltage always fixed – regardless of the number of modules per string
- Module-level Monitoring - for easy module and string level fault detection with no added wiring
- Allows parallel strings of uneven length with no added diodes
- Safety Mode - safe string voltage when inverter is disconnected or OFF
- Theft prevention feature – better security for less cost
- 25 year reliability and limited warranty

### INVERTER HIGHLIGHTS

- Superior efficiency (>97%)
- Built-in module level monitoring receiver
- Fixed DC voltage
- Inverter always operates at its maximum possible efficiency
- Fixed string voltage enables simple system design, and reduces installation cost
- Communication to internet via broadband
- IP65 – indoor and outdoor installation
- Small, lightweight and easy to install
- Excellent reliability with standard 12 year warranty

### MONITORING HIGHLIGHTS

- Pinpointing faults with high resolution PV site visualization at module-level
- Interactive charts and schematics make it easy for installers to ensure a system is functioning properly after installation
- Artificial intelligence analysis of data and trends automatically finds and alerts to issues
- Alerts can be sent via SMS and email
- Powerful Embedded Reporting Tools for financial and technical management
- Solar field maintenance management tool – supports the complete life-cycle of field management



SolarEdge PowerBox



SolarEdge Inverter



SolarEdge monitoring



## About SolarEdge

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