



WHY PARALLEL SOLAR

Most solar arrays are composed of "strings" of matched panels, wired in series. This conventional approach is fundamentally vulnerable - when individual panels experience minor variations in output, they disrupt the output of the string and the entire array, cutting overall energy harvest. With the addition of a simple VBoost converter module, each panel becomes a fully independent, highly efficient contributor of energy to the array - just like a power plant on a grid.

Designers gain flexibility regarding PV panel location, orientation and overall system size. Installers have a safe, simple wiring scheme with easy expansion and per-panel monitoring. And most importantly, system operators improve their expected output and payback.

100+ THIN FILM MODULES PER CABLE RUN

Next-generation solar installations are increasingly adopting economical thin-film cell technology. But the higher voltages generated by thin-film panels are a poor match for the series architecture of most solar arrays - where their higher voltage greatly limits string lengths.

Parallel Solar unlocks the potential of thin film by creating a constant-voltage DC bus for the entire array. Because of the parallel design, voltages are no longer the limiting factor in the number of thin film panels that can be strung together. The improved design can reduce installed system cost, by reducing the wiring, combiner boxes, and labor required to assemble a system.

REDUCE SYSTEM COST

Wiring is a costly, time-consuming aspect of solar array installation. In a traditional series-string array, each panel must be connected to adjacent panels with custom wiring and junction boxes, and a return line run from the end of each string.

eIQ Energy's Parallel Solar architecture eliminates the need for a return line. And because each

vBoost comes with an integrated wiring harness and connector, the only on-site wiring needed is from the first vBoost to the combiner box and from the combiner to the inverter. Net result: faster, smarter, less expensive installations. So power starts flowing sooner, and crews can complete more installations in the same amount of time.

REDUCE DESIGN COMPLEXITY

A challenge in solar array design is the electrical interaction between series-wired panels - each panel's output and voltage must be closely matched to its neighbors, or array's output can plummet. Parallel Solar makes these factors a non-issue. eIQ Energy's vBoost module enables each panel to deliver a constant voltage under all operating conditions, so all panels become independent contributors to the array's power bus.

It's a new level of freedom for designers. Multiple PV technologies can run side by side. Panels on the same wire run can face in different directions. And shading, dirt and other environmental variables are no longer a concern.

Parallel Solar

The smart path to clean energy

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MONITOR SYSTEM PERFORMANCE

As the size of a solar array increases, so does the risk and magnitude of malfunction. Real-time monitoring is essential for ensuring the long-term performance of a solar plant. Each vBoost module continuously collects and transmits data on the panel (or panels) to which it is connected; the Parallax Communications Module serves as a data collection point and reporting hub.

The array operator gets per-panel visibility and tracking, as well as the ability to collect diagnostic and maintenance data that can help ensure optimal performance — and ROI — over the system's operational life.

SAFER SOLAR POWER INSTALLATION

Solar power arrays carry substantial amounts of electrical power. While their safety record is extremely good, unusual situations (such as component failures, fires or other accidents) have the potential to create situations where repair crews or emergency personnel can be exposed to hazardous current from individual panels or strings.

Not with Parallel Solar. Each vBoost module continuously monitors the array's power bus for the presence of a functioning inverter. If no inverter is present, the vBoost shuts down so that no power is fed from the panel onto the DC bus. No operator intervention is needed.

IMPROVE INVERTER PERFORMANCE

The ultimate measure of array performance is the AC power produced by the array's inverter. But an inverter's efficiency takes a hit when its DC supply voltage fluctuates — an inevitable situation with traditional series-wired arrays.

Parallel Solar architecture from eiQ Energy eliminates voltage swings, so inverters always operate in their "sweet spot." A constant supply voltage also reduces stress on the inverter's critical components, so they last longer and operate at higher efficiency.



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