SOLAR STIK®

Solar Stik Technical Bulletin 7

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Minimum Battery Capacity Required for Optimal PRO-Verter Operation

Background

A hybrid power system will function most efficiently when proper balance is achieved within the system's architecture (energy storage, power management, and power generation). The central power management device in the Solar Stik System architecture is the PRO-Verter, so any components that are connected to it need to be rated for the amount of power that will be processed by it.

For example, PRO-Verters can require extremely high current (amperage) ***from*** the batteries when AC loads require power from the inverter, but it can also push high current ***into*** the battery when it is in charge mode.

Each Expander Pak has a built-in circuit breaker that will trip at a value ***less than*** the maximum rated current to/from the PRO-Verter. For this reason, multiple Expander Paks must be connected to a PRO-Verter for the system to function at its rated power. **The combined values of the Expander Pak circuit breakers must be greater than the rated inverter/charger current from the PRO-Verter**.

Determining the Required Battery Capacity

In the PSS-G AES, the PRO-Verter 7000 inverter can require up to 200 A from the batteries, and the charger has a rated output of 110 A. Each 24VDC Li Expander Pak 2400 has a 50 A circuit breaker; therefore five (5) 24VDC Li Expander Pak 2400s is the MINIMUM number that is required to (1) support the inverter's full output and (2) be charged effectively and safely when the PRO-Verter 7000 is in charge mode.

Connecting an insufficient number of any Expander Paks (energy storage modules) to a PRO-Verter will result in a situation where the batteries are charged or discharged too quickly:

- Charging lead-acid Expander Paks too quickly may result in an artificially high battery voltage reading and signal the PRO-Verter to turn off the generator before the batteries are actually charged sufficiently.

- Discharging Li Expander Paks too quickly may cause the battery temperature to rise to a point that the battery management system (BMS) disconnects the batteries from the whole system.

Refer to the "Minimum Battery Capacity Recommendations" on the PRO-Verter I-Plate to ensure trouble-free operation.

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