



# Photovoltaic energy storage system solutions 500 kWh

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The DPS-500 is ideal for utility scale solar plus storage installations, offering advanced features including automated clipping recapture and low voltage harvesting that increase project revenues, while its DC coupled architecture reduces installation and regulatory costs.

This DC to DC converter can operate in voltage, current, and power control modes, and is capable of on-the-fly switching between modes. Designed to be easily scaled, any combination of up to six units can be paralleled together to create building blocks of up to 3MW of storage power.

Due to high DC/AC inverter loading ratios typical with utility-scale PV, energy is lost when PV output exceeds the PV inverter peak rating, resulting in lost revenues. With DC-coupled battery storage attached to the array, the batteries can be charged with this excess PV output that would otherwise be clipped by the PV inverter. The stored energy can then be fed into the grid at the appropriate time, maximizing production and revenues from the PV generation asset. The ability to capture clipped DC output is only possible using a DC-coupled storage system.

PV inverters typically require a minimum "wake up" threshold DC bus voltage to operate, resulting in lost energy in the morning and evening or during periods of cloud coverage when voltage on the array is below the PV inverter "wake up" threshold. Adding DC-coupled energy storage allows for the capture of this generated energy from the margins. This capability is only available with a DC-DC converter that has voltage source capability.

With DC-coupled energy storage, the energy storage system can operate and maintain the DC bus voltage when the PV inverter is offline for scheduled or unplanned outages, allowing energy from the array to flow to the batteries and ensuring energy can be harvested for later use. The same uptime capabilities apply when a large utility- scale array is curtailed by the ISO or utility when there is overall excess production on the grid. With a DC-coupled energy storage system, energy production can continue with energy being stored and available for discharge when curtailment ends.

Energy Storage allows bulk energy shifting of solar generation to take advantage of higher PPA rates in peak periods, or to allow utilities to address daily peak demand that falls outside periods of solar generation.



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