

Title: 400V Data Center Racks Available Now

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Is 400V DC rack distribution right for your data center?

Rapid growth AI and cloud computing is straining data center power systems. To meet increasing demands, 400V DC rack distribution is emerging as a more efficient and scalable solution. However, this transition comes with challenges, including safety concerns, thermal management and standardization.

How much power can a data center rack deliver?

The emerging vision is of data center racks capable of delivering up to 1 megawatt of power, paired with liquid cooling systems engineered to manage the resulting heat. The shift to 400VDC power distribution marks a decisive break from legacy systems.

Are AC & 400V DC rack power distribution scalable in AI data centers?

As AI workloads continue to drive up data center power demands, both AC and 400V DC rack power distribution present compelling solutions for improving efficiency and scalability. While AC infrastructure remains dominant, its inefficiencies are becoming more apparent, particularly in high-power-density AI data centers.

What is a Diablo 400V mechanical rack?

The base of the mechanical rack follows the Open Rack standard. Currently three companies have worked together to provide a high-level overview of the Diablo 400V architecture. The goal is to standardize items such as, high voltage connectors and mating interfaces. Transferring power at a higher voltage is more efficient, reduces I²R losses.

To keep up, the industry is moving toward high-voltage DC (HVDC) fabrics: first at ± 400 V with OCP's Diablo 400 architecture, and soon at 800 V HVDC, as envisioned by NVIDIA, Vertiv, ...

In this exclusive Q& A, Vicor contends that ± 400 -V DC power distribution to AI racks in data centers is inevitable.

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At the 2025 Open Compute Project Summit, we announced a ± 400 VDC enabling 1 MW IT racks, and the



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Project Deschutes liquid cooling distribution unit.

Data centers are increasingly adopting 400V DC rack power distribution as an alternative to traditional AC systems, driven by the need for improved efficiency, reliability and cost-effectiveness.

To increase compute density and to deal effectively with the prospect of racks that consume up to 140kW or more, hyperscalers are now advocating an evolution to 400VDC distribution to next ...

The power demands of data centers, especially for AI and machine learning applications, have increased dramatically. Designs are now emerging for racks that draw up to 1MW and beyond.

Google outlines new AI data center infrastructure with +/-400 VDC power and liquid cooling to handle 1MW racks and rising thermal loads.

Enter the Open Compute Project (OCP) Diablo 400 specification, co-authored by Microsoft, Meta, and Google, which defines a disaggregated power architecture delivering 400 V HVDC directly to racks.

The likes of Google, Microsoft, and Meta are now drawing on technologies initially developed for electric vehicles (EVs), particularly 400VDC systems, to address the dual challenges of...

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