

Article Overview

Data center power distribution boxes, or PDUs, range from rack-mounted units handling a few kilowatts to large floor-standing units rated up to 1.25 MVA.

Rack-Mounted PDUs

Rack PDUs are installed directly within server racks to distribute power to multiple IT devices. They are designed for 120V, 200-240V, and three-phase environments, with capacities typically ranging from 5 kW to 20 kW per rack, depending on the number of servers and power density of the equipment . Rack PDUs often include multiple outlets, monitoring capabilities, and sometimes intelligent features for remote power management.

Cabinet and Floor-Standing PDUs

For larger deployments, cabinet or floor-standing PDUs are used to feed multiple racks or groups of racks. These units are enclosed in their own cabinets and can handle much higher loads. Typical sizes include:

- o PowerPak: up to 300 kVA
- o PowerPak 2: up to 400 kVA
- o PowerPak 2 EX: up to 625 kVA
- o PowerHub 2: up to 1.25 MVA These PDUs are designed for high availability, voltage regulation, harmonic reduction, and branch-level distribution, and are often paired with rack PDUs to provide final distribution to IT equipment .

Design Considerations

When selecting a PDU size, data center engineers consider:

- o Power density per rack: Modern racks can draw 5-20 kW or more.
- o Redundancy: N+1 or 2N configurations ensure continuous operation.
- o Voltage and phase: Three-phase power is common for high-density racks.
- o Monitoring and control: Intelligent PDUs allow real-time load monitoring and remote switching.
- o Connector type: Industrial CEE connectors are often used for reliable high-current connections .

Summary

In practice, rack PDUs handle individual racks with capacities of 5-20 kW, while floor-standing or cabinet



Total size of data center power distribution box

PDUs manage multiple racks with capacities from 300 kVA up to 1.25 MVA. The choice depends on the data center's size, power density, redundancy requirements, and monitoring needs, ensuring reliable and safe power delivery to all IT equipment .

Many different characteristics, like total area, floor area for ICT equipment, electric power demand of ICT equipment, or arithmetic

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Total size of data center power distribution box

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