

Zero-power distribution box configuration



Overview

Distribution Box and Selection Guide: Internal Structure, Components. Learn how to choose a distribution box and understand its internal structure, inclu.

Key Takeaways

Zero-U distribution boxes (0U PDUs) are vertically mounted power distribution units that save horizontal rack space while providing flexible, monitored, and reliable power to IT equipment. Overview

Zero-U PDUs are designed to be installed vertically in the rear channel of a server rack, consuming no horizontal rack space, which allows maximum utilization of rack space for servers, storage, and networking equipment . They are ideal for high-density IT environments and can support both single-phase and three-phase inputs.

Key Components

A typical 0U distribution box or PDU includes:

- Input connections: Single-phase (200–240 V) or three-phase (346–415 V, Y+N) with rated currents of 16–32 A depending on the model .
- Output connectors: Multiple IEC320-C13 and IEC320-C19 outlets, often 24–36 C13 and 3–4 C19, to support various devices .
- Switching and protection: ON/OFF switches for segments, circuit breakers, and branch circuit protection to prevent overloads .



- Monitoring interfaces: RS232 or optional WEB/SNMP modules for remote monitoring and management .
- Environmental sensors: Optional sensors for temperature and humidity monitoring .
- Internal busbars and bars: Phase busbar, neutral bar, and earth bar for safe power distribution .

Configuration Considerations

- Input Selection: Choose single-phase or three-phase based on rack load and redundancy requirements.
- Outlet Layout: Determine the number and type of outlets (C13/C19) to match server and network equipment.
- Monitoring Needs: Decide between basic, monitored, or switched & monitored PDUs. Switched PDUs allow individual outlet control and remote power sequencing .
- Redundancy: For critical applications, use dual PDUs in the same rack to provide redundant power paths for dual-cord devices .
- Environmental Factors: Ensure operating temperature (0–45°C), relative humidity (5–95%), and altitude (up to 2000 m) are within specifications .
- Safety and Standards: Follow IEC 61439, IEC 60898, or local electrical codes for installation, grounding, and protection .

Installation Tips

- Mount the PDU vertically along the rear rack channel to maximize space.
- Label outlets and segments for easy identification and maintenance.
- Use monitoring software to track power consumption and prevent overloads.
- Plan for future expansion by leaving spare outlets or circuits.

Summary

Zero-U PDUs provide space-efficient, flexible, and reliable power distribution for high-density racks. Proper configuration involves selecting the right input type, outlet layout, monitoring capabilities, and redundancy options while adhering to safety standards. Advanced models allow remote monitoring and individual outlet control, making them suitable for modern data centers and critical IT environments .

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