Dimensional parameters of smart PDUs for power systems



Overview

Smart PDU Architecture Guide (Intelligent Rack Power Distribution)This guide explains how intelligent rack power distribution systems are designed, deploye.

Key Takeaways

Smart PDUs are designed with slim, rack-mountable profiles, typically ranging from 54mm width for vertical units to standard 1U or 2U heights for horizontal units, allowing flexible integration into data center racks.

General Form Factors

Smart PD

Us are available in vertical (zero-U) and horizontal (1U/2U) configurations.

Vertical PD

Us are slim and mount alongside the rack frame, saving space for equipment, while horizontal PDUs occupy standard rack units and are installed across the width of the rack. Typical vertical PDU widths start from 54mm, enabling dual mounting on one side of the rack for single-side cabling orientation.

Horizontal PD

Us generally conform to 19-inch rack width standards, with heights of 1U (44. 45mm) or 2U (88. 9mm) depending on the model.

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Depth and Mounting

Depth varies by manufacturer and model, but most vertical PDUs are designed to fit within the depth of standard server racks (600–1200mm).

Horizontal PD

Us are usually 200–400mm deep, allowing sufficient space for outlet access and cable management. Mounting options include rear and side brackets for vertical units and front-to-back mounting rails for horizontal units, ensuring compatibility with both shallow and deep racks.

Power Density and Phase Considerations

Smart PD

Us support single-phase and three-phase power, with high-density models capable of delivering up to 55kW per rack in three-phase configurations. Higher voltage operation reduces current, allowing smaller cables and more compact PDU designs, which directly influences dimensional planning. Some models include daisy-chain connectivity, enabling multiple PDUs to be networked while maintaining a compact footprint.

Additional Features Affecting Dimensions

Integrated features such as touchscreen displays, environmental sensors (temperature, humidity, smoke), and latching relays may slightly increase the depth or front panel profile of the PDU. Manufacturers like Legrand and nVent provide modular designs that allow customization of outlet configurations without significantly altering the overall PDU dimensions.

Summary

Vertical PD

Us (Zero-U): Width ~54mm, height matches rack height, depth 600–1200mm, dual mounting possible.

Horizontal PD

Us (1U/2U): Width 19 inches, height 44–89mm, depth 200–400mm. High-density three-phase PDUs: Can deliver up to 55kW, compact design reduces cable size and footprint. Additional features: Touchscreens, sensors, and latching relays may slightly increase depth or front panel profile.

These dimensional parameters ensure that smart PDUs can be efficiently integrated into modern data center racks while providing monitoring, control, and high-density power distribution capabilities.

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Article Content

Smart PDU Architecture Guide (Intelligent Rack Power Distribution)

This guide explains how intelligent rack power distribution systems are designed, deployed, and integrated into broader electrical and monitoring architectures.

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Connected PDUs (iPDUs) include measurement of consumption and switching of active power and remote alarm with volts, amperes, real-time power (kW) and energy (kWh) measurements.

What is a Smart PDU?

A smart PDU, also known as intelligent PDU, goes beyond distributing power to IT equipment within the data center. It is capable of monitoring, managing, and

Layout 1

The Raritan PX family of high-quality rack power distribution units (PDUs) offers real-time remote power monitoring of current (amps), voltage, power (kVA, kW) and energy consumption (kWh) with +/– 1%

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This document defines a YANG data model for Smart Power Distribution Units (SmartPDUs). SmartPDUs extend traditional PDUs by incorporating telemetry and remote control functions that

Low Voltage Systems MNS PDU Power Distribution Units

The renowned ABB MNS system, manufactured for over 30 years to exacting standards in over 30 countries, now includes the latest in intelligent Power Distribution Unit (PDU) technology.

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The 1-phase or 3-phase inline power meter with an illuminated display is designed for measuring parameters on the lead-in cable to basic PDUs and is easy to connect into existing circuits.

Smart PDU''s – Intelligent Power Management | nVent DATA

Explore a diverse selection of Intelligent PDUs, including Enlogic PDUs, tailored to suit your unique requirements. From basic monitoring to advanced metering and switching capabilities, Enlogic PDUs

Power Distribution Units

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Determine which PDU is right for you based on power capacity, input and output configurations, monitoring features and scalability needs. Find detailed specifications and part numbers to select the

Vertiv Geist Rack PDUs

By combining leading rack PDU technology, expert service and support, and a seven-year protection plan, you''ll know your data center has the power it needs to support business-critical applications.

What Are the Different Types of PDU?

Explore the differences between basic, metered, switched, managed, and smart PDUs—and discover which power solution best fits your data center''s needs.

The Ultimate Guide to Power Distribution Units (PDUs): From Basics

A power distribution unit ensures safe, efficient power delivery to data center equipment, preventing overloads and supporting reliable IT operations.

Leveraging Smart Power Distribution Units (PDUs) for Carbon

By leveraging the energy-saving capabilities of systems such as smart PDUs in our labs and facilities, we move a step closer to our goals of reducing carbon emissions, mitigating climate

Smart PDUs & Inline Meters for Efficient Data Centres

Discover how smart PDUs and inline meters boost energy efficiency in data centres. Essential for AI, HPC, and colocation environments.

Does your data center need a smart PDU?

It connects to a data center''s IT network, which enables admins to monitor power flow to various hardware and devices via data center management systems and software applications.

Smart Power Distribution Units: A Must-Have for Data Centers in 2025

Smart power distribution units optimize energy use, enhance reliability, and support scalability, making them essential for modern data centers in 2025.

What is a Smart PDU in a Data Center

A smart PDU in a data center optimizes power management with real-time monitoring, load balancing, and energy efficiency, ensuring reliability and cost savings.

Busbar Terminals in Modern Energy Storage Systems: The Complete

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