

Article Overview

Dual power supply UPS setups provide redundancy by allowing servers or critical equipment to draw power from two independent UPS sources, ensuring continuous operation even if one UPS fails.

Dual Power Supply Basics

Servers or devices with dual power inputs can connect each input to a separate UPS. This setup ensures that if UPS A fails, the load continues to receive power from UPS B, providing true redundancy and minimizing downtime. Each UPS can operate independently, and the system can be configured to avoid unnecessary shutdowns when only one UPS experiences a fault.

Split vs Parallel Operation

- o Split Operation: Each UPS powers a separate input or load independently. There is no electrical connection between UPS outputs under normal conditions. Advantages include fault isolation, simplified maintenance, and higher reliability, as one UPS can fail without affecting the other. This is recommended for critical instrumentation or servers where cascading failures must be avoided.
- o Parallel Operation: Two UPS units are electrically connected to share the same load. This allows load sharing and N+1 redundancy, but requires careful synchronization and compatible UPS models. Faults in the parallel bus or control logic can potentially affect the entire load, making it less fault-tolerant than split operation.

Automatic Transfer Switches (ATS)

For smaller or single-phase systems, an ATS can be installed ahead of a UPS to provide dual input redundancy. The ATS switches quickly between two input circuits, ensuring continuous power to the UPS output even if one input fails. This is particularly useful when a UPS does not natively support dual inputs.

Software-Controlled Shutdown

UPS management software, such as PowerChute Network Shutdown (PCNS), can be configured to only shut down servers when both UPS units are critically low. This prevents unnecessary shutdowns if only one UPS fails while the other continues to supply power. Key considerations include:

- o Ensuring compatible UPS models if using multiple brands.
- o Configuring shutdown triggers to require signals from both UPS units.
- o Avoiding firmware versions known to cause PCNS issues (e.g., APC Network Card v3.5.7) and using stable versions like v3.5.5.

Best Practices

- o Use separate A/B building circuits for each UPS to maximize redundancy .
 - o Monitor battery health and perform regular UPS testing.
 - o Prefer split operation for critical systems to reduce cascading failure risk.
 - o Ensure software and firmware compatibility when coordinating shutdowns across multiple UPS units.
 - o Document and test failover scenarios to confirm that servers remain operational during single UPS failures.
- By combining dual-input servers, split UPS operation, ATS, and intelligent shutdown software, organizations can achieve a highly reliable power protection strategy that minimizes downtime and protects critical loads .

In this article, you will learn about the numerous types and configurations for designing PCB with a dual power supply.

What is the difference between dual power supply and dual power transfer switch? Dual power supply mainly refers to

Explore different UPS configurations offered by Fuji Electric. Find the right power backup solution for your specific requirements.

Electronic systems require conditioned, continuous power--and they get it from uninterruptible power systems (UPSs). But what

For complete redundancy, it would make sense to have a UPS powered by two separate circuits if possible, though

WEHO SC Series Switching Power Supply Conclusion: The Switching Power Supply at the Heart of Reliability For

There are three major types of Uninterruptible Power Supply (UPS) system. Before you buy, compare the features of each and select

Automatic Transfer Switch (ATS) 16A & 30A Product: This ATS product is designed with two independent power inlets to supply

UPS stands for Uninterruptible Power Supply. A UPS system is an autonomous source of alternate power that is used to supply

Introduction The varied types of Uninterruptible Power Supplies (UPS) and their attributes often cause confusion in the data center

UPS system dual power supply switching

A UPS, or an uninterruptible power supply system, is an electrical device designed to provide emergency power to a

UPS systems with dual inputs are common in larger 3 phase UPS systems, typically 20kVA and larger. This keeps the

INTRODUCTION The industry drive toward smaller, lighter and more efficient electronics has led to the development

1. What is Split Operation in Dual UPS Systems? Definition: Split operation means that two UPS units

Learn everything about UPS systems, including rackmount and floor-standing options. Discover how they provide backup power,

However, one key engineering decision is whether to operate these UPS systems in split (independent)

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