100kWh High-Frequency Switching Power Supply



Overview

PCS 100KW Power Conversion System for Energy Storage System.

Key Takeaways

A 100kWh high-frequency switching power supply (SMPS) integrates a high-efficiency power conversion system with energy storage, delivering rapid AC/DC and DC/AC conversion for commercial, industrial, and microgrid applications.

Overview

A 100kWh high-frequency switching power supply typically combines a Power Conversion System (PCS) with a lithium-based battery (often LiFePO4) to provide reliable energy storage and distribution. These systems are designed for bidirectional AC/DC and DC/AC conversion, enabling both charging from the grid or renewable sources and discharging to supply AC loads. High-frequency switching minimizes ripple voltage, improves power factor (often above 0.

9), and allows the system to respond rapidly to load changes.

Key Features

High Efficiency: Conversion efficiency can reach 98–98. 5%, with fast dynamic response and full-load switching times as low as 100ms. Modular Design: Many systems adopt a modular cabinet layout, supporting flexible configurations for batteries, inverters, and PV integration.

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UPS-Grade Switching: Sub-10ms switching ensures uninterrupted power supply for critical loads, suitable for commercial and industrial applications like gas stations, resorts, and factories. Integrated Management: Equipped with Battery Management System (BMS) and Energy Management System (EMS) for monitoring state of charge, temperature, and overall battery health, preventing overcharging or deep discharging. Safety and Reliability: Systems include multiple protection mechanisms, fire protection, thermal management, and environmental monitoring for outdoor installations.

Applications

Commercial & Industrial (C&I): Provides stable power for factories, supermarkets, and microgrids, reducing reliance on diesel generators. Renewable Integration: Works with solar PV or hybrid solar-diesel setups, enabling ultra-fast charging and maximizing renewable energy utilization. Microgrids & Remote Sites: Ideal for off-grid or islanded systems, supporting energy independence and disaster recovery.

Technical Specifications (Typical)Battery Capacity: 100kWh LiFePO4PCS Output: 100kW three-phase AC, 400VVoltage: 768V DC nominal, 280AhSwitching Time:

Article Content

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

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