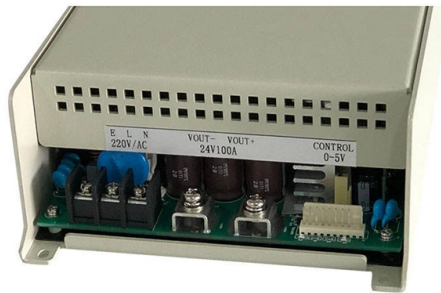


RRU Remote Power Supply Method



Overview

Remote Radio Unit (RRU) Power Supply The DC supply for an RRU typically must operate continually, making robust and reliable surge protection an essential.

Key Takeaways

RRUs are powered via a combination of primary DC supply and backup power, with dynamic switching to small signal power modes during power constraints to ensure continuous operation. Overview of RRU Power Supply

A Remote Radio Unit (RRU) converts baseband signals into radio frequency signals and amplifies them, working with a Baseband Unit (BBU) to expand network coverage in complex environments like urban or mountainous areas (). RRUs require stable and reliable power to maintain signal quality, and their power consumption varies depending on the number of carriers and output levels ().

Normal and Backup Power Operation

RRUs typically operate on a primary DC power supply, often sourced from the base station's main power system. To ensure uninterrupted operation during power failures, backup power systems such as batteries or generators are implemented (). The RRU continuously monitors the power information of the backup supply, including type and available capacity, to determine whether it can maintain normal operation (). If the backup power is insufficient, the RRU can switch to a small signal power configuration mode, reducing transmission power to conserve energy while maintaining essential communication functions (). Once normal power is restored, the RRU automatically returns to its standard operating mode.

Power Management and Protection

Modern RRUs incorporate overvoltage, undervoltage, and short-circuit protection to safeguard sensitive electronics (). Surge protection is critical, especially in outdoor deployments exposed to lightning or transient voltage spikes. Solutions include TVS diodes for differential and common mode protection and gas discharge tubes (GDTs) for high surge current handling (). Power management also involves coordinated impedance and current-limiting components to protect secondary devices from voltage spikes, ensuring reliable operation of the RRU even under adverse conditions ().

Redundancy and Reliability

To enhance reliability, some RRUs use redundant power supply systems, allowing continuous operation during primary power failures (). The RRU evaluates the backup power against predetermined thresholds, considering factors like expected outage duration and stored energy, to decide whether to maintain normal operation or switch to energy-saving modes ().

Summary

The RRU power supply method combines primary DC power, backup systems, dynamic power mode switching, and robust surge protection to ensure continuous, reliable operation. By monitoring power availability and adjusting transmission power accordingly, RRUs maintain network coverage efficiently while minimizing base station construction and operational costs ().

Article Content

How BTS works: Antennas, RRU, BBU, TMA, Power Supply

It is usually installed in a technical room or shelter and is connected to the RRU via fiber optic links (using CPRI protocols).

Understanding Remote Radio Units (RRU)

RRU, or Remote Radio Unit, is a distributed frequency unit that connects mobile devices to a cellular network via fiber optic links. It

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