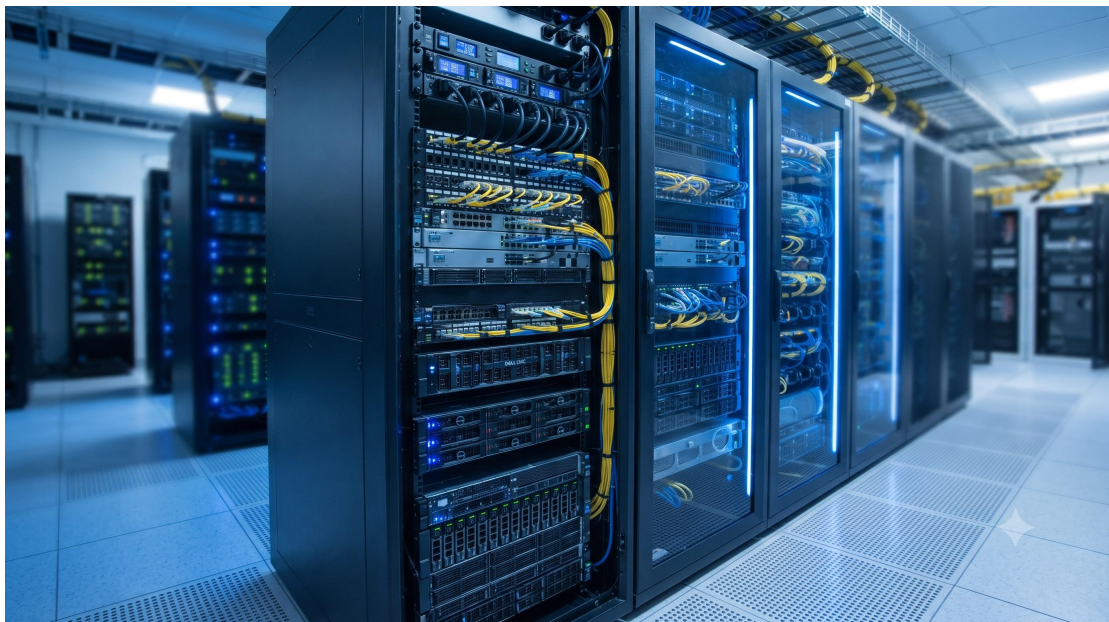


Telecom Site Power Capacity Planning Guide - Official Technical Overview & Hardware Datasheet

EXECUTIVE SUMMARY

This document serves as the official technical overview and hardware datasheet for the Telecom Site Power Capacity Planning Guide. Designed for carrier-grade and enterprise telecommunications infrastructure, this guide provides a comprehensive framework for accurately sizing, deploying, and managing power resources at remote radio sites, central offices, and data center edge nodes. The methodology described herein ensures high availability, optimized Total Cost of Ownership (TCO), and strict adherence to industry safety and environmental standards.



ARCHITECTURE & CHASSIS DESIGN

The power capacity planning architecture is built upon a modular and scalable foundation, accommodating a wide range of deployment scenarios from compact outdoor cabinets to high-density indoor server rooms. The core chassis design supports a variety of power distribution units (PDUs), rectifiers, and battery backup modules, all integrated into a standardized 19-inch or 23-inch rack-mountable form factor. Key architectural pillars include:

- N+1 Redundancy: Ensures uninterrupted operation during component failure.
- Hot-Swappable Modules: Permit maintenance and upgrades without service disruption.
- Intelligent Power Management: Integrated controllers for real-time load monitoring and load shedding.
- Hybrid Power Input: Support for both AC (110V/220V) and DC (-48V) power sources.

The physical chassis is engineered for optimal airflow and thermal dissipation, with a front-to-back or front-to-side cooling strategy to maximize efficiency in various rack environments.

HARDWARE FEATURES

The Telecom Site Power Capacity Planning Guide hardware ecosystem is defined by its robust and intelligent features:

1. **High-Efficiency Rectifier Modules:** Convert AC to stable DC power with up to 96% efficiency, significantly reducing energy waste and operational costs.
2. **Advanced Battery Management System (BMS):** Extends battery life through precise charging algorithms and continuous health monitoring, supporting both VRLA and Lithium-Ion battery technologies.
3. **Remote Monitoring & Control:** Built-in SNMP and Modbus protocols allow for seamless integration with Network Operations Centers (NOCs) for proactive management and fault notification.
4. **Comprehensive Load Distribution:** Provides multiple output branches with individual circuit breakers for granular power distribution to diverse telecom equipment (e.g., baseband units, remote radio heads, transmission gear).
5. **Environmental Hardening:** Wide operating temperature range from -40°C to +65°C, making it suitable for uncontrolled outdoor environments.

COMPLIANCE & STANDARDS

This planning guide and its associated hardware are fully compliant with global telecommunications and safety standards, including:

- Safety: IEC 60950-1, IEC 62368-1, UL 60950-1, CSA C22.2.
- EMC: EN 300 386, FCC Part 15 Class A, CISPR 32.
- Environmental: RoHS, REACH, WEEE.
- Telecom: ETSI EN 300 019 (environmental conditions), NEBS Level 3 (GR-63-CORE, GR-1089-CORE).

TECHNICAL SPECIFICATIONS

The following table provides a comprehensive list of the key physical, electrical, and operational parameters for the power capacity planning system.

Parameter	Specification
Form Factor	2RU Chassis (19"/23" rack-mountable)
Input Voltage Range (AC)	90-264 VAC, 47-63 Hz
Input Voltage Range (DC)	-40 to -72 VDC
Maximum Output Power	5000W (with 4x rectifiers)
Rectifier Efficiency	Up to 96% at 50% load
Operating Temperature	-40\u00b0C to +65\u00b0C
Storage Temperature	-40\u00b0C to +85\u00b0C
Relative Humidity	5% to 95% (non-condensing)
Cooling	Variable Speed Fans (Front-to-Back)

Management Interfaces	1x Ethernet (10/100/1000), 1x RS-485, 1x USB
LED Indicators	System Health, Input Status, Output Status, Alarm
Dimensions (H x W x D)	88.9 mm x 482.6 mm x 450 mm
Weight (Chassis only)	8.5 kg

ORDERING OPTIONS

To facilitate precise procurement for diverse site requirements, the following base orderable SKUs are available. Each SKU includes the chassis, controller, and a set number of rectifier and distribution modules. For custom configurations, please consult your sales representative.

- SKU-PCP-1000: Standard System with 2x 1000W Rectifiers, 1x Distribution Panel (8 outputs). Suitable for small cell sites.
- SKU-PCP-2000: Enhanced System with 3x 2000W Rectifiers, 1x Distribution Panel (12 outputs) and 1x Battery Management Module. Ideal for macro cell sites.
- SKU-PCP-5000: High-Capacity System with 4x 2500W Rectifiers, 2x Distribution Panels (24 outputs), and dual BMS modules. Designed for data

centers and large hub sites.

- PCP-ACC-BATT-48V: 48V 100Ah Lithium-Ion Battery Pack.
- PCP-ACC-PDU: Remote Power Distribution Unit with individual outlet metering.

