

Dimensions and parameters of AC-DC power supplies for metropolitan area networks



✓ TELECOM CABINET

✓ BRAND NEW ORIGINAL

✓ HIGH-EFFICIENCY

Overview

Telecom Power Supply | AC-DC & DC-DC Solutions | Advanced Energy Efficiency, reliability and power density are the benchmarks for a telecom power supply today.

Key Takeaways

AC-DC power supplies for metropolitan area networks are designed for high efficiency, redundancy, and multiple voltage outputs, typically featuring input AC 110-220V or DC 750-1500V, with outputs ranging from low-voltage DC to high-power AC modules.

Key Electrical Parameters



Input Voltage: AC-DC power supplies in metro and communications systems accept standard AC line voltages (110–220V, 50/60Hz) or DC inputs from catenary or third rail systems (750V or 1,500V DC) depending on the application . **Output Voltage and Power:** Typical outputs include low-voltage DC (3V, 5V, 12V) for digital circuits and higher AC or DC outputs for auxiliary loads. Metro APS units can provide 120 kVA AC / 40 kW DC or 170 kVA AC / 30 kW DC per module . Communications systems often use power factor corrected AC-DC front-end supplies feeding intermediate DC buses (+12V IBA) and point-of-load converters for ASICs and FPGAs . **Isolation and Safety:** Medium-frequency galvanic isolation is commonly used to separate high-voltage inputs from low-voltage outputs, ensuring safety and compliance with EMC and harmonic regulations . **Efficiency and Regulation:** High efficiency is critical, with designs minimizing standby power and harmonic distortion. Switch-mode topologies with rectifiers and smoothing capacitors maintain regulated DC outputs largely independent of input fluctuations . **Redundancy and Load Sharing:** For reliability, especially in communications networks, AC-DC supplies often implement N+1 redundancy and load-sharing schemes to maintain continuous operation during module failures .

Physical Dimensions and Form Factor

Enclosures: Metro APS units are typically housed in stainless-steel containers that accommodate all components, including battery chargers, in a compact footprint suitable for onboard installation . **Modularity:** Power modules are standardized, with variants in power and input voltage achieved through adjustable input and transducer inductances. Communications systems may embed compact isolated AC-DC modules directly on motherboards or line cards, using SIP or SMD packages for point-of-load converters . **Thermal Management:** Medium-frequency transformers and IGBT-based modules allow for efficient heat dissipation, often with forced-air cooling or conduction through chassis walls .

Design Considerations

- Compatibility with multiple input sources (AC mains or DC rails)
 - High reliability and redundancy for critical metro and network operations
 - Low-noise, regulated outputs for sensitive digital electronics
 - Compliance with international standards for EMC, harmonic content, and safety
 - Scalability and modularity to support varying load requirements and future upgrades
- In summary, AC-DC power supplies for metropolitan area networks are highly modular, efficient, and reliable, designed to convert AC or DC inputs into multiple regulated outputs while ensuring safety, redundancy, and compact installation for both metro vehicles and communications infrastructure .

Article Content

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Efficiency, reliability and power density are the benchmarks for a telecom power supply today. Advanced Energy's Artesyn is one of

Modular DC power systems for mission

The building block of modular DC Power Systems is the rectifier module, which converts AC utility or AC generator power into clean

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

