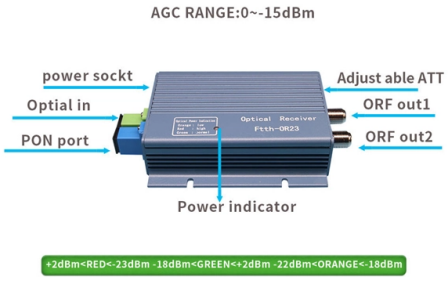
Copper Cable Data Center Solution



Article Overview

Copper cabling remains a cost-effective, reliable solution for short-distance connections in data centers, supporting power delivery and network connectivity up to 100 meters.

Applications and Advantages

Copper cabling is widely used in data centers for power distribution, control circuits, and short-distance network connections. It is more economical than fiber optics, easier to install, and requires less specialized equipment, making it ideal for local area networks (LANs) and server rack connections . Common copper cables include Cat6, Cat6a, Cat7, and Cat8, supporting gigabit to multi-gigabit speeds over distances up to 100 meters . Copper is also used in XHHW-2 power cables ranging from 14 AWG to 1,000 Kcmil to power server racks, cooling systems, and control circuits .

Performance and Limitations

While copper is effective for short-distance, mid-to-low-speed applications, it faces limitations in high-speed data centers. Traditional copper cabling typically supports 10Gbps to 25Gbps, which is insufficient for modern requirements of 100Gbps or 400Gbps connections . Its transmission distance is limited, and installation complexity can increase in high-density environments. Copper is best suited for Top-of-Rack (ToR) or short horizontal runs, while fiber optics handle backbone and long-distance connections ....

Article Content

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Conclusion High-speed copper cables— DAC, ACC, and AEC —each serve a unique purpose in building scalable, efficient, and high

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