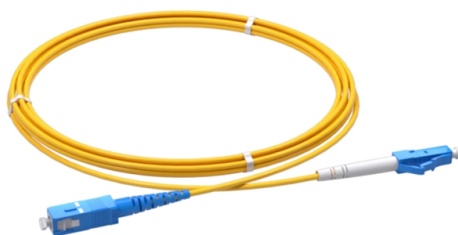


Main optical cable of the trunk system



Overview

Fiber trunk cables are integral to building efficient, high-performance, and scalable optical networks.

Key Takeaways

Trunk system main optical cables are high-density, pre-terminated fiber optic assemblies that consolidate multiple fibers into a single cable for efficient, high-speed network connectivity.

Trunk optical cables serve as the backbone of fiber optic networks, providing a physical conduit for multiple fiber connections. They are designed to combine multiple physical links into one logical link, enabling higher transmission speeds, improved resiliency, and simplified network management. These cables are widely used in data centers, office buildings, campuses, and industrial networks to support high-bandwidth applications.

Cable Construction

Trunk cables typically feature:

- High-density fiber bundles: Multiple 8, 12, or 16-fiber sub-units are combined within a single jacket, allowing fiber counts from 12 up to 144 or more.
- Microcore or loose tube designs: Fibers are housed in protective tubes with aramid yarn or other strength members for tensile durability.

- Pre-terminated connectors: MPO/MTP, LC, or SC connectors are commonly used, with options for high-density 16-fiber MPO-16 connectors for modern 800G-SR8 backbones .

- Protective features: Factory-installed pulling eyes and reinforced jackets protect delicate fiber ends during installation .

Types and Variants

Trunk cables are available in single-mode (OS2) and multimode (OM1, OM2, OM3, OM4, OM5) variants, optimized for different bandwidths and transmission distances . They can be configured as:

- Indoor, outdoor, or universal cables
- Breakout or microbreakout designs for easier termination and routing
- PreCONNECT or modular plug-and-play systems for tool-free installation

Connectors

- LC connectors: Compact, high-density, suitable for narrow spaces, with 1.25 mm ceramic ferrules .

- SC connectors: Larger, push-pull design with 2.5 mm ferrules, suitable for both single-mode and multimode applications .

- MPO/MTP connectors: Multi-fiber connectors for high-density trunk assemblies, supporting 12, 16, or more fibers per connector .

Advantages

- Space efficiency: Consolidates multiple fibers into a single cable, reducing clutter and saving rack space .

- Simplified installation: Pre-terminated cables reduce splicing, assembly errors, and downtime .

- Scalability: Supports future network expansion and high-bandwidth applications .

- Improved performance: Reduces insertion loss and return loss by minimizing interconnects .

Applications

Trunk system main optical cables are essential for:

- Data center backbone connections
- High-density patch panels and structured cabling
- Campus and enterprise network interconnects

- High-speed, high-bandwidth environments such as AI-driven data centers In summary, trunk optical cables are pre-assembled, high-density fiber solutions that streamline network deployment, enhance performance, and provide scalable, reliable connectivity for modern optical networks.

Article Content

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A Fiber Trunk Cable, also commonly referred to as a trunk cable or a main cable in optical fiber communication systems, is a high

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