

Single-mode 48-core optical cable model



Overview

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Key Takeaways

A 48-core single-mode optical cable is a high-capacity fiber optic cable containing 48 individual single-mode fibers, designed for long-distance, high-bandwidth data transmission with robust mechanical protection.

Overview

A 48-core single-mode optical cable consists of 48 individual optical fibers within a single cable sheath, each fiber capable of transmitting data independently. The term "single-mode" (SM) refers to the fiber type, which has a core diameter of 9/125 μm , allowing light to travel in a single, straight path. This design minimizes signal loss and supports long-distance communication with high bandwidth, making it ideal for backbone networks, data centers, and telecommunication infrastructure.

Structure and Design

Core Count: 48 fibers, often organized into 4 to 6 loose tubes to facilitate high-capacity transmission and reduce stress on individual fibers. **Armoring:** Many 48-core cables are steel-armored or have double steel tape sheaths, providing protection against mechanical stress, rodent damage, and environmental hazards. **Jacket:** Single or double PE jackets are used for moisture resistance and durability, suitable for direct burial or duct installation.

Loose Tube Stranding: Fibers are stranded in loose tubes with secondary excess length, allowing them to move freely and remain stress-free under tension or bending.

Performance

Low Attenuation: Single-mode fibers ensure minimal signal loss over long distances.

High Bandwidth: Supports high-speed data transmission for large-scale networks.

OS2 Standard Compliance: Many 48-core cables meet OS2 single-mode specifications, suitable for long-haul and high-capacity applications.

Applications

Telecommunication Networks: Backbone and trunk lines connecting cities or data centers. **Data Centers:** High-density interconnections requiring multiple fiber channels. **Industrial Networks:** Environments needing rugged, durable cabling with mechanical protection.

Direct Burial Installations: Outdoor deployment in underground conduits or open trenches.

Advantages

High Capacity: 48 fibers allow simultaneous transmission of multiple data streams.

Durability: Armored design protects against physical damage and environmental factors.

Long-

Distance Transmission: Single-mode fibers reduce signal degradation over kilometers.

Flexibility: Loose tube design and multiple cores facilitate easier installation and network expansion. In summary, a 48-core single-mode optical cable is a robust, high-capacity solution for modern telecommunication and data networks, combining long-distance performance, mechanical protection, and high bandwidth in a single cable assembly.

Article Content

48-Core Single-Mode Fiber Cable Specs | PDF | Fibers | Optical

The document provides specifications for a 48-fiber optical cable (model CFA-048D) designed for indoor distribution, featuring a compact and lightweight structure with LSZH-FR cover and various internal

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Opti-Core™ Fibre Optic Indoor-Outdoor Armoured Cable 48 to 144-Fibres, EuroClass Cca and B2ca for EMEA A T A S H E E T

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