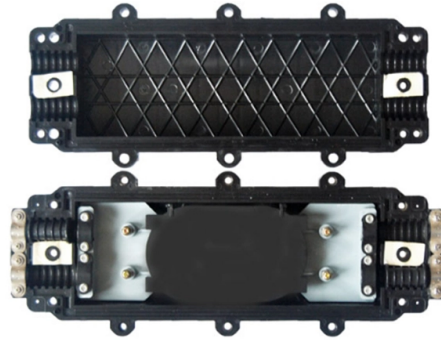


Common Fiber Optic Cable Models for Computer Rooms



Overview

Fiber-Optic Cables 101 | Wired Communications, LLC. This guide will walk you through the essentials of fiber optic selection—so you can avoid common pitfalls.

Key Takeaways

For computer rooms, the most commonly used fiber optic cables are single-mode and multimode fibers, typically in tight-buffered or distribution cable formats for indoor deployment.

Core Fiber Types

1. Single-Mode Fiber (SMF)

- Features a very thin core (8–10 μm) that carries a single light mode.
- Ideal for long-distance, high-speed transmission with minimal signal loss.
- Common indoor subtypes include OS1 (tight-buffered, indoor use) and OS2 (loose-tube, suitable for longer runs or mixed indoor/outdoor paths).
- Supports speeds up to 100 Gbps over distances of 10 km or more, making it suitable for backbone connections in large data centers.

2. Multimode Fiber (MMF)

- Has a larger core (50 μm or 62.5 μm) that carries multiple light modes simultaneously.
- Best for shorter distances within a building or campus, typically up to 550 meters depending on the fiber grade (OM1–OM5).

- Cost-effective for connecting servers, switches, and patch panels in computer rooms .

Cable Constructions for Indoor Use

1. Tight-Buffered Cables

- Each fiber is individually coated with a protective buffer, usually 900 µm in diameter.
- Easier to handle, terminate, and install in indoor environments like telecom closets or data centers.
- Often used in distribution cables containing 12–24 fibers for horizontal runs .

2. Distribution Cables

- Bundles multiple tight-buffered fibers under a single outer jacket.
- Space-efficient and ideal for vertical risers or horizontal pathways in computer rooms .

3. Breakout Cables

- Each fiber has its own jacket, bundled together.
- Simplifies termination without requiring a breakout kit.
- Suitable for short indoor runs connecting directly to equipment .

Jacket Types and Fire Ratings

- Plenum-rated (OFNP): Required for air-handling spaces; highly fire-resistant.
- Riser-rated (OFNR): Suitable for vertical shafts between floors.
- PVC or LSZH jackets: Common for general indoor use; LSZH reduces smoke and toxic fumes in case of fire .

Specialized Indoor Options

- Ribbon Fiber Cables: Multiple fibers arranged in a flat ribbon for high-density splicing; ideal for data centers with high-capacity backbone networks .
- Armored Fiber Cables: Include a protective metal layer for environments with potential mechanical risks, though less common indoors unless extra protection is needed .

Summary

For computer rooms, the most practical choices are:

- Multimode tight-buffered distribution cables for short-distance connections between servers, switches, and patch panels.
- Single-mode cables for backbone or long-distance runs within or between buildings.

- Ensure the jacket type complies with building codes (plenum or riser) and consider high-density ribbon or breakout cables for efficient space utilization and easier termination . Selecting the right fiber type and construction ensures high-speed, reliable, and future-proof connectivity in computer rooms.

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