Fiber optic patch cords mm and sm

Overview

Fiber Optic Patch Cord — SM, MM, Armored | TTI FiberShop fiber optic patch cords in LC, SC, FC, ST connectors. Single mode & multimode. Custom lengths avai.

Key Takeaways

Single-mode (SM) fiber patch cords are designed for long-distance transmission, while multimode (MM) patch cords are optimized for short-distance, high-speed connections.Overview

Fiber optic patch cords are short cables with connectors on both ends, used to connect devices such as switches, patch panels, and optical transceivers . They are available in single-mode (SM) and multimode (MM) types, each suited for different applications based on distance, bandwidth, and core size.

Single-Mode (SM) Fiber
• Core Size: 8–10 µm

• Wavelengths: 1310 nm and 1550 nm

• Distance: Can transmit over long distances, up to 100 km in some cases

• Fiber Types: OS1 (tight-buffered, indoor) and OS2 (low-water peak, outdoor/long-haul)

• Applications: Long-haul telecom, data center interconnects, CWDM systems

• Connectors: LC, SC, FC, ST, E2000, MPO; polish types include UPC and APC

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• Advantages: Low attenuation, minimal signal distortion, ideal for high-speed, long-distance links
Multimode (MM) Fiber
• Core Size: 50 µm or 62.5 µm

• Wavelengths: 850 nm and 1300 nm

• Distance: Shorter runs, typically up to 400 meters for OM4 at 10G speeds

• Fiber Types: OM1 (62.5/125 µm), OM2 (50/125 µm), OM3/OM4 (laser-optimized 50/125 µm), OM5 (wideband multimode)

• Applications: Intra-data center links, LANs, short-distance high-speed networks

• Connectors: LC, SC, ST, MTRJ, MPO; available in duplex or uniboot configurations

• Advantages: Supports multiple light modes, easier alignment, cost-effective for short distances
Key DifferencesFeatureSingle-Mode (SM)Multimode (MM)Core Diameter8–10 µm50–62.5 µmTransmission DistanceLong (up to 100 km)Short (up to 400 m for OM4)Light PropagationSingle pathMultiple pathsTypical UseLong-haul, telecom, CWDMData centers, LANs, short intra-building linksCostHigher per meterLower per meterBandwidthVery highHigh, but limited by modal dispersionConnector and Jacket Options

Patch cords come with various connectors (LC, SC, ST, MPO) and jackets (PVC, LSZH, plenum, armored) to suit indoor, outdoor, or harsh environments . Specialty cords include bend-insensitive fibers (G.657A2), mode-conditioning cords, and ruggedized tactical cables for demanding installations.

Selection Guidelines
• Use SM fiber for long-distance or high-speed backbone connections.

• Use MM fiber for short-distance, high-density data center links.

• Match the fiber type, connector, and polish to your equipment to avoid signal loss.

• Consider jacket type based on installation environment (e.g., LSZH for low-smoke areas, plenum for air ducts). Choosing the correct fiber optic patch cord ensures optimal performance, minimal signal loss, and reliable network operation .

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