What are the classifications of fiber optic patch cords

Overview

SOPTO A deep-dive into the technology of fiber patch cords. Learn about Single-mode vs. Multimode, LC/SC/MPO connectors, UPC/APC polish types, and critical.

Key Takeaways

Fiber optic patch cords are classified by fiber type, connector type, cable configuration, and polish type, each suited for specific network applications. Classification by Fiber TypeSingle-Mode (SM): Designed for long-distance transmission with a small core diameter (~9µm), allowing only one light path. Commonly used in telecom, long-haul networks, and enterprise backbones.

Outer jacket is usually yellow. Multimode (MM): Supports multiple light paths, suitable for short-distance applications like LANs and data centers. Core sizes include 50µm or 62.

5µm. OM1/OM2 are orange, OM3 is aqua, OM4 is violet, and OM5 is lime green. Classification by Connector TypeLC (Lucent Connector): Small form factor, push-pull mechanism, widely used in high-density data centers.

S

C (Subscriber Connector): Square, snap-in connector, common in PON and telecom networks.

S

T (Straight Tip): Bayonet mount, rugged, used in industrial or legacy LANs.

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F

C (Ferrule Connector): Screw-on thread, ideal for high-vibration environments. MPO/MTP: Multi-fiber connectors (8, 12, 24 fibers) for high-density parallel optics like 40G/100G networks. Other connectors: MU, MT-RJ, E2000, DIN, each with specific applications in telecom or industrial setups.

Classification by Cable ConfigurationSimplex: Single fiber, used for one-way communication (transmit-only or receive-only) applications. Duplex: Two fibers, suitable for two-way communication, commonly used in high-speed networks. Hybrid: Different connectors on each end (e.g., LC to SC), providing flexibility in connectivity.

Armored: Extra protection against physical damage, ideal for rugged environments. Classification by Polish TypePC (Physical Contact): Slightly spherical end-face, reduces air gap, return loss ~−40dB.

UP

C (Ultra Physical Contact): More refined polish, better surface finish, return loss ~−55dB, common in digital applications.

AP

C (Angled Physical Contact): End-face polished at 8° angle to minimize back-reflection, used in high-precision or analog systems.

Additional Considerations

Jacket Material: PVC for basic indoor use, Plenum (OFNP) for fire-resistant air ducts, Riser (OFNR) for vertical shafts, LSZH for low smoke and halogen-free environments.

Bend-

Insensitive Fiber: G. 657A1/A2 fibers for tight spaces and FTTH applications. By understanding these classifications, you can select the appropriate fiber optic patch cord based on distance, bandwidth, environment, and connector compatibility, ensuring optimal network performance and reliability.

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Fiber optic patch cables can be divided into simplex and duplex fiber optic patch cords according to the working mode of the interface. Simplex fiber

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What Is Fiber Patch Cord? Singlemode/Multimode,LC SC FC,UPC Vs

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