How to connect fiber optic cable to a fusion splice box



Overview

In this guide, we''ll walk you through the entire process of preparing fiber optic cable for splicing and termination to fiber connectors.

Key Takeaways

A fiber optic cable is connected to a fusion splice box by carefully preparing, cleaving, and fusion splicing the fibers into a splice module, ensuring low-loss, permanent connections.

Overview of Fusion Splicing

Fusion splicing permanently joins two optical fibers by melting their ends together with an electric arc, creating a continuous optical path with minimal signal loss and reflection. This method is preferred over mechanical splicing for long-haul or high-performance networks because it achieves attenuation losses typically below 0. 1 dB, compared to 0.

3–0. 5 dB for connectors.

Preparation Steps

Safety First: Wear high-rated safety goggles and cut-resistant shoes. Handle glass shards carefully and dispose of them in a dedicated fiber waste container. Use anti-static measures to protect the splicer electronics.

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Cable Stripping: Remove the outer jacket (typically 3–5 cm) and expose the fiber buffer tube. For tight-buffered fibers, strip the 250 µm coating carefully without bending or twisting the fiber. Cleaning: Wipe the exposed fiber with an IPA-soaked lint-free swab to remove dust, oil, or other contaminants.

Even microscopic debris can degrade splice quality. Cleave the Fiber: Use a precision cleaver to create a flat, mirror-like end. A poor cleave can cause high loss or splice failure.

Splicing into the Fusion Splice BoxInsert Fibers into Splicer: Open the splicer's windshields and place each fiber in the V-groove clamps, ensuring proper alignment. Apply Splice Sleeve: Slide a protective splice sleeve over one fiber before splicing to protect the joint after fusion. Perform Fusion: Activate the splicer to create the fusion splice.

Inspect the splice for accuracy and repeat if necessary. Install in Splice Module: Place the completed splice into the fusion splice box or module. Organize fibers according to the connection plan, maintain proper bending radius, and secure strain relief to prevent slippage.

Best Practices

Maintain cleanliness throughout the process to prevent signal degradation. Observe bending radius limits to avoid microbends or fractures in the fiber. Plan fiber routing and service loops carefully to facilitate maintenance and future expansion.

Use manufacturer-recommended consumables and splice sleeves to ensure long-term reliability. By following these steps, a fiber optic cable can be reliably connected to a fusion splice box, providing a durable, low-loss connection suitable for high-performance networks.

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