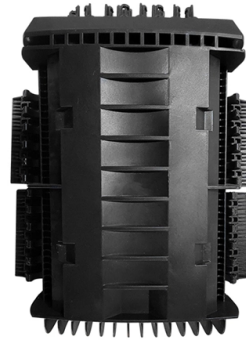


Fiber Optic Core Splicing Sequence



Article Overview

The fiber optic core splicing sequence involves preparation, stripping and cleaning, precise alignment, fusion, and protection to ensure a low-loss, reliable connection.

Step-by-Step Splicing Sequence

1. Preparation Before starting, gather all necessary tools and materials: a fusion splicer, fiber optic cables (single or multi-core), protective splice sleeves or heat shrink tubes, alcohol wipes, and a precision cleaver. Inspect each fiber for damage and replace any defective cables. Measure and cut the cables to equal lengths to maintain consistency during splicing .
2. Stripping and Cleaning Remove the protective coating from each fiber using a precision stripping tool, taking care not to damage the glass core. For ribbon cables, use V-groove alignment methods. Clean the exposed fibers thoroughly with alcohol wipes or cleaning solution to remove dust, oils, or debris that could affect signal quality .
3. Cleaving Use a fiber cleaver to cut the fiber ends to a perfectly flat surface. Proper cleaving ensures minimal optical loss and smooth fusion. The cleaver must produce a precise 90-degree end-face for optimal alignment .
4. Alignment Place the fibers in the fusion splicer. Modern splicers use high-resolution cameras and motors to automatically align the fiber cores to within microns. For ribbon fibers, V-groove holders may be used for manual alignment. Proper alignment is critical to minimize back reflection and insertion loss .
5. Fusion The splicer generates an electric arc to melt the fiber ends, fusing them into a single continuous fiber. This creates a permanent, low-loss connection. Typical optical loss for fusion splicing is 0.01-0.03 dB, significantly lower than mechanical splicing .
6. Inspection and Testing After fusion, the splicer evaluates the splice quality and estimates optical loss. Any misalignment or defects can be detected at t...

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