

RIVO MULTITRADE OPTICAL SYSTEMS

Fusion splicing of fiber optic cable and 24-core optical fiber



Overview

The diagram of 24 core fiber fusion splicing sequence is an essential tool for engineers in the telecommunications industry.

Key Takeaways

Fusion splicing of 24-core fiber optic cables involves precise preparation, alignment, and joining of each fiber to ensure low-loss, high-strength connections. Preparation and Tools

Before starting, gather all necessary tools: a fusion splicer, precision cleaver, fiber strippers, alcohol wipes, protective sleeves or heat shrink tubes, and the 24-core fiber cables themselves . Inspect each cable for damage and cut them to equal lengths to maintain consistency during splicing . Ensure your workspace is clean, static-free, and well-lit, and wear safety goggles and cut-resistant gloves to protect against glass shards and the high-temperature fusion arc .

Stripping and Cleaning

Each fiber within the 24-core cable must be stripped of its protective coating using a precision stripping tool, typically removing 10–20 mm depending on the splicer specifications . Avoid damaging the glass core. After stripping, clean each fiber with isopropyl alcohol to remove dust, oils, or debris, which can affect signal quality . For ribbon fibers, use V-groove alignment to maintain proper orientation during splicing .

Cleaving

Use a precision cleaver to create a flat, mirror-like end on each fiber. A poor cleave can cause high insertion loss or splice failure . Ensure fibers are straight and free of tension, maintaining a bending radius greater than 30 mm during handling .

Fusion Splicing

Place each fiber into the fusion splicer's V-groove or automatic alignment system. The splicer generates an electric arc to melt and fuse the fiber ends, creating a seamless molecular bond . For 24-core fibers, splicing can be done one fiber at a time or as a ribbon splice, depending on the splicer model . After splicing, slide a protective sleeve or heat shrink tube over the joint to shield it from moisture, dust, and mechanical stress .

Quality Control

Check the insertion loss and return loss using an OTDR or splicer's built-in measurement system. High-quality splices typically achieve ≤ 0.02 dB insertion loss and > 60 dB return loss for single-mode fibers . Ensure mechanical integrity by testing tensile strength, which should exceed 95% of the fiber's rated strength .

Safety and Best Practices

- Always wear safety goggles and handle fiber shards carefully .
- Use anti-static mats or wrist straps to prevent damage to splicer electronics .
- Follow manufacturer-recommended consumables and splicer settings to reduce failure rates .
- Maintain a clean, organized workspace to prevent contamination and ensure consistent splicing quality . By following these steps, fusion splicing of 24-core optical fibers can achieve low-loss, durable, and reliable connections suitable for high-bandwidth networks, FTTH deployments, 5G backhaul, and data center interconnects .

Article Content

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Operating Principle It is the optical fibers in the fiber optic cables that carry the light, and allow information to be

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