How to splice a 24-core optical fiber cable



Overview

Learn how to perform mechanical fiber cable splicing inside fiber enclosures using fiber splice trays.

Key Takeaways

The 24-core optical fiber cable splicing sequence involves preparation, stripping and cleaning, fusion splicing in a defined order, and testing, following color-coded identification for each fiber.

Preparation

Before splicing, gather all necessary tools: a fusion splicer, fiber optic cables with 24 cores, protective sleeves or heat shrink tubes, alcohol wipes, and a precision cleaver. Inspect each cable for damage and cut them to equal lengths to ensure consistent splicing. Install a splice protection sleeve on one fiber before stripping or cleaving to protect the joint during fusion.

Stripping and Cleaning

Strip the protective coating from each fiber using a precision stripping tool, taking care not to damage the glass core. Clean each stripped fiber thoroughly with alcohol wipes or a cleaning solution to remove dust or debris. For ribbon cables, use V-groove alignment to maintain proper fiber positioning.

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Fusion Splicing Sequence

Align fibers precisely in the fusion splicer using either manual V-groove holders or automatic core alignment systems. Fuse fibers with an electric arc, which melts the glass ends together to form a permanent joint. Splice in sequence according to the 24-core color code, typically following the TIA-598-C standard: 1: Blue, 2: Orange, 3: Green, 4: Brown, 5: Slate (Gray), 6: White, 7: Red, 8: Black, 9: Yellow, 10: Violet, 11: Rose, 12: Aqua.

For fibers 13–24, repeat the sequence with a black stripe or other marking to maintain unique identification. Install protective sleeves over each fused joint immediately after splicing.

Testing

After splicing, perform optical loss testing to ensure low attenuation and verify signal integrity. Inspect each splice for proper alignment and absence of defects. Organize the fibers neatly in the splice tray to maintain bend radius requirements and prevent stress on the joints.

Best Practices

Maintain a clean working environment to prevent contamination. Handle fibers carefully to avoid microbends or cracks. Follow the color-coded sequence strictly to ensure correct connectivity.

Reserve sufficient fiber length for splicing and tray management. By following this sequence, a 24-core optical fiber cable can be spliced efficiently with minimal signal loss and long-term reliability.

Article Content

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