Types of Optical Cable Fusion Splicers

Overview

There are three types of fiber strippers available, known as (from Left) the Miller Stripper, No-Nik and Micro-Strip.

Key Takeaways

Optical cable fusion splicers are classified by fiber type, alignment method, and motor-driven precision, including single-core, ribbon, cladding alignment, and core alignment splicers.Classification by Fiber Type
• Single-Core Fusion Splicers: Designed to splice one optical fiber at a time, typically with a 0.125 mm diameter. They are widely used in daily applications such as construction, maintenance, and emergency repair of telecom lines, as well as in laboratory experiments and optical device testing .

• Ribbon Fusion Splicers: Capable of splicing multiple fibers simultaneously (commonly 2, 4, 6, 8, or 12 cores). Ribbon splicers are efficient for large-scale projects, reducing splicing time for flat, multi-core ribbon cables .

• Specialized Splicers: Include skin line splicers for jumper cables and polarization-maintaining fiber splicers for specialized optical applications .
Classification by Alignment Method
• Core Alignment (Profile Alignment): Uses a Core Detection System (CDS) with multiple motors and CCD cameras to align fiber cores precisely. The system detects the core via imaging and aligns fibers at micrometer-level precision, achieving low splice loss (typically ≤ 0.02 dB). Core alignment is suitable for all fiber types, including old and new fibers, and is ideal for high-precision applications like FTTH and long-haul networks .

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• Cladding Alignment: Aligns fibers based on the outer cladding rather than the core. Typically uses two motors and one camera, with fibers placed in a fixed V-groove. This method requires high precision in the V-groove and clean fiber surfaces. Cladding alignment is simpler and cost-effective, suitable for multimode fibers and basic LAN or residential installations .
Classification by Motor Configuration
• 4-Motor Fusion Splicers: Two motors push the fiber to the center, and two motors adjust the fiber image on the screen for alignment. Suitable for moderate precision requirements .

• 6-Motor Fusion Splicers: Equipped with six motors for high-precision core alignment, automatically identifying various fiber specifications. These splicers provide extremely low splice loss and are ideal for backbone trunk lines and high-performance networks .
Summary

Optical fusion splicers are categorized based on fiber type (single-core, ribbon, specialized), alignment method (core vs. cladding), and motor-driven precision (4-motor vs. 6-motor). Core alignment with multi-motor systems is preferred for high-precision, low-loss splicing, while cladding alignment and simpler motor configurations are suitable for cost-effective, lower-demand applications. Ribbon splicers enhance efficiency for multi-fiber projects, making them essential for large-scale optical network deployments .

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Learn how to choose the right fusion splicer for your fibre optic projects. Compare core vs cladding alignment, key

What are the different types of fiber optical fusion splicers

There are many fusion splicer manufacturers on the market, each of which has its own advantages,

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The two primary industry-accepted methods for fiber optic cable splicing are fusion splicing and mechanical splicing.

Fusion Splicers | Telecommunication Systems Business Unit

Fusion splicer enable splicing of Fiber Optic Cable with low loss and high reliability. For fusion splicer, we offer two types: Core

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