Fiber Optic Fusion Splicer Configuration

Overview

How to choose a fusion splicer: core vs cladding alignment, 6 key specs, and picks for FTTH, backbone and field work from Richer.

Key Takeaways

Fusion splicer settings depend on fiber type, splice mode, and arc parameters to achieve low-loss, high-quality splices.Splice Modes
• Automatic Mode (Auto Mode) The splicer detects the fiber type (single-mode, multimode, or dispersion-shifted) and automatically adjusts arc power, splice time, and heating parameters. Ideal for beginners or bulk installations where speed and standard conditions are important .

• Manual Mode Provides full control over arc intensity, splice time, and fiber alignment. Useful for specialized fibers, repair work, or experimental setups where non-standard settings are required .

• Single-Mode (SM) Mode Optimized for single-mode fibers with small core diameters. Parameters are tuned to minimize signal loss, making it suitable for long-distance networks and high-quality connections .

• Multimode (MM) Mode Designed for multimode fibers with larger cores. Requires specific arc power adjustments to account for core structure differences .
Key Settings and Adjustments
• Arc Power and Duration: Adjust according to fiber type and coating. Single-mode fibers require precise, lower-power arcs, while multimode fibers may need slightly higher power .

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• Fiber Alignment: Most modern splicers use optical core alignment to automatically align fibers. Manual adjustments may be needed for non-standard fibers .

• Cleave Quality: Use a precision fiber cleaver to produce perpendicular, smooth fiber ends. Poor cleaves increase splice loss .

• Cleaning: Clean fiber ends with 99%+ isopropyl alcohol and lint-free wipes. Contaminants can significantly degrade splice quality .

• Protective Sleeves: After splicing, use heat-shrink sleeves to protect the joint from mechanical stress .
Best Practices
• Follow Manufacturer Recommendations: Each splicer model may have slightly different default settings and consumables .

• Re-clean Fiber Ends: In dusty or humid environments, re-clean every 5–10 splices to maintain low-loss performance .

• Safety: Wear high-rated safety goggles and cut-resistant gloves, and handle fiber shards carefully .

• Testing: After splicing, test the splice for strength and optical loss to ensure reliability . By selecting the appropriate splice mode, adjusting arc parameters, and following proper fiber preparation and protection procedures, you can achieve consistent, low-loss fusion splices suitable for both single-mode and multimode networks.

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Fusion splicing may be done one fiber at a time or a complete fiber ribbon from ribbon cable at one time.

Single Fiber Fusion Splicing

The following sections of this application note specifically address the single fiber fusion splicing method. However, many of the

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