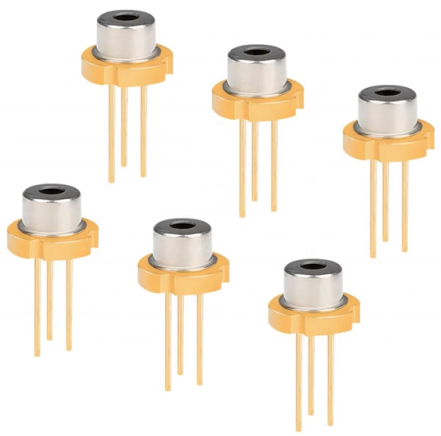
Assembly steps for fiber optic patch cord FC



Overview

In this video, we take you inside the manufacturing process of a fiber optic patch cord, showing the key assembly steps that directly impact optical performance and long-term...

Key Takeaways

Assembling an FC fiber optic patch cord involves precise fiber preparation, connector insertion, epoxy curing, ferrule polishing, and rigorous testing to ensure optimal optical performance.

Step-by-

Step Assembly Process1.

Cable Preparation

Cut the fiber optic cable to the required length, leaving extra length for handling and termination ( ). Strip the outer jacket and buffer coating carefully to expose the bare fiber, typically 0. 9mm for single-mode fibers ( ).

Clean the exposed fiber with alcohol to remove dust, oils, and residues ( ). 2.

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Connector Preparation

Prepare the FC connector by ensuring the ferrule is clean and free of debris. Inject a small amount of epoxy into the ferrule if using an adhesive-based termination ( ). 3.

Fiber Insertion and Crimping

Carefully insert the prepared fiber into the connector ferrule, ensuring it reaches the correct depth ( ). Crimp the connector housing to secure the fiber mechanically, providing strain relief and stability ( ). 4.

Epoxy Curing

Cure the epoxy in a controlled oven or curing station to solidify the bond between the fiber and ferrule ( ). Ensure the curing process avoids micro-bubbles or misalignment, which can increase insertion loss ( ). 5.

Ferrule End-

Face Polishing

Polish the ferrule end-face using automatic or manual polishing machines to achieve a smooth, flat, or angled surface depending on UPC or APC type ( ). Clean the polished end-face with alcohol and inspect under a microscope (typically 400x) for scratches, chips, or contamination ( ). 6.

Connector Assembly

Assemble the connector housing and attach the strain relief boot to protect the fiber and maintain mechanical integrity ( ). 7.

Testing and Quality Control

Perform insertion loss (IL) and return loss (RL) testing using calibrated equipment to ensure the patch cord meets performance standards ( ). Inspect the end-face with interferometers or microscopes to verify optical quality and alignment ( ). Label and document the patch cord for traceability and quality assurance ( ).

Notes and Best Practices

Maintain a clean working environment to prevent contamination. Handle fibers with care to avoid micro-bends or cracks. Follow manufacturer specifications for epoxy type, curing time, and polishing procedures.

Use proper personal protective equipment (PPE) when handling fibers and chemicals. By following these steps, an FC fiber optic patch cord can achieve low insertion loss, stable return loss, and long-term mechanical and optical reliability suitable for data centers, telecom networks, and FTTH deployments ( ).

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When installing, align the key on the connector body with the keyway on the transceiver or adapter. When removing the LC connector, press the connector latch downward. Copyright © 2019 FS

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