JEWELBLU OPTICAL SYSTEMS

Optical Splitter Connector Selection

Overview

Fiber Splitter Selection Guide: PLC, Ratio & ConnectorAlthough often viewed as a simple passive device, the choice of splitter type, split ratio, and Ultim.

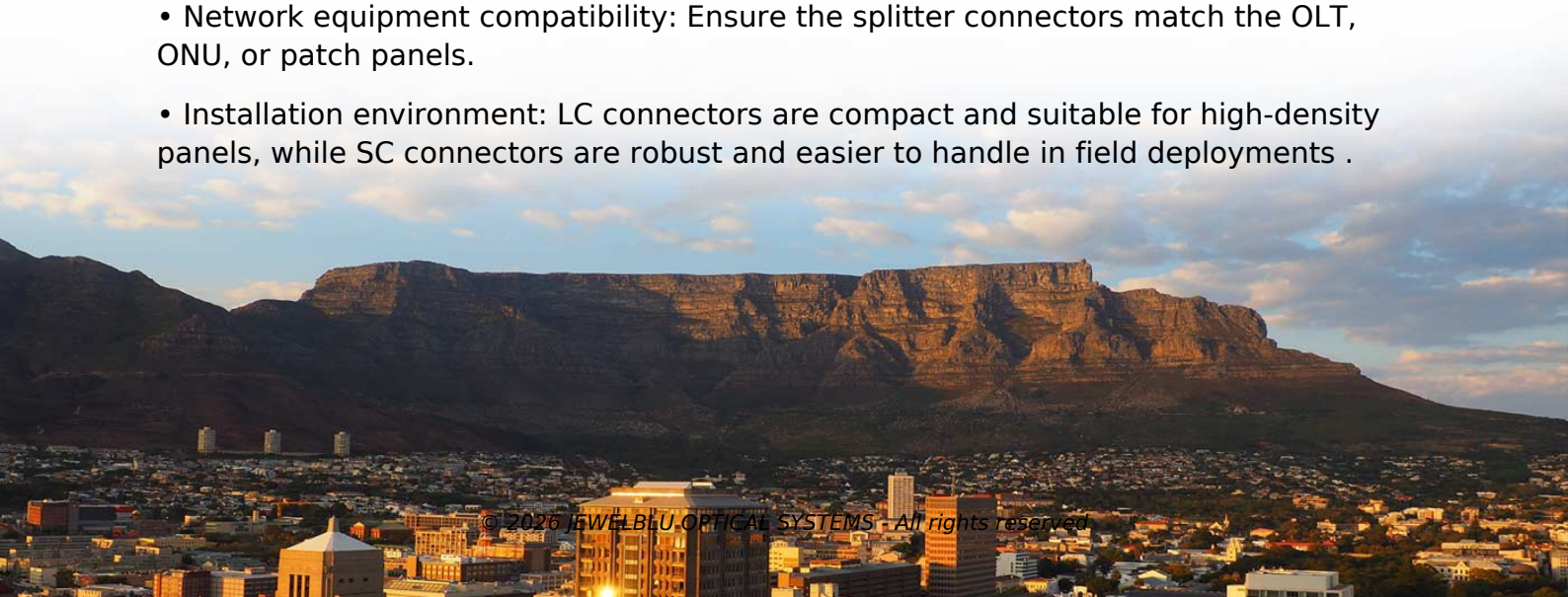
Key Takeaways

Selecting the right optical splitter connector involves matching the splitter type, network architecture, and deployment requirements to ensure optimal signal distribution and long-term reliability.Key Considerations for Connector Selection

1. Splitter Type Compatibility Optical splitters are mainly of two types: PLC (Planar Lightwave Circuit) and FBT (Fused Biconical Taper). PLC splitters are preferred for modern FTTH and Quick ODN networks due to their uniform signal distribution, scalability, and wavelength insensitivity, while FBT splitters are suitable for low-channel applications but are more sensitive to wavelength and less uniform in output power . Connector selection must ensure compatibility with the chosen splitter type. 2. Connector Interface Types Common connector interfaces include LC, SC, FC, and ST. The choice depends on:

• Network equipment compatibility: Ensure the splitter connectors match the OLT, ONU, or patch panels.

• Installation environment: LC connectors are compact and suitable for high-density panels, while SC connectors are robust and easier to handle in field deployments .



• Maintenance and scalability: Standardized connectors simplify future upgrades and reduce operational complexity. 3. Split Ratio and Optical Budget The split ratio (e.g., 1:4, 1:8, 1:16, 1:32) affects optical loss. Higher split ratios reduce fiber count but increase insertion loss, which must be accounted for in the optical budget. Connector selection should consider low-loss interfaces to maintain signal quality, especially in high-split scenarios . 4. Deployment Architecture

• Centralized splitting: Splitters are located near the OLT; connectors must support high-density patching.

• Distributed splitting: Splitters are closer to subscribers; connectors should be field-installable and durable for outdoor or curbside environments . 5. Environmental and Mechanical Factors Consider temperature range, dust protection, and mechanical durability. Outdoor or harsh environments may require connectors with protective housings or IP-rated enclosures to prevent signal degradation . 6. Standard Compliance Ensure connectors and splitters comply with ITU-T G.984 (GPON), ITU-T G.9807.1 (XGS-PON), and Telcordia GR-1209/1221 standards to guarantee interoperability and long-term network reliability .
Practical Selection Steps
• Determine the network type (FTTH, GPON, EPON) and required split ratio.

• Choose the splitter technology (PLC for high-channel, FBT for low-channel).

• Select a connector type compatible with existing equipment and installation density.

• Verify insertion loss and optical budget to ensure signal quality.

• Consider environmental conditions and select connectors with appropriate protection.

• Confirm standards compliance for interoperability and future upgrades. By following these steps, network engineers can ensure that optical splitters and their connectors provide reliable, scalable, and efficient signal distribution across the fiber network .

Article Content

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Optical splitters work by using different methods—such as fused biconical taper, planar

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