

Customization Process for Low-Noise Optical Splitters for Campus Networks



Article Overview

Customizing low-noise optical splitters for campus networks involves selecting the appropriate splitter type, optimizing split ratios, packaging, and placement to ensure minimal signal loss and high transmission quality.

1. Selecting the Splitter Type

Optical splitters can be PLC (Planar Lightwave Circuit) or FBT (Fused Biconical Taper). PLC splitters are preferred for campus networks requiring uniform signal distribution, high channel counts, and wavelength insensitivity, making them ideal for GPON, XGS-PON, and future 25/50G PON deployments. FBT splitters are cost-effective for low-channel applications (1x2, 1x4) but are more sensitive to wavelength and exhibit poorer uniformity at higher splits. For low-noise performance, PLC splitters are generally superior due to their integrated waveguide technology, which reduces signal distortion and nonlinear effects.

2. Determining Split Ratios

Split ratios (e.g., 1x2, 1x4, 1x8, 1x16, 1x32) must be chosen based on network topology, user density, and power budget. Unequal split ratios can be customized to prioritize high-demand areas while maintaining low noise levels. For campus networks, a combination of centralized and distributed splitting can optimize fiber usage and reduce insertion loss. Centralized splitters allow flexible customer assignment via jumpers, while distributed splitters are fixed and often housed in clo...

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