

Comparison of Low Loss and Advantages Disadvantages of PLC Splitter Performance



AI Overview

PLC splitters offer consistent low-loss performance for high-ratio PON deployments, with advantages in uniformity, scalability, and reliability, though they may have slightly higher base insertion loss and cost compared to FBT splitters.

Low Loss Performance
Insertion Loss: PLC splitters typically exhibit slightly higher base insertion loss than FBT splitters in low-ratio configurations (1x2: 3.8–4.2 dB) due to waveguide coupling inefficiencies, whereas FBT splitters achieve 3.2–3.8 dB for the same ratio. However, for high-ratio splits (1x32 or 1x64), PLC splitters maintain consistent total loss (16.5–17.5 dB) because of their monolithic single-chip design, avoiding the compounded loss seen in cascaded FBT splitters. This makes PLC splitters ideal for long-reach GPON links exceeding 20 km.

Uniformity and Wavelength Stability: PLC splitters provide highly uniform power distribution across all outputs and stable performance across multiple wavelengths (1310 nm, 1490 nm, 1550 nm), which is critical for multi-service PON networks. FBT splitters, while efficient in low-split ratios, can suffer from uneven distribution and wavelength sensitivity in higher split ratios.

Advantages of PLC Splitters
Scalability: PLC splitters support high split ratios (up to 1x64) without cascading, enabling large-scale FTTH deployments.
Reliability: They maintain signal integrity over long distances and multiple wavelengths, minimizing bit error rates.
Compact and Flexible Deployment: PLC splitters can be deployed in centralized or distributed architectures, offering design flexibility for urban and rural networks.
Cost-Effective for Large Networks: While initial cost is higher than FBT, PLC splitters reduce operational complexity an...

Article Content

PLC Splitter: The Ultimate Guide to Efficient Light

This guide will demystify the PLC splitter, compare it with alternatives, and explain its synergy with essential components like optical

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FBT vs PLC Splitters: A Comprehensive Comparison of Fiber Optic ...

While FBT technology offers advantages in customization and cost-effectiveness for smaller deployments, PLC technology provides superior performance uniformity and reliability for

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Optimizing Your FTTH Design: Strategies for Designing Split Levels

When designing your FTTH network split level, both centralized splitting and cascaded splitting have their advantages and disadvantages. It is essential to evaluate these factors and select

How to Design Your FTTH Network Splitting Level and

Unearth in-depth insights into FTTH Network Design. Learn about the critical role of optical splitters, understand different splitting levels and ratios, and

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Switched-mode power supply

Standby power loss is often also reduced with the elimination of these transformers. Disadvantages include greater complexity, the generation of high-amplitude, high

FBT Splitter vs. PLC Splitter: What Are the Differences?

The differences between FBT splitter and PLC splitter lies in the working wavelength, splitting ratio, failure ratio, and price. All these differences

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Fiber Splitters The Role And Application Guide

However, choosing the right splitter type and splitting ratio is crucial to optimizing the performance of communication networks. PLC Splitters are

PLC Splitters vs FBT Splitters A Detailed Guide for 2025

Compare PLC Splitters and FBT Splitters for 2025. Learn about cost, performance, scalability, and which splitter suits your fiber optic network needs.

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FBT vs PLC Splitter: Essential Differences You Should Know

Fiber splitters are divided into FBT and PLC splitters. They differ in wavelength, port, splitting ratio, failure rate, uniformity, temperature, size, and cost.

PLC Splitters vs FBT Splitters: A Detailed Comparison

Although the functions of the two are very similar, both are used to distribute optical signals, there are significant differences in their structure,

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Design and optimization of non-uniform 1 × 5 PLC splitter using ...

In this paper, the design and optimization of a non-uniform 1 × 5 PLC splitter are carried out, and the device performance sensitivity analysis towards various structure dimensions was then

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The Comparative Analysis of PLC and FBT Optical

Both the PLC and FBT splitters have their own merits in terms of performance and cost, and both technologies are continuously being improved to

Optical Splitter Type: Comparison Of FBT Splitter And

They also have several types, such as bare PLC splitter, blockless PLC splitter, fanout PLC splitter, mini plug-in type PLC splitter, etc. The following

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