

Types of Telecommunication Optical Splitters



Overview

Introduction to Passive Optical Network Splitter Architectures One important note is that splitting architectures should be seen as tools that can be mixed.

Key Takeaways

Optical splitters are passive devices that divide a single optical signal into multiple outputs, with models including FBT and PLC types, supporting split ratios from 1x2 up to 1x128 for FTTH and PON networks. Types of Optical Splitters 1. Fused Biconical Taper (FBT) Splitters Low-cost, ideal for small split ratios such as 1: 2 or 1: 4.

Suitable for short-distance or low-density networks. Typically used in central office or small-scale deployments. 2.

Planar Lightwave Circuit (PLC) Splitters High uniformity and reliability, preferred for large split ratios like 1: 32, 1: 64, or even 1: 128. Compact and scalable, suitable for high-density FTTH networks. Available in bare fiber or connectorized formats, with low insertion loss (≤ 3).

8 dB) and low polarization-dependent loss (≤ 0.2 dB) across 1260–1650 nm wavelength range.

Split Ratios

Common split ratios include 1x2, 1x4, 1x8, 1x16, 1x32, 1x64, and some odd ratios like 1x3 or 1x5. Cascaded splitting can combine multiple splitters to achieve higher ratios, e.g., a 1x4 and 1x8 splitter to form a 1x32 final split.

GPO

N and XGS-PON networks typically use 1x32 or 1x64 splits, with standards allowing up to 128 splits per OLT port. Deployment Architectures¹.

Centralized Splitting

Splitters are located at a central office or cabinet. Customer-to-splitter assignments can be reconfigured using fiber jumpers. Reduces fiber count on the feeder side and simplifies network management.

2.

Distributed Splitting

Splitters are placed in closures or pedestals in the outside plant. Addresses are fixed and not reconfigurable via jumpers. Often used in cascaded configurations to reach target split ratios.

Specifications and Features

Operating Temperature: Typically -40°C to 85°C. Insertion Loss: Low, depending on split ratio and type (PLC splitters ≤ 3.8 dB).

Polarization Dependent Loss (PDL): Low, usually ≤ 0.2 dB. Packaging: Compact housings for splice trays, wall-mounted boxes, or optical distribution boxes.

Standards Compliance: Telcordia GR-1209-CORE and GR-1221-CORE, ITU-T G. 984 for GPON.

Models and Applications

Bare Fiber Splitters: Flexible for integration into custom network designs.

Connectorized Splitters: Pre-terminated for quick deployment in central office or outside plant. Splitter Modules: Part of value-added module (VAM) systems for scalable optical transport networks.

Applications include FTTX systems, LAN/WAN/Metro networks, CATV, and telecommunications networks. Optical splitters are essential for cost-efficient, scalable, and passive PON networks, enabling a single OLT port to serve multiple subscribers while minimizing fiber infrastructure and operational costs.

Article Content

Introduction to Passive Optical Network Splitter Architectures

One important note is that splitting architectures should be seen as tools that can be mixed and matched to meet the overall requirements for the network. Most of the confusion in the industry centers around

Comprehensive Guide to Optical Splitters

What is an Optical Splitter? An optical splitter is a crucial passive fiber optic device that splits and combines optical signals. It can distribute the optical energy transmitted through a single

Optical Splitters Demystified: The Silent Heroes Powering Your FTTH ...

There are two main manufacturing technologies for optical splitters, each with its own advantages and ideal use cases. The choice between them depends on your application requirements.

Fiber Optic Splitter: How It Works & Types Guide

This guide demystifies fiber optic splitters, explaining their design, operating principles, types, key specifications, and real-world applications.

Optical Fiber Splitter Types — Complete Guide | TTI Fiber

This guide covers what optical fiber splitters are, the main types of optical fiber splitters you should know about, how to pick the right one, and how to install and maintain it properly.

Ultimate Guide to Optical Splitters for FTTH & GPON

Master optical splitter selection for FTTH & GPON networks. Compare PLC vs FBT, analyze insertion loss charts, and optimize your ODN architecture today.

Fiber-optic splitter

According to the principle, fiber optic splitters can be divided into Fused Biconical Taper (FBT) splitter and Planar Lightwave Circuit (PLC) splitters. The FBT splitter is one of the most common.

Fundamentals of Optical Splitters » SENKO Advanced Components, Inc.

There are two main types of optical splitters, each serving different network needs: Fused Biconic Taper (FBT) Splitters: An older type of splitter that uses heat to fuse fibers together in a tapered structure,

What Are the Different Types of Fiber Splitter Available?

Learn about different types of fiber splitter, including PLC and FBT splitters, features, applications, and how to choose the right one.

Types of Optical Modules

If optical splitters must be used for special scenarios or requirements, strictly follow the link budget and insertion loss specifications of different single-mode optical modules.

An In-Depth Exploration of Fiber Optic Distribution Boxes: Types ...

They provide an organized solution for fiber optic cable termination and distribution.

2.Rack-Mounted Fiber Optic Distribution Box Designed for standard 19-inch equipment racks, these boxes are

Your Go-to Guide to Optical Splitter

The optical splitter is an optical power distribution device that splits one optical signal into multiple optical fiber signals to achieve multichannel transmission.

Fiber Optic Splitter Box: The Complete Selection & Installation Guide ...

A fiber optic splitter box (also called an optical distribution box, fiber splitter enclosure, or ODB) is a protective housing that contains and organizes fiber optic splitters, splice trays, and

What is Fiber Optic Splitter and Types

What is a Fiber Optic Splitter? Fiber optic splitter is a passive optical device used to distribute optical signals, which can divide input optical signals into multiple outputs to meet the fiber

China PLC Splitter Manufacturers and Suppliers

PLC splitters are the main type of splitters used in passive optical Lans and off-factory FTTX networks (e.g., GPON, EPON, etc.). They split the input signal from

Fiber Optic Distribution Boxes: The Key to Seamless Connectivity

Fiber optic distribution boxes act as the connection points for incoming fiber optic cables, enabling easy distribution to various network devices such as switches, routers, and customer premises equipment

Understanding Fiber Optic Splitters: Principles,

There are several types of fiber optic splitters, each with its unique characteristics and applications. These include the planar waveguide splitter, tree-like splitter,

The Definitive Guide to Passive Optical Network (PON): Architecture ...

1. Introduction: Unpacking the "Passive" Revolution in Network Connectivity Passive Optical Network (PON) stands as a foundational technology in the evolution of modern

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