

Article Overview

An optical splitter has one or more input ports and multiple output ports that distribute optical signals from an OLT to multiple ONTs in a PON network.

Function of Ports

Optical splitters are passive devices that divide a single optical signal into multiple outputs without requiring power. The input port receives the optical signal from the Optical Line Terminal (OLT), while the output ports deliver the signal to multiple Optical Network Terminals (ONTs) or endpoints . In bidirectional PON systems, the same fiber can carry downstream and upstream signals using different wavelengths, allowing the splitter to handle signals in both directions .

Split Ratios and Port Counts

The number of output ports is determined by the split ratio, which defines how the optical power is divided. Common split ratios include 1x2, 1x4, 1x8, 1x16, 1x32, and 1x64, with each output port receiving a fraction of the input power . For example, a 1x8 splitter distributes the input signal equally to eight output ports, each receiving 1/8th of the total power. Some splitters use unbalanced outputs to adjust power along the network path .

Types of Splitters and Port Configurations

- o PLC (Planar Lightwave Circuit) splitters: Provide uniform power distribution, ideal for high port counts like 1x32 or 1x64 .
- o FBT (Fused Biconical Taper) splitters: Cost-effective for small splits like 1x2 or 1x4, often used in test environments or low-density deployments . Splitters can be deployed in centralized or distributed architectures. Centralized splitters are located in a central office or cabinet, allowing flexible port assignments via jumpers, while distributed splitters are placed in closures or pedestals closer to end users, with fixed port assignments .

Connectors and Network Integration

Splitter ports typically use SC/APC connectors for PON networks, though LC/UPC or SC/UPC may also be used . Each output port connects to an ONT or a local distribution point, enabling scalable network expansion without adding additional OLT ports. In Passive Optical LANs, a single OLT port can serve up to 32 ONTs through a splitter, with downstream signals split and upstream signals combined on the same fiber .

Key Considerations

Network Port Optical Splitter

- o Insertion loss: Each output port experiences some signal loss, which must be accounted for in the network power budget .
- o Port labeling: Proper labeling ensures correct connections and simplifies maintenance .
- o Scalability: Splitter ports allow ISPs to add subscribers by connecting new ONTs to available outputs without major network changes . In summary, the network ports on an optical splitter serve as the interface points for distributing optical signals from a single OLT input to multiple ONTs, with the number of ports, split ratio, and deployment architecture determining network efficiency, scalability, and signal quality .

A PLC Splitter divides one optical signal into multiple outputs, ensuring reliable, efficient fiber optic network

Fiber Broadband Association Technology Committee February 2025 The choice of splitter architecture for a passive optical network

What are the Benefits of Using Optical Splitters? The utilization of splitters offers two significant benefits: Scalability

Fiber Optic Splitter Box: The Complete Selection & Installation Guide for FTTH Networks Learn how to select, spec,

FS PLC Fiber Optic Splitters, Bare/Blockless/ABS/LGX Splitter/Rack Mount Types, support 1xN light distribution, with low IL and PDL

It is widely used in passive optical network systems, such as EPON, GPON, BPON, FTTH,

Electricity and wireless networks transmit data and build the modern technological world, benefiting

Learn how optical splitters are used in PON networks, including centralized and cascaded

In conclusion, fiber optic splitters play a crucial role in optical networks. They operate based on the 1:N

I've seen passive fiber optic splitters being used a number of times in situation where you need to have a copy of all

Passive optical networking (PON) provides Ethernet connectivity from a main data source to endpoints, using a technique called

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

Network Port Optical Splitter

Passive optical network A fiber optic cable assembly with SC APC connectors, as commonly used to link

explains how optical splitters enable FTTH, their types (FBT vs. PLC), key ratios, and how

Optical splitters enable the distribution of light signals from a single input to various servers, ensuring efficient data routing within the

The fiber optic splitters can be divided into two types: Fused Biconical Taper (FBT) splitter and Planar Lightwave Circuit (PLC)

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