Huawei Optical Splitter Structure and Principle Diagram



Overview

Made of PC+ABS/PPO material in order to meet strong corrosion resistant performance and light quality.

Key Takeaways

Huawei optical splitters use passive waveguide structures, including trident designs, to divide a single optical signal into multiple outputs efficiently for PON networks.

Structure of Huawei Optical Splitters

Huawei optical splitters, such as the SPL2605, are passive devices designed to split optical signals in GPON or FTTH networks. They typically consist of: Input pigtail: Receives the optical signal from the Optical Line Terminal (OLT). The input is distinguishable by color coding for easy identification.

Output pigtails: Deliver the split signals to multiple Optical Network Terminals (ONTs). Split ratios range from N: 2 to N: 64, depending on network requirements. Housing material: Made of PC+ABS or PPO, providing corrosion resistance and durability.

Waveguide structure: In advanced designs, Huawei uses a trident waveguide structure, where a single tapered first waveguide receives the multimode input signal and splits it adiabatically into two single-mode signals via two tapered second waveguides arranged on either side. This ensures low insertion loss and uniform signal distribution.

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Principle of Operation

The optical splitter operates on the passive splitting principle: Signal propagation: The input optical signal enters the first waveguide. Adiabatic splitting: The trident structure gradually divides the multimode signal into multiple single-mode outputs without significant reflection or loss. Distribution to end users: The split signals are transmitted through the output pigtails to ONTs, enabling one OLT port to serve multiple subscribers efficiently.

Huawei splitters are passive, meaning they require no power, and are designed for high reliability and scalability in PON networks. They are compatible with FBT (Fused Biconical Taper) splitters for small splits and PLC (Planar Lightwave Circuit) splitters for larger splits like 1: 32 or 1: 64.

Applications in GPON Networks

In a GPON architecture: The OLT sends a single optical signal into the optical distribution network (ODN). The passive optical splitter divides this signal to multiple ONUs/ONTs, supporting services like Internet, IPTV, and VoIP. This one-to-many architecture reduces fiber deployment costs while maintaining high bandwidth and long reach (up to 20 km in GPON networks),.

Diagram Representation

A simplified diagram of a trident-structured optical splitter: CodeCopy Input Signal | Tapered First Waveguide | ------------------------ | |Tapered Second Waveguide Tapered Second Waveguide | |Output 1 Output 2 This structure can be extended for higher split ratios by cascading multiple splitters or using PLC technology.

Key Advantages

Passive operation: No power required, low maintenance. Scalable: Supports multiple split ratios for different network sizes. Low insertion loss: Adiabatic splitting ensures minimal signal degradation.

Durable: Resistant to corrosion and environmental factors. Huawei optical splitters are essential components in FTTH and GPON networks, enabling cost-effective, reliable, and scalable optical access solutions.

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Article Content

SPL2605 Compact Optical Splitter Datasheet 02

Made of PC+ABS/PPO material in order to meet strong corrosion resistant performance and light quality. The preceding data is the results of tests carried under 1310/1550 nm wavelength

EDOC1100001588

Overview The SPL2605 can be independently integrated into an FDT or FAT, or encapsulated in a tray-mounted splitter SPL9201 for optical splitting in an ODF and FDT. The splitter has different splitting

SPL2605 Compact Optical Splitter Specs | PDF | Optical Fiber | Optics

Made of PC+ABS/PPO material in order to meet strong corrosion resistant performance and light quality. Structure. The preceding data is the results of tests carried under 1310/1550 nm wavelength and

OPTICAL SPLITTER INCLUDING A TRIDENT STRUCTURE

In particular the present invention proposes an optical splitter with a trident (waveguide) structure, which is capable of propagating a multimode signal (e.g. the zero and first order modes of both TE and TM

Huawei Passive Optical Network (PON) Splitters: Empowering FTTH ...

Huawei PON splitters are placed at strategic points within an FTTH network, usually at a distribution point located near the customer premises. These splitters receive an optical signal from...

Optical Splitters: Split Ratios, Splitting Architectures & PON Network ...

This guide focuses on two critical aspects of optical splitters that define FTTH performance: split ratios (how signals are divided) and splitting architectures (how splitters are

Fiber-optic splitter

A fiber-optic splitter, also known as a beam splitter, is based on a quartz substrate of an integrated waveguide optical power distribution device, similar to a coaxial cable transmission system.

ODN Design Pack for Link Net

The document outlines a detailed optical distribution network (ODN) design, specifying configurations for splitter usage and cable connections for various scenarios.

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Introduction to Passive Optical Network Splitter Architectures

In this scenario, the splitters are located in the central office or OLT location, shown in the blue circle. This architecture is similar to a “point to point” network, since one fiber is needed for each customer

(Video) What is an optical splitter (SPL) v2.0

Support Documentation Optical Access EA5800 Series OLT (X17/X15/X7/X2) SmartAX EA5800 Training Materials Training Multimedia

Beam Splitter

With metasurface structures, this PB phase principle is usually applied for beam splitting, but the principle only shows LCP and RCP are symmetrically split. This type polarizing beam splitter is called

How Does a PLC Splitter Work? An In-Depth Technical Guide

Conclusion This comprehensive yet accessible guide explored planar lightwave circuit (PLC) splitters that enable the reliable distribution of optical signals in a wide range of cutting-edge

Understanding Fiber Optic Splitters: Principles, Parameters, Types ...

Fiber optic splitters are used in various areas, including active optical networks, passive optical networks, FTTX access networks, and measurement systems. In active optical networks, they are

Optical splitter placement A) TYPES According to the

Optical splitter placement A) TYPES According to the principle, fiber optic splitters can be divided into Fused Biconical Taper (FBT) splitter and Planar Lightwave

Fiber Optic Couplers Selection Guide: Types, Features ...

Fiber optic couplers are optical devices that connect three or more fiber ends, dividing one input between two or more outputs, or combining two or more inputs into one output. The device allows

How Does a Fiber Optic Splitter Work

How Does a Fiber Optic Splitter Work? There are three main working principles of the fiber splitter: 1. Signal Input: The fiber splitter receives the optical signal from the upstream network node

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.

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Introduction to Passive Optical Network Splitter Architectures

Fiber Broadband Association Technology Committee February 2025 The choice of splitter architecture for a passive optical network (PON) network can impact many aspects of a Fiber to the X (FTTx)

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

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