

How to connect the OLT and the beam splitter

Article Overview

To connect an OLT to a beam splitter, use a single-mode fiber from the OLT PON port to the splitter input, ensuring the splitter type and ratio match your network design.

Step-by-Step Connection

1. Identify the OLT PON Port: Locate the PON port on your OLT (e.g., GPON or XGS-PON) that will serve the downstream ONTs. Each port typically supports one fiber connection to a splitter . 2. Choose the Appropriate Beam Splitter: Select a PLC (Planar Lightwave Circuit) or FBT (Fused Biconical Taper) splitter based on your network needs. PLC splitters are preferred for high port counts (1:32, 1:64) and centralized splitting, while FBT splitters are suitable for smaller deployments . Decide on the splitting ratio according to the number of ONTs to serve and the optical budget. 3. Connect the Fiber from OLT to Splitter Input: Use a single-mode fiber patch cord to connect the OLT PON port to the input port of the splitter. Ensure proper fiber connectors (typically SC/APC) and maintain clean, dust-free connections to minimize loss . 4. Connect Splitter Outputs to ONTs: Each output port of the splitter is connected to an ONT or ONU via single-mode fiber. In a primary splitting setup, the splitter is placed near the OLT, and outputs go directly to ONTs. In a secondary (cascaded) splitting setup, the first-stage splitter connects to a second-stage splitter closer to the subscriber, then to ONTs . 5. Verify Optical Power Budget: Each split reduces optical power. For example, a 1:4 splitter reduces power by approximately 6 dB, and a 1:32 splitter reduces it by about 15 dB. Ensure the OLT output and ONT receiver sensitivity accommodate the splitter loss . 6. Test the Connection: After connecting, use an optical power meter or OTDR to verify signal strength and continuity from the OLT through the splitter to each ONT. Confirm that all ONTs are reachable and receiving adequate signal.

Additional Considerations

- o Centralized vs. Distributed Splitting: Centralized splitting uses a high-ratio splitter at the central office, while distributed splitting uses smaller splitters in the field. Choose based on network density and maintenance preferences .
- o Connector Type and Polarity: Maintain consistent connector types (SC/APC recommended) and correct fiber polarity to avoid signal issues.
- o Environmental Protection: Outdoor splitters should be housed in weatherproof enclosures to protect fibers from damage and moisture. By following these steps, the OLT can be effectively connected to a beam splitter, ensuring proper signal distribution to all downstream ONTs while maintaining network performance and reliability.

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Download scientific diagram | (a) Optical Line Terminal (OLT); (b) Optical Splitter; (c) Optical Network Terminal (ONT). from

An Optical Splitter, also known as a beam splitter, is a passive optical device that divides a single input optical signal

Fiber-optic splitter A fiber-optic splitter, also known as a beam splitter, is based on a quartz substrate of an integrated waveguide

The Role of PON Ports PON ports connect to the fiber splitters and eventually reach the

In the PON network, there is an OLT at the service provider's central office and a number of ONU devices or optical

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

What is an OLT? Definition: An Optical Line Terminal (OLT), also called an Optical Line Termination, is a network device located at

This guide focuses on two critical aspects of optical splitters that define FTTH performance: split ratios (how signals

Budowa Silesia Photonics (BWS PHOTONICS) designs and manufactures passive optical components, PLC splitters, AWG, FBT

Optical splitter is one of the important passive devices in optical fiber link. It is mainly to implement the optical signal

A split ratio describes how many output ports a splitter has, and how evenly the input optical power is distributed

Optimizing Your FTTH Design: Unleashing the Power of Split Level and Split Ratio. Explore the 2 Key Architectural

In the realm of optical communication networks, the optical splitter serves a vital role in dividing and distributing optical signals

At the same time, higher split ratio splitters reduce bandwidth per ONU (optical network unit). And there will

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be

An optical line termination (OLT), also called an optical line terminal, is a device which serves as the service provider endpoint of a

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