PLC Optical Splitter Manufacturing Technology



Overview

Based on their manufacturing technology, optical splitters can be divided into planar splitters (PLC, Planar Lightwave Circuit) and fused-type splitters (FBT, Fused Biconical Taper).

Key Takeaways

PLC optical splitters are manufactured using specialized equipment for wafer fabrication, fiber alignment, packaging, and testing to ensure high precision and reliability.

Overview of PL

C Splitter ProductionPLC (Planar Lightwave Circuit) splitters are passive optical devices that divide a single optical signal into multiple outputs, widely used in FTTH and PON networks for efficient signal distribution. The production process emphasizes precision, reliability, and scalability, requiring advanced equipment at each stage to maintain optical performance and uniformity.

Key Production Stages and Equipment

Planar Lightwave Circuit Fabrication

Photolithography Equipment: Used to transfer intricate waveguide patterns onto silica glass wafers with high precision. This step defines the optical paths and splitting structure of the PLC chip. Etching and Wafer Processing Tools: These machines shape the waveguides and create the splitter structure on the chip.

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Fiber Array Alignment and Attachment

Fiber Array Bonding Equipment: Advanced alignment systems ensure pre-terminated optical fibers are precisely positioned and attached to the input and output ports of the PLC chip. This step is critical for minimizing insertion loss and maintaining uniform signal distribution. Active Alignment Systems: Some setups use real-time optical feedback to optimize fiber placement during bonding.

Package Assembly and Sealing

Package Sealing Equipment: Encapsulates the chip and fiber assembly within a protective housing, safeguarding against environmental factors like moisture and temperature fluctuations. Automated Assembly Lines: Facilitate consistent and repeatable packaging for high-volume production.

Testing and Measurement

Optical Testing Equipment: Measures insertion loss, uniformity, and wavelength performance to ensure the splitter meets specifications. Environmental Testing Systems: Simulate temperature, humidity, and mechanical stress to verify long-term reliability. Additional ConsiderationsHigh-Precision Handling Tools: Micromanipulators and robotic arms are often used to handle delicate fibers and chips during assembly.

Cleanroom Facilities: Production typically occurs in controlled environments to prevent contamination and maintain optical quality. Automation and Quality Control: Modern PLC splitter production integrates automated inspection and testing to ensure consistent performance across large batches. Understanding the production equipment and processes is essential for manufacturers and network operators to ensure high-quality, reliable PLC splitters that meet the demands of modern optical networks.

Article Content

What Is PLC Splitter and How Does it Works?

PLC Splitter Manufacturing Technology PLC splitter is based on Semiconductor technology. As its name shows, PLC splitters are manufactured by planar waveguide circuit

An In-depth Look at Production Process and Equipment

The production process and equipment involved in manufacturing fiber optic PLC splitters play a crucial role in the functionality and effectiveness of these vital

FBT vs PLC Splitters: Design, Manufacturing, Applications

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PLC Splitter Manufacturing Technology

The manufacturing of Planar Lightwave Circuit (PLC) splitters involves several key processes to create precise and reliable optical devices. Here''s an overview of the general

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

The working of PLC splitters relies on strategically designed optical waveguides fabricated on a silica substrate using photolithography techniques adapted from semiconductor manufacturing.

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

PLC splitters represent a more modern approach to optical splitting, using semiconductor manufacturing techniques similar to those employed in integrated circuit production.

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Your Go-to Guide to Optical Splitter

Optical splitters can be manufactured using fused bi-conical taper technology or planar lightwave circuit technology, from which comes the fused biconical taper (FBT) splitter and the planar

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Company Overview

Shenzhen UT-King Technology Co., Ltd. Products:XPON ONU, Fiber Optic Fast Connector, Fiber Optic PLC Splitter, Patch Cord, Fiber Cable

Zhengzhou Weunion Communication Technology Co. Ltd.''s Post

Our FH-spec 2x (1x8) PLC splitter comes pre-fitted with SC/APC connectors to facilitate optical signal partitioning in fixed telecom infrastructure.

PLC-116-M-1-R-2 by Lightel Technologies | Fiber Optics | Vyrian

Find the best price and datasheet for PLC-116-M-1-R-2 by Lightel Technologies: SPLITTER/COUPLER; Maximum Operating Temperature: 85 Cel; Minimum Operating Temperature: -40 Cel; Minimum

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

Planar Lightwave Circuit (PLC) splitters play a vital role in modern fiber optic communication networks by enabling the efficient distribution of high-speed optical signals. This

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PLC Optical Splitters Detailed Explanation Of The

Compared with traditional fused taper splitters, PLC optical splitters have the advantages of high splitting accuracy, low insertion loss, and small size,

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