

Spectrum Splitter SPL



Overview

Spectrum SCS-90W-SPL Description The Spectrum PoE Splitter, SCS-90W-SPL, is equipped with 1 x 10/100/1000M TX PoE IN and 1 x 10/100/1000M TX for ANTOP AT-70.

Key Takeaways

A Spectrum Splitter (SPL) is a passive optical device that divides a single optical signal into multiple outputs, enabling efficient distribution in fiber networks. Function and Purpose

An SPL splitter is used to divide an optical beam into two or more beams, distributing the input signal across multiple outputs. In a typical 50:50 split, each output experiences a theoretical 3 dB loss, though practical deployments often see 5-6 dB loss due to real-world factors like connector and fiber attenuation . This allows a single transmitter to serve multiple receivers, making it essential for video-over-fiber systems and PON networks .

Types of SPL Splitters

- FBT (Fused Biconical Taper) Splitters: Low-cost, ideal for small splits such as 1:2 or 1:4. They are suitable for short-distance or low-output applications .



- PLC (Planar Lightwave Circuit) Splitters: High uniformity, preferred for large splits like 1:16, 1:32, or 1:64. PLC splitters are compact, splice-ready, and fit in FPONE enclosures, making them ideal for FTTH deployments .

Split Ratios and Architectures

- 1:N Splitters: One input port splits into N outputs (e.g., 1:8, 1:16, 1:32). Common in star-topology PONs, centrally located to serve multiple ONTs .
- 2:N Splitters: Two input ports split into N outputs (e.g., 2:32, 2:64). Used in ring-topology PONs for redundancy, ensuring service continuity if one input fails .
- Non-uniform Splitters: Distribute power unequally, useful for asymmetric deployments where some ONTs are farther from the splitter .

Applications

- FTTH Networks: Share a single OLT port among multiple ONTs, reducing fiber and equipment costs .
- Video-over-Fiber Systems: Connect one transmitter to multiple receivers, such as in surveillance or broadcast applications .
- Passive Optical Networks: Enable scalable, maintenance-free distribution of optical signals without requiring power or active electronics .

Example Products

- Huawei SPL Series: Includes models like SPL9105-P1004 and SPL1202, designed for high-quality access networks with strict quality control .
- Delta SPL-SC/2SC: Provides 50:50 splitting for video-over-fiber applications .
- PANDUIT PLC Splitters: Compact, planar lightwave circuit splitters supporting 1:4 or 1:16 splits for PON deployments .

Key Considerations

- Power Loss: Expect 3 dB theoretical loss per split; practical deployments may see 5–6 dB .
- Uniformity: PLC splitters provide consistent power distribution across outputs, critical for reliable bandwidth delivery .
- Scalability: Adding new subscribers only requires connecting additional ONTs to existing splitter outputs, avoiding costly network upgrades . In summary, SPL optical splitters are passive, scalable, and essential components in modern fiber networks, enabling efficient signal distribution for both residential and enterprise applications.

Article Content

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