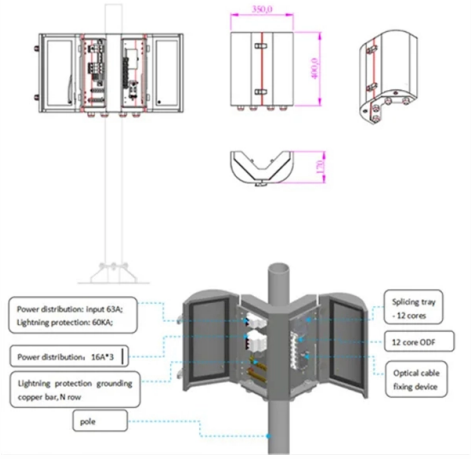
Splitter Splitting Ratio



Overview

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

Key Takeaways

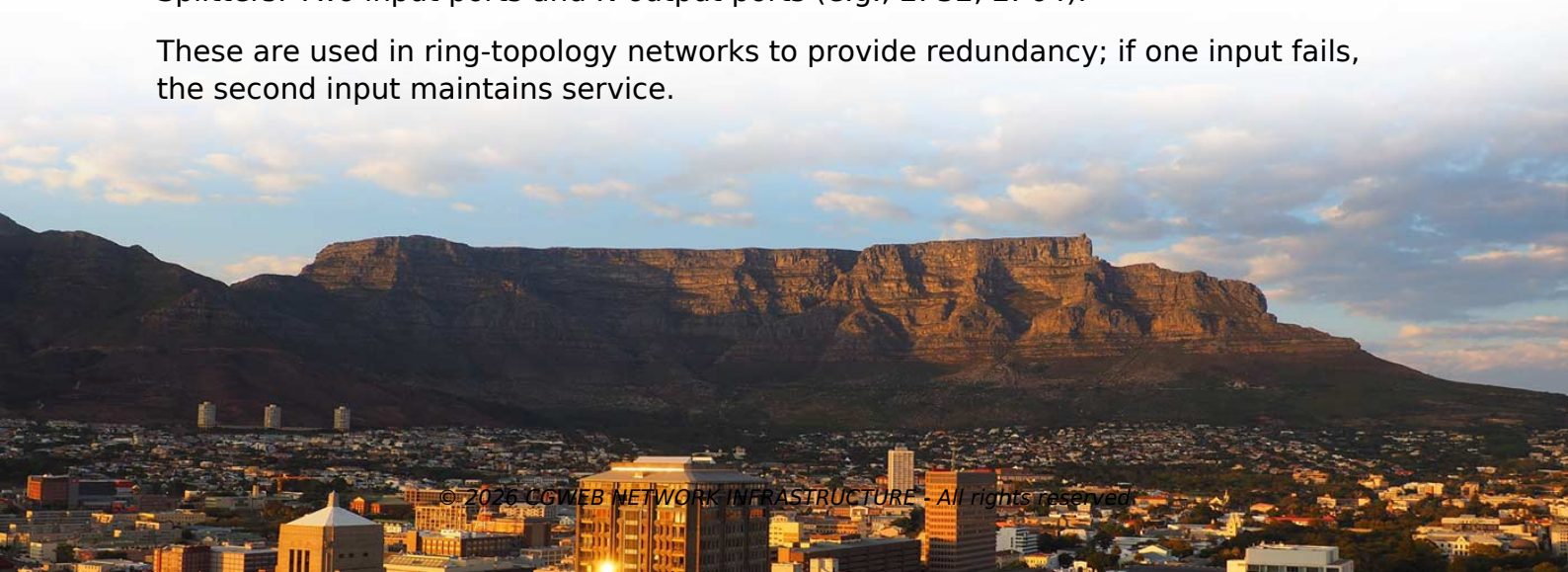
Optical splitters typically use 1: N or 2: N split ratios, with common values including 1: 2, 1: 4, 1: 8, 1: 16, 1: 32, and 1: 64, distributing input optical power evenly across output ports.

Overview of Split Ratios

A split ratio defines how an optical signal is divided among the output ports of a splitter. For example, a 1: 8 splitter takes one input signal and distributes it equally to eight outputs, with each output receiving roughly 1/8th of the input power. Split ratios can be uniform, where all outputs receive equal power, or non-uniform, which are custom configurations for specialized applications.

Common Splitter Configurations1: N Splitters: One input port and N output ports (e.g., 1: 2, 1: 4, 1: 8, 1: 16, 1: 32, 1: 64). These are widely used in star-topology PON networks, where a central splitter distributes signals directly to each subscriber. 2: N Splitters: Two input ports and N output ports (e.g., 2: 32, 2: 64).

These are used in ring-topology networks to provide redundancy; if one input fails, the second input maintains service.



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Practical Considerations

Power Distribution: Each doubling of the split ratio reduces output power by approximately 3 dB. Higher split ratios allow more subscribers per OLT port but reduce the optical power per subscriber, potentially affecting signal quality. Network Design: Centralized splitting places a large splitter at the head-end (e.g., 1: 32 or 1: 64), while cascaded splitting uses multiple smaller splitters in series to achieve the desired overall ratio (e.g., 1: 4 followed by 1: 16 to get 1: 64),.

Distance and Optical Budget: Longer fiber runs and higher split ratios require careful planning to ensure sufficient signal strength at each output port.

Typical PO

N deployments use 1: 32 or 1: 64 as a balance between cost, performance, and scalability. Examples of Split Ratios1: 2 – simplest split, often used for redundancy or small networks. 1: 4, 1: 8 – common for small to medium subscriber groups.

1: 16, 1: 32 – standard in most FTTH deployments. 1: 64 – used in short-distance or high-density networks. 1: 128 – occasionally used in ultra-dense or future-proof networks if optical margin allows.

In summary, split ratios determine how many subscribers share a single optical line and directly influence network design, signal strength, and cost efficiency. Choosing the appropriate ratio depends on subscriber density, distance, and desired optical budget.

Article Content

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

A split ratio describes how many output ports a splitter has, and how evenly the input optical power is distributed across those ports. For example, a 1:32 splitter takes 1 input signal and

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There are a multitude of split ratios available. The most common splitters deployed in a PON system is a uniform power splitter with a 1:N or 2:N splitter ratio, where N is the number of

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A fiber broadband provider typically determines and overall split ratio for the network, such as 1x32 or 1x64, and uses combinations of splitters to meet that ratio with each PON port.

Optimising FTTH Design: Split Levels & Split Ratios

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The real design trade-offs lie in how you split the optical signals, where you locate the splitters, and the ratio you choose for subscriber sharing. Let''s dive into the key considerations.

Basic Knowledge about Split Ratio and Insertion Loss of Optical Splitter

The splitter ratio in fiber optic networks refers to how optical power is distributed among the output ports of an optical splitter. Expressed as a ratio or percentage, the splitter ratio indicates

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