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Single-fiber optical modules are available



Overview

Discover high-performance single mode SFP modules for your network. Compatible with major brands like Cisco, Ubiquiti, and more.

Key Takeaways

Single-fiber optical modules, often BiDi SFP transceivers, enable both transmit and receive signals over a single optical fiber, supporting efficient, long-distance networking.Overview

Single-fiber optical modules, commonly referred to as BiDi (Bidirectional) SFPs, are compact, hot-pluggable transceivers that convert electrical signals into optical signals and vice versa. They are designed for single-mode fiber, allowing both upstream and downstream data to travel on a single fiber strand, which reduces cabling requirements and is ideal for FTTH, metro, and data center interconnects .

Key Features
• Speeds and Protocols: Available for 100M, 1G, and multi-rate up to 2.7G, supporting Ethernet, Fibre Channel, and SDH/SONET protocols .

• Distance: Typical 1G single-mode BiDi modules support distances up to 3 km using simplex LC UPC connectors .

• Compatibility: Works with major networking brands like Cisco, Ubiquiti, Juniper, and Huawei, thanks to adherence to MSA (Multi-Source Agreement) standards .

• Power and Efficiency: Low power consumption and compact form factor make them suitable for high-density switch panels and green data centers .

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• Connector Type: Usually LC simplex for single-fiber connections .
Applications
• Fiber-to-the-Home (FTTH) deployments to reduce fiber usage.

• Data center interconnects (DCI) for cost-effective long-haul connections.

• Enterprise and telecom networks requiring flexible, scalable optical links.

• Legacy network upgrades where single-mode fiber is already deployed.
Vendors and Products
• Smartoptics: Offers a wide range of SFP modules including BiDi single-fiber options for 1G and multi-rate applications .

• Ubiquiti: Provides 1G bidirectional single-mode SFP modules with up to 3 km reach .

• Syrotech Networks: Supplies SFP optical transceivers compatible with multiple brands .

• Amazon: Lists high-performance single-mode SFP modules compatible with Cisco, Ubiquiti, and other major brands .
Considerations

When selecting a single-fiber optical module, consider:

• Distance requirements and fiber type (single-mode vs. multimode).

• Data rate compatibility with existing network equipment.

• Vendor compatibility to ensure proper recognition and operation.

• Environmental factors such as temperature range and power consumption. Single-fiber SFP modules are a cost-effective and fiber-efficient solution for modern networking, enabling high-speed, long-distance connections while minimizing cabling complexity.

Article Content

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Fiber Optics Part 2: Single-Mode Fiber vs. Multi-Mode

Written by Priya Maratukulam, Product Manager, Transceiver Modules Group, Cisco In our

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Fiber optic connectors represent the interface linking the optical modules to a fiber optic patch cable, available in single

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Price Single-mode modules are typically more expensive than multi-mode modules because they use more components and more

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