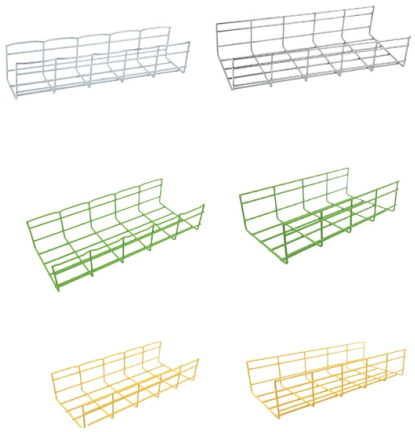
Using fiber optic modules together



Overview

Can two switches with fiber ports be directly connected through fiber ports? The answer is yes. The mainline of the fiber optic LAN directly connects to the switch, then to the router.

Key Takeaways

Pairing fiber optic modules involves selecting compatible modules and cables, inserting them correctly into devices, and ensuring proper transmit/receive alignment for reliable optical communication.

Understanding Fiber Optic Modules

Fiber optic modules, such as SFP, SFP+, or sync modules, convert electrical signals into optical signals and vice versa. They typically work in pairs, with one module transmitting while the other receives. Modules can be simplex (single fiber) or duplex (two fibers for separate transmit and receive channels) depending on the application.

Steps to Pair Fiber Optic Modules

Verify Compatibility

Ensure the modules are compatible with the host devices (switch, router, or CPU) and support the required data rate (e.g., 1G, 10G, 25G). Confirm the fiber type matches the module: single-mode for long distances, multi-mode for shorter distances.

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Prepare the Environment

Power off the devices before installation to prevent electrical damage.

Use ES

D protection such as anti-static wrist straps.

Clean the SF

P ports and fiber connectors with lint-free wipes and isopropyl alcohol to remove dust or debris.

Insert the Modules

Remove the module from anti-static packaging. Align the module with the device port, ensuring the TX (transmit) and RX (receive) sides match the cable orientation. Gently push until the module clicks into place; a latch or pull tab may secure it.

Connect the Fiber Cable

For duplex modules, use a two-strand fiber cable: one strand for transmit, one for receive. For simplex modules, a single fiber is used with different wavelengths for bidirectional communication. Insert the fiber connector into the module port until it clicks securely.

Test the Connection

Power on the devices and check link status indicators. Use network testing tools or optical power meters to verify signal integrity and minimal loss.

Special Considerations

Industrial Sync Modules: In systems like Siemens S7-400, two sync modules per CPU are connected with duplex fiber cables, often requiring 2 x duplex cables (4 strands total) for redundancy. Cable Selection: Choose pre-assembled patch cables for short distances (1–10 m) or installation-grade cables for longer runs. Consider indoor/outdoor use, rodent protection, and fire safety ratings.

Maintenance: Always inspect cables for damage, avoid sharp bends, and follow bend radius specifications to prevent signal degradation. By following these steps and ensuring proper alignment, cleaning, and testing, fiber optic modules can be paired effectively for reliable high-speed communication.

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Optic Modules Datasheet

Features and Benefits The following table lists the different pluggable optic modules and supported platforms, along with the technical specifications for each.

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