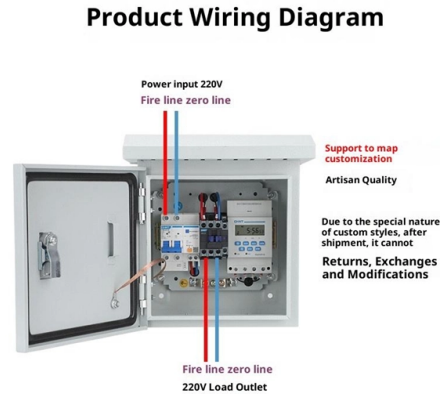


How to match optical module switches



Overview

Most switch brands have specific compatibility requirements, especially when using third-party optical modules.

Key Takeaways

Matching optical modules with switches requires verifying compatibility in speed, wavelength, fiber type, port type, and vendor support to ensure reliable network performance.

Key Factors for Compatibility

- **Module Type and Port Speed** Optical modules come in different types such as SFP (1G), SFP+ (10G), SFP28 (25G), QSFP+ (40G), and QSFP28 (100G). Ensure the module speed matches the switch port. For example, a 1G SFP cannot operate at full speed in a 10G-only SFP+ port, and vice versa, even if the form factor fits physically .
- **Wavelength Matching** Both ends of a fiber link must use modules with the same wavelength. A 1310nm module will not communicate with an 850nm module. Mismatched wavelengths can cause data loss or degraded performance .
- **Fiber Type** Verify whether the module is designed for single-mode (SMF) or multi-mode fiber (MMF). Using the wrong fiber type can result in signal attenuation or link failure .
- **Duplex Mode** Full-duplex modules must be paired with full-duplex modules. Connecting a full-duplex module to a half-duplex module will prevent data transmission .

- **Vendor Compatibility and Coding** Many switches, such as Cisco, HPE, Juniper, and Aruba, maintain Supported Transceiver Lists. Some vendors use EEPROM coding to verify module authenticity. Using a module not recognized by the switch may trigger alarms like “unsupported transceiver.” Third-party modules can be coded to match major brands for interoperability .
 - **Distance and Environmental Grade** Check the module's maximum transmission distance and environmental specifications (temperature, industrial grade) to ensure it meets deployment requirements .
- Practical Steps to Ensure Compatibility
- **Consult Official Compatibility Lists:** Check the switch manufacturer's documentation or online tools (e.g., Cisco Optical Device Compatibility Matrix) to confirm supported module models and minimum software versions .
 - **Verify Technical Parameters:** Confirm speed, wavelength, fiber type, duplex mode, and distance requirements.
 - **Use Proven Suppliers:** Choose modules from reputable vendors that comply with IEEE, SFF-8472, and MSA standards to reduce compatibility risks .
 - **Test in a Lab Environment:** Before large-scale deployment, test modules with the intended switch to ensure stable operation.

Summary

To match optical modules with switches effectively, validate the module type, speed, wavelength, fiber type, duplex mode, vendor support, and environmental specifications. Following these steps prevents link failures, ensures stable network performance, and simplifies troubleshooting in enterprise or industrial deployments .

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The selected optical modules must be supported by the optical interfaces. Check whether the optical module used on the switch is

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