

Optical Modules 1310 and 1550



AI Overview

1310 nm and 1550 nm optical modules are both used for single-mode fiber, with 1310 nm suited for medium distances and 1550 nm optimized for long-haul transmission due to lower attenuation.

Wavelength and Fiber Compatibility Both 1310 nm and 1550 nm modules are designed for single-mode fiber (SMF), unlike 850 nm modules which are for multimode fiber (MMF) (). The wavelength determines how light propagates through the fiber, affecting signal loss and dispersion.

Attenuation Characteristics 1310 nm: Typical link loss is around 0.35 dB/km, making it suitable for medium-range transmission up to approximately 40 km (). 1550 nm: Lower attenuation of about 0.20–0.28 dB/km allows for longer distances, often exceeding 40 km and up to 120 km without repeaters (). Lower attenuation at 1550 nm also makes it compatible with Erbium-Doped Fiber Amplifiers (EDFAs) for extended reach ().

Dispersion Characteristics 1310 nm: Experiences moderate dispersion, which is generally manageable for medium-distance links. 1550 nm: Has higher chromatic dispersion, which can limit very high-speed transmission unless dispersion compensation is applied ().

Typical Applications 1310 nm modules: Ideal for campus networks, metro backbones, and medium-distance links where moderate loss and dispersion are acceptable (). 1550 nm modules: Preferred for long-haul, metropolitan, and intercity networks, especially when combined with optical amplification to cover extended distances ().

Practical Considerations Both wavelengths can use the same single-mode fiber, so fiber selection is generally independent of wavelength (). Choosing the correct module depends on link distance, required optical budget, and network design. Using the wrong wavelength can lead to insufficient optical margin or unstable performance (). In summary, 1310 nm modules are optimized for medium-range SMF links with moderate loss and dispersion, while 1550 nm modules are optimized for long-distance SMF links with lower attenuation and compatibility with...

Article Content

SFP Wavelength Guide: 850nm vs. 1310nm vs. 1550nm

In contrast, 1310 nm and 1550 nm SFP modules are designed for single-mode fiber (SMF), which supports significantly longer distances due to

BiDi SFP: The Complete Guide to Bidirectional SFP Transceivers and ...

BiDi SFP (Bidirectional Small Form-Factor Pluggable) transceivers have emerged as a powerful solution, enabling full-duplex communication over a single optical fiber. By using

Pluggable Optical Modules: Transceivers for the Cisco

Cisco offers a comprehensive range of pluggable optical modules for the Cisco ONS family of multiservice platforms. The wide variety of modules

Top Optical Modules for POTN Deployment: SFP, QSFP, and OSFP

These modules feature: Multi-vendor compatibility with leading switch and OLT platforms. Wavelength options at 850 nm, 1310 nm, and 1550 nm for flexible reach. Digital Diagnostics

Everything You Need to Know About 1310nm Optical

1550 nm modules are more expensive, but they support long-distance transmission and DWDM, making them the choice for telecom backbones and

EML vs VCSEL vs CW Laser: Optical Transceiver

Compare EML, VCSEL, and CW laser technologies in optical transceivers. Covers cost, reach, speed, the 2025 EML shortage, and silicon

10 Gbit/s SFP+ Optical Modules

10 Gbit/s SFP+ optical modules apply to 10 GE optical ports. The wavelength can be 850 nm, 1310 nm, or 1550 nm, and the transmission distance ranges from 0.5 km (0.31 mi) to 80 km (49.71 mi).

How to Choose an OTDR for Fiber Optic Testing: Complete 2026 Guide

For metro and access network testing, the EXFO MaxTester MAX-715B combines OTDR and iOLM (intelligent Optical Loss Measurement) in a single handheld unit. Its 1310/1550 nm dual

Fiber Optic Wavelengths Explained: 1310nm vs 1550nm

The 1310nm wavelength offers minimal chromatic dispersion, which helps maintain signal integrity for high-speed communication. The 1550nm

What is the difference between 1310 and 1550 SFP?

The numbers 1310 and 1550 refer to the wavelength of light used in the optical transmitters of SFP (Small Form-factor Pluggable) modules. These wavelengths are commonly associated with fiber

10GE SFP+ Optical Modules

When connected to a 10GBASE-ER standard optical module (1550 nm, 10 Gbit/s, 40 km), an SFP-10G-ER-1310 optical module supports only 20 km of maximum transmission distance.

Products

02 WWDM Dual Fiber Mux/DeMux 85236868 X10080-2WI02-1355-NNN1S-55
Channels: 1310 /1550 nm S Module, 1310/1550

10GHz Directly Modulated Laser Module, 1550 or

10GHz Directly Modulated Laser Module, 1550 or 1310nm, DML The directly-modulated laser (DML) is a cost-effective solution for 10Gbps digital transmission

Technical Characteristics Of 10G Optical Modules With

There are three wavelength windows for 10G optical module communication applications, namely the 850nm window, 1310nm window, and

What Do 850nm, 1310nm and 1550nm Actually Mean in Optical

Learn what 850nm, 1310nm, and 1550nm mean in optical transceivers. Discover the differences between SX, LX, and ZX optics, transmission distances, fiber types, and how to choose

XFP transceiver

XFP modules are hot swappable and support multiple physical layer variants. They typically operate at near-infrared wavelengths (colors) of 850 nm, 1310 nm or

Fiber Optic Wavelengths Explained: 850 vs 1310 vs

In practice, network designers often prefer 1310 nm for moderate distances and 1550 nm (or even C-band around 1530–1565 nm) for long-haul or

Optical Transceiver Market Size, Share, and Trends Analysis 2032

The global Optical Transceiver market size was estimated at USD 13.08 Billion in 2024 and is estimated to grow at a CAGR of 15.41% from 2025 to 2032.

What is the difference between 1310nm and 1550nm SFP?

The difference between 1310nm and 1550nm SFP (Small Form-factor Pluggable) transceivers lies in the wavelength at which they operate and the distances over which they can

Arista Optics Modules and Cables

Arista's Optical Modules and Cable portfolio offer a wide variety of high-density and low-power 800G (dual 400G), 400G, 200G, 100G, 50G, 40G, 25G, 10G, 1G, and 100M Ethernet connectivity options

What is difference between 1310nm and 1550nm?

In standard Singlemode cable assembly, the two wavelengths used for Insertion Loss testing are 1310nm and 1550nm. All Singlemode fibers work very similarly

Small Form-factor Pluggable

Small Form-factor Pluggable connected to a pair of fiber-optic cables Small Form-factor Pluggable (SFP) is a compact, hot-pluggable network interface module

The Ultimate Guide to ZTE SFP Module Distance and Wavelength

A deep understanding of ZTE SFP module distance and wavelength specs is a prerequisite for designing reliable, scalable, and high-performance networks. From the cost-effective 850 nm SR

Cisco 10GBASE SFP+ Modules Data Sheet

Product overview The Cisco® 10GBASE SFP+ modules (Figure 1) give you a wide variety of 10 Gigabit Ethernet connectivity options for data center, enterprise wiring closet, and service provider transport

Contact Us

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