

1310 Optical Module Frequency Band



AI Overview

1310nm optical modules operate in the O-band (1260–1360 nm) with typical frequency ranges up to 10 GHz for high-performance modulators. Wavelength and Frequency Range 1310nm optical modules are part of the O-band, which spans 1260–1360 nm, a range chosen for its low chromatic dispersion, making it ideal for medium-distance fiber optic communication. In terms of frequency, this corresponds approximately to 230–238 THz in the optical spectrum. High-performance fiber-coupled phase modulators designed for 1310nm can operate from DC up to 10 GHz, covering the 1270–1370 nm wavelength band. This allows these modules to support high-speed data transmission while maintaining signal integrity.

Applications and Performance 1310nm modules are widely used in single-mode fiber (SMF) networks for short-to-medium distances, typically up to 10 km without amplification. They are commonly deployed in: Data centers for server interconnects, Enterprise backbones and campus networks, Metropolitan area networks (MANs) and neighborhood links. The 1310nm wavelength provides a balance between cost, reach, and performance, positioned between 850nm (short-reach multimode) and 1550nm (long-haul single-mode) solutions. Its low chromatic dispersion ensures minimal signal distortion over medium distances, while its moderate attenuation allows efficient transmission without excessive power loss.

Technical Considerations When selecting a 1310nm optical module, key factors include:

- Fiber type compatibility:** Single-mode fiber is preferred for longer distances, while multimode fiber can be used with mode-conditioning patch cords for shorter links.
- Supported data rates:** Modules can handle 1 Gbps to 100 Gbps, depending on form factor and standard (SFP, SFP+, SFP28, QSFP28, CFP, etc.).
- Standards compliance:** Ethernet, SONET/SDH, OTN, and 5G front-/mid-haul networks are commonly supported.
- Temperature and environmental range:** Ensures reliable operation in diverse deployment scenarios.

Summary The 1310nm optical module is a key component in modern fiber optic networks, offering a balance of performance, reach, and cost for medium-distance communication.

Article Content

What does "1310nm" or "1550nm" in common light test

In fiber optic testing, 1310nm and 1550nm are two of the most commonly used wavelengths for light sources and power meters. These

Fiber Optical Amplifier 1250-1350nm O-Band (up to 16dBm)

The SOAA provides cost-effective solutions for 1310nm O-band optical amplification. It is a semiconductor with a fiber-coupled waveguide structure. Two configurations are available:

1310nm Single Mode Fiber Optical Transceivers Explained

Operating at the 1310nm wavelength, this type of optical module strikes a practical balance between transmission distance, signal stability, and deployment cost, which is why it remains a default choice

What is the difference between 1310 and 1550 wavelength□

The wavelengths 1310 nm and 1550 nm refer to specific ranges within the electromagnetic spectrum used in optical fiber communication. The primary difference between them

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

However, advancements in fiber optic technology have narrowed the differences between the two, making the choice more dependent on specific network requirements. Dispersion: Differing levels of

What Are The Wavelength Bands Of Optical Fiber?

Summary FAQ What are the 4 dominant wavelengths used in fiber optic systems? Why are wavelengths 1310 nm and 1550 nm desirable for optical transmission? What is the difference

Common Optical Wavelengths: 850nm, 1310nm,

Why These Specific Wavelengths? The selection of 850nm, 1310nm, and 1550nm as the primary wavelengths for optical communications is not

Fiber Optical Phase Modulator 1310nm

The LNPM is a high-performance, fiber-coupled phase modulator with operating frequencies ranging from DC to 10GHz, covering the 1270-1370 nm wavelength band.

Fiber Optic Wavelengths Explained: 1310nm vs 1550nm

Fiber wavelengths at 1310nm and 1550nm minimize signal loss and dispersion, enabling efficient long-distance data transmission in optical networks.

Wavelength and Transmission Distance of Optical Transceiver Modules

The price of the optical sources and signal converters that are paired with 850nm optical transceiver modules is far lower than the prices of 1310nm and 1550nm devices, making it a very economical

What is 1310 nm? | Definition & Guide | RF Essentials

1310 nm (nanometers) is one of the two foundational optical wavelengths utilized in global fiber-optic telecommunications (the O-Band). Unlike standard RF engineering which uses frequency (Hertz),

Exploring the Role of Wavelengths in Optical Networks

Optical networks utilize specific wavelengths of light to transmit data efficiently over fiber-optic cables. The choice of wavelength is crucial, as it directly influences the network's performance, including

1300nm and 1310nm wavelengths in Fiber Optic Communications

850nm and 1300nm light wavelengths are produced by LEDs and are standards for multimode fiber. 1310nm and 1550nm light wavelengths are produced by laser diodes and are

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

Authoritative SFP wavelength guide: compare 850nm, 1310nm, 1550nm applications, link-budget implications, multimode vs single-mode selection, interoperability, and checklist.

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

What is the difference between 1300nm and 1310nm?

It is a popular choice for short to medium-distance optical communication. In summary, while the numerical difference between 1300nm and 1310nm is minimal, "1300nm" often refers to a

1310 nm Laser Diodes, 1310nm Lasers | Innolume

In telecommunications and datacom, 1310 nm lasers are core to fiber optic communication, particularly within the "O-band," supporting high-speed, low-dispersion data transfer across metropolitan

Everything You Need to Know About 1310nm Optical

A 1310nm optical module lets you move data efficiently through fiber optic communication networks. As part of the O-band (1260–1360 nm), it

What is difference between 1310nm and 1550nm?

Accordingly light sources at these three wavelengths have been commercialized. These are the wavelength of the, light source called optical transmitter used in optical communication. What is the

How Wavelength (850/1310/1550nm) Affects Optic

WOLON 's optical transceiver lineup—produced by Wuhan Wolon Cloud Network Communication Technology Co., Ltd.—covers 850 nm SR modules for cost

Low-Noise, Narrow-Linewidth Laser System, O-Band

Thorlabs' single-frequency, turnkey, low-noise laser systems at 1310 nm are ready-to-use laser systems that integrate a low-noise driver and temperature

Understanding Wavelengths In Fiber Optics

Understanding Wavelengths In Fiber Optics Fiber optics is full of jargon but it's important to understand it. One of the more confusing terms to many is "wavelength." It sounds very scientific, but it is simply

Understanding 1310nm Fiber: A Comprehensive Guide

This frequency is known for having very little dispersion, which makes it perfect for medium-range communication like that found in cities or between

What are the differences between 1310nm and 1550nm

Can optical modules with wavelengths of 1310nm and 1550nm be connected? Taking into account the different transmission loss and dispersion in

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

The main difference between optical modules of different wavelengths lies in their operating frequency bands or the spectral range in which they operate. Common wavelengths of

Low-Noise, Narrow-Linewidth Laser System, O-Band

The system comes equipped with two analog current modulation ports (AC and DC coupled) and an analog temperature modulation port, which can be used to lock

Why do we use 1310 and 1550?

In the realm of optical fiber communication, the wavelengths of 1310 nm and 1550 nm are of paramount importance. These specific wavelengths are not chosen arbitrarily; rather, they are the result of

The FOA Reference For Fiber Optics

Fiber Optic Network Optical Wavelength Transmission Bands As fiber optic networks have developed for longer distances, higher speeds and wavelength-division multiplexing (WDM), fibers have been used

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