

Gigabit Single-Mode Fiber Transceiver Parameters

Article Overview

Gigabit single-mode fiber (SMF) transceivers typically operate at 1.25Gbps, use 1310nm or 1550nm wavelengths, and support link distances from 10km to 80km depending on the module type.

Key Parameters

Data Rate: Most Gigabit SMF transceivers operate at 1.25Gbps, suitable for 1000BASE-LX or 1000BASE-BX Ethernet applications . **Wavelength:**

- o 1310nm is common for medium-range links up to 20km .
- o 1550nm is used for long-reach links up to 80km . **Link Distance:**
- o Standard SFP modules can support 10km to 20km over single-mode fiber .
- o Extended reach modules, such as 1000BASE-LX 80km SFPs, allow up to 80km . **Optical Power and Sensitivity:**
- o Typical transmit power (TX) ranges from -2dBm to 0dBm for long-reach modules .
- o Receiver sensitivity (RX) is often around -22dBm for reliable Gigabit connectivity .
- o Extinction ratio, rise/fall time, and optical eye parameters are specified to ensure signal integrity . **Connector Type:** Most Gigabit SMF SFPs use LC connectors, which are compact and support hot-pluggable installation .
- Monitoring and Compliance:**
- o Many modules support Digital Optical Monitoring (DOM) per SFF-8472, allowing real-time monitoring of optical output/input power, temperature, laser bias current, and supply voltage .
- o Industrial-grade variants operate in -40°C to 85°C environments for harsh conditions .
- o Modules comply with Class 1 laser safety standards (IEC-60825) . **Form Factor:** SFP (Small Form-factor Pluggable) modules are hot-pluggable, allowing easy replacement or upgrades without powering down the host device .
- Applications:**
- o Enterprise LANs, campus networks, and metropolitan access networks.
- o FTTx links and industrial control systems requiring reliable long-distance Gigabit Ethernet . By considering these parameters--data rate, wavelength, optical power, link distance, connector type, and monitoring features--network engineers can select the appropriate Gigabit SMF transceiver for stable and efficient optical connectivity.

The Cisco MGE transceivers provide fast, reliable connectivity between switches located on different floors, in separate buildings, or

1000BASE-ZX SFP for long-reach single-mode fibers The 1000BASE-ZX SFP operates on

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The transmission distance of multimode fiber optic transceiver is less than that of the single-mode transceiver due to

1000BASE-EX SFP for long-reach single-mode fibers The 1000BASE-EX SFP operates on standard single-mode fiber-optic link

Utilizing LC connectors and operating at a 1310nm wavelength, it enables high-speed data transmission over single-mode fiber for

Also known as a mini-Gigabit Interface Converter (GBIC), this industrial SFP module's metal housing offers increased durability while

1000BASE-ZX is a non-standard but multi-vendor term to refer to Gigabit Ethernet transmission using

Confused by SFP vs SFP+? Read the definitive 2026 guide on SFP modules. We explain Single Mode vs Multimode, DDM

The 1000BASE-ZX SFP operates on standard single-mode fiber-optic link spans of up to approximately 70 km in length. The SFP

FS gigabit ethernet transceiver solutions provide fibre or copper options including 1000BASE-SX, 1000BASE-LX/LH, 1000BASE-T

The 1000BASELX SM SFP 80KM is a Gigabit single-mode SFP (mini-GBIC) transceiver with an LC style connector. Operating at a

This data sheet describes the benefits, specifications, and ordering information for the Cisco SFP Modules for Gigabit

The general parameters and basic knowledge of Gigabit optical transceivers are difficult to master. The following will

Gigabit single-mode single-core optical fiber modules usually have the following specifications: multi-mode 550m, single

Learn what SFP 1G LX is, its wavelength, distance, fiber type, and compatibility. A technical guide to 1000BASE-LX SFP for

The DEM-315GT is a high performance 1550nm singlemode SFP (mini-GBIC) transceiver. Supporting full

duplex,

Web: <https://www.supremeacademicresearch.co.za>

