Gigabit optical module network speed



Overview

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

Key Takeaways

Gigabit optical modules typically support data rates up to 1 Gbps, suitable for access networks, campus links, and legacy backbone connections.

Overview of Gigabit Optical Modules

Gigabit optical modules, often referred to as 1G SFPs or GBICs, are transceivers that convert electrical signals into optical signals for fiber-based communication between network devices. They are widely used in access and campus networks due to their affordability, ease of installation, and compatibility with legacy switches and appliances. Common TypesGBIC (Gigabit Interface Converter): The original pluggable module standard, supporting 1 Gbps over SC connectors.

It is hot-swappable but physically large, limiting port density and power efficiency.

SF

P (Small Form-factor Pluggable): Also called “mini-GBIC,” it supports 1 Gbps Ethernet and Fibre Channel, offering higher port density and lower power consumption than GBICs.

SF

P modules come in multiple optical reach options: SX (850 nm): Up to 550 meters over multimode fiber.

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L

X (1310 nm): Up to 10 km over single-mode fiber.

Z

X (1550 nm): Up to 80 km for long-haul links.

Copper SF

P (RJ45): 1 Gbps over Cat6 cabling.

Applications

Gigabit optical modules are ideal for: Connecting printers, door controllers, or legacy servers. Short-reach multimode links inside buildings. Medium-range single-mode campus links up to 10 km.

Industrial or specialized equipment requiring reliable 1 Gbps connectivity. AdvantagesHot-swappable for flexible interface changes. Cost-effective for legacy and access networks.

Multiple fiber reach options to suit different network topologies. Compact form factor (SFP) allows higher port density compared to GBIC.

Limitations

Limited to 1 Gbps speeds, not suitable for modern high-bandwidth applications.

GBI

Cs are physically large and consume more power. Not compatible with newer 10G, 25G, or higher-speed networks without upgrading to SFP+ or SFP28 modules. In summary, Gigabit optical modules provide reliable 1 Gbps connectivity for legacy and access networks, offering multiple fiber options and compact form factors, but they are gradually being replaced by higher-speed SFP+ and SFP28 modules in modern data centers and enterprise networks.

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Article Content

Optical Transceiver Speeds Guide: 1G, 10G, 25G, 40G,

Below I walk through the common speeds — what they mean in practice, where they still make sense, and the straightforward trade-offs that matter when you''re

Cisco SFP Modules for Gigabit Ethernet Applications Data Sheet

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

Cisco SFP vs GBIC vs XFP vs SFP+: The Practical Optical

Learn the differences between SFP, SFP+, GBIC, and XFP modules - speeds, distances, and compatibility, from Network-Switch experts.

SFP Data Rate Explained: 1G vs. 10G vs. 25G Selection Guide

Understand SFP data rate differences across 1G, 10G, and 25G. Learn compatibility, speed limits, and how to choose the right SFP or SFP+ module.

Gigabit Ethernet

In computer networking, Gigabit Ethernet (GbE or 1 GigE) is the transmission of Ethernet frames at a rate of a gigabit per second. The most popular variant, 1000BASE-T, is defined by the IEEE 802.3ab

What Is an SFP Optical Module? Guide | PHILISUN

Understand the core function, compare data rates (1G to 25G), learn critical compatibility rules, and follow our 5-step checklist for selecting the perfect SFP optical module for your network build.

SFP Optical Module Specifications: Standards & Performance

This guide dives into the key SFP Optical Module Specifications that engineers, network architects, and procurement professionals rely on when evaluating optical transceivers.

Small Form-factor Pluggable

SFP+ supports 8 Gbit/s Fibre Channel, 10 Gigabit Ethernet and Optical Transport Network standard OTU2. It is a popular industry format supported by many network component vendors.

Optical PHY PCB Layout for Gigabit and Faster Ethernet

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In this article, I''ll run over the important guidelines for working with an optical PHY that would be found in a modern network switch, the layout topology, and how to deal with power in these

How many gigabit optical modules correspond to a 25G chip?

They belong to different system layers: chip-level single-lane speed versus full module aggregated bandwidth. A “25G chip” typically refers to a single-lane data rate of 25Gbps, used in

100 Gigabit Ethernet

100 Gigabit Ethernet 40 Gigabit Ethernet (40GbE) and 100 Gigabit Ethernet (100GbE) are groups of computer networking technologies for transmitting Ethernet frames at rates of 40 and 100 gigabits

Optical Transceiver Speeds Guide: 1G, 10G, 25G, 40G,

1G — simple, cheap, still useful One-gigabit SFP modules are the workhorses in access and campus networks. They''re inexpensive, easy to terminate, and play

Small Form-factor Pluggable

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 format used for

What''s the difference between Gigabit Optical Module vs 10 Gigabit ...

With the continuous progress of information technology and the expansion of application scenarios, the network''s demand for higher bandwidth and faster transmission speeds is becoming

Gigabit Switches

A Gigabit switch can significantly enhance your Ethernet speed, especially when dealing with multiple devices. A Gigabit switch operates as a central hub that connects various devices within your

What Are The Types Of Gigabit Optical Modules

The single fiber optical module is very suitable for long-distance backbone and man applications, and its wiring cost will be relatively low. Gigabit optical modules are mainly used in

Overview of SFP Gigabit Optical Module

Usage of SFP Optical Modules To correctly use an SFP gigabit optical module, follow these professional steps: Select a suitable SFP optical module based on network requirements and

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Installation and Maintenance Guide for Gigabit Optical Modules and 10 ...

As an essential component of network communication, optical modules have been widely used in various scenarios such as data centers, enterprise LANs, and WANs. An optical module is

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

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