Gigabit to 10 Gigabit interface optical module



Overview

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

Key Takeaways

Gigabit (1G) and 10-Gigabit (10G) optical modules are pluggable transceivers that enable high-speed Ethernet connectivity, with 10G modules offering higher bandwidth and faster data transmission for demanding network environments.

Overview

Gigabit optical modules (1G SFP) support data rates up to 1 Gbps and are suitable for general networking needs, including enterprise LANs, standard data center connections, and moderate bandwidth applications. They are available in multiple types, such as 1000BASE-SX (short-range multimode), 1000BASE-LX (long-range single-mode), and 1000BASE-T (copper-based using Cat5/Cat6 cables) with transmission distances ranging from 550 meters to 70 kilometers depending on the module type and fiber used. 10-Gigabit optical modules (10G SFP+) support data rates up to 10 Gbps and are designed for high-speed, high-bandwidth applications such as data centers, cloud computing, big data, and video surveillance.

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They can handle higher peak network loads and instantaneous data transmission requirements. 10G modules are available in multimode, single-mode, extended range, and copper variants, with typical distances up to 30 meters for 10GBASE-T over copper and longer distances for fiber-based modules. Key DifferencesFeatureGigabit SFP10-Gigabit SFP+Data Rate1 Gbps10 GbpsTypical UseStandard LAN, moderate trafficHigh-speed data centers, cloud, video surveillanceForm FactorSFPSFP+ (smaller, higher density)Transmission Distance550 m to 70 kmUp to 30 m (copper) or longer for fiberPower ConsumptionLowerHigher, depending on module typeCompatibilityStandard switches and routersRequires 10G-capable ports; interoperable with XENPAK, X2, XFP in some cases Identification and DeploymentGigabit and 10-Gigabit modules often look similar but can be distinguished by markings on the module.

For example, 1G SFP modules are labeled with “1. 25Gig” and wavelength information (e.g., 850nm, 1310nm), while 10G SFP+ modules are labeled “10Gig” with corresponding wavelength and distance specifications. These modules are hot-swappable, allowing installation or replacement without powering down the network device.

They support digital optical monitoring for diagnostics and are compatible with multiple vendor platforms, ensuring flexibility in network design. Choosing Between Gigabit and 10-Gigabit ModulesGigabit modules are sufficient for general networking needs and cost-effective deployments. 10-Gigabit modules are recommended for high-load, high-speed environments where bandwidth and low latency are critical, such as data centers, cloud infrastructure, and enterprise backbone networks.

When selecting modules, consider network requirements, budget, distance, and device compatibility. Using the correct module ensures optimal performance and avoids potential bottlenecks.

Conclusion

Gigabit and 10-Gigabit optical modules provide scalable, high-speed connectivity for modern networks. Gigabit modules are ideal for standard applications, while 10G modules meet the demands of high-performance, high-bandwidth environments. Proper selection based on speed, distance, and network load is essential for efficient and reliable network operation.

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Article Content

10GbE SFP+ Transceiver Modules

FS 10G SFP+ transceiver module solutions provide a wide variety of reliable 10 Gigabit Ethernet connectivity options for data centre, enterprise, and service

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

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

Cisco SFP Modules for Gigabit Ethernet Applications

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

Optic Modules Datasheet

Data Sheet datasheet is intended to guide the user through the various options available when choosing an optic module for a given platform depending on the architecture.

What Is 10GBASE-LR? SMF 1310nm 10km SFP+ Explained

10GBASE-LR is a 10-gigabit Ethernet optical standard that operates at 1310 nm over single-mode fiber (SMF), supporting link distances of up to 10 km.

Introduction of 10G SFP+ Optical Modules

10G SFP+optical module is a popular category widely used in data centers, enterprise networks, edge devices, and CPEs. Function: They''re transceiver modules used for 10 Gigabit

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

What is the difference between Gigabit and 10 Gigabit Optical

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Whether you should choose a Gigabit or 10GbE module depends on the type of network you are working with. For example, if your network is Gigabit Ethernet, you should use a Gigabit

1G to 10G Media and Rate Converter | Perle S-10GR-STS

Perle Media Converters facilitate Fiber to 10 GbE Copper Conversion at the GIG Data Center in Malta. They offer flexibility with different modules in one chassis and enable seamless and reliable

Industrial Gigabit Ethernet Fiber Media Converters 10/100/1000M, DIN ...

Industrial Gigabit Ethernet Fiber Media Converters 10/100/1000M, DIN Rail Mount Industrial Gigabit Ethernet Fiber Media Converter is designed for reliable data transmission in demanding industrial

Cisco 40GBASE QSFP Modules Data Sheet

Each 10-gigabit lane of this module is compliant to IEEE 10GBASE-SR specifications. This module can be used for native 40G optical links over 12-fiber parallel cables with MPO/MTP female connectors or

world.taobao : hsgq hongshengguang 10g gigabit optical module

Hsgq Hongshengguang 10g Gigabit Optical Module Single-Mode Dual-Fiber Multi-Mode Dual-Fiber Sfp+Lc Interface 10/20/40/60Km Optical Module Compatible with Huawei H3C Ruijie Zte and Other

Fiber Optic vs Ethernet Port Differences: Connectors

To use the switch''s 10-Gigabit optical port, you need to plug in SFP+ 10-Gigabit optical module. The 10-Gigabit dual-core optical module (dual-core is the most

K6097: Specifications of the Fiber Gigabit Ethernet SFP, XFP, SFP+ ...

Topic The following specifications are for the available Fiber Gigabit Ethernet modules and the platforms that support those modules. Important: The end user must ensure suitability of

SFP Modules

About this product Small Form-factor Pluggable | SFP transceiver modules, also known as mini GBICs (Gigabit Interface Converters), enable fibre optic transmission between network devices and are

10G BiDi SFP+ 20km Tx1270/Rx1330

The BIDI-10G-SFP-20A (Tx1270/Rx1330) will pair with any SFP+ MSA-compliant Tx1330/Rx1270 BiDi module that meets the 9 dB budget and 20km reach class, which is common when one end of the

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Type-C Gigabit Fiber Ethernet Network Adapter Gigabit Single Mode Optic ...

Type-C Gigabit Fiber Ethernet Network Adapter Gigabit Single Mode Optic Module NIC RTL8153 Description : SFP LCx 1 Bus Type: Type-c Transmission Rate: 1000Mbps Chipset: for Realtek

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