10 Gigabit Ethernet NIC optical port and optical module



Overview

Dual-port 10GbE PCIe card with dual SFP28 transceivers for adding optical 10GbE connectivity to Mac, Windows, and Linux computers with PCIe slots.

Key Takeaways

10GbE ports can use SFP+ optical transceivers, 10GBASE-T RJ45 modules, or direct attach cables (DAC) depending on fiber type, distance, and connector requirements. SFP+ Optical ModulesSFP+ (Small Form-factor Pluggable Plus) modules are the most common 10GbE optical transceivers, supporting both fiber and copper connections. They are hot-swappable and compatible with most 10GbE switches, routers, and network interface cards (NICs).

Key types include: 10GBASE-SR: Short-range multimode fiber, up to 300 meters, LC connectors. 10GBASE-LR: Long-range single-mode fiber, up to 10 km, LC connectors. 10GBASE-LRM: Multimode fiber, up to 220 meters, for legacy fiber installations.

10GBASE-ER: Extended range single-mode fiber, up to 40 km. SFP+ modules can also support DWDM wavelengths for dense wavelength-division multiplexing without additional transponders. 10GBASE-T RJ45 ModulesFor copper cabling, 10GBASE-T SFP+ transceivers allow 10GbE over Cat6a or Cat7 cabling up to 30 meters.

These modules use standard RJ45 connectors and are ideal for retrofitting existing copper networks. They are compliant with IEEE 802. 3an and 802.

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3az standards and provide a cost-effective upgrade path for short-distance connections. Direct Attach Cables (DAC)DACs are SFP+ copper cables with integrated transceivers, available in passive (up to 7 m) and active (up to 15 m) variants. They are low-latency, low-power, and commonly used for server-to-switch or top-of-rack connections in data centers.

Considerations for Selection

Distance: Fiber modules (SR, LR, ER) are chosen based on required link length; copper modules or DACs are suitable for short distances. Connector Type: LC connectors for fiber, RJ45 for copper. Compatibility: Ensure the module matches the switch or NIC port type (SFP+ or 10GBASE-T).

Network Environment: For high-density data centers, SFP+ or DACs are preferred; for office retrofits, 10GBASE-T RJ45 modules are practical. Monitoring: Many SFP+ modules support Digital Optical Monitoring (DOM) for real-time diagnostics.

Example Deployment

Cisco 10G Routed PON ONTs integrate XGS-PON optics with a 10GbE RJ45 port, providing symmetrical 10Gbps connectivity for residential or SMB environments. In enterprise networks, SFP+ modules are typically used to connect switches, servers, and storage over fiber, while 10GBASE-T modules allow leveraging existing copper infrastructure. By selecting the appropriate optical module or transceiver type, you can ensure reliable 10GbE connectivity tailored to your network's distance, cabling, and performance requirements.

Article Content

10G SFP+ Optical Transceivers | Transceiver Module

FS 10GbE SFP+ module solutions provide a wide variety of 10 Gigabit Ethernet connectivity options for data centers, enterprise wiring closets, Internet Service

Twin10 SFP28 PCIe Card

Dual-port 10GbE PCIe card with dual SFP28 transceivers for adding optical 10GbE connectivity to Mac, Windows, and Linux computers with PCIe slots.

10G NIC,25Gb NIC, 10G 25G SFP28 Ethernet network card | FiberMall

FiberMall offers dual-port 25G SFP28 Fiber Ethernet PCI-Express v3.0 x8 NICs based on Intel/NVIDIA chips, and single/dual/quad-port SFP+ 10G Ethernet adapters using Intel X710.

pci express 10 gigabit ethernet fiber network card | Newegg

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Twin10G SFP28 PCIe Card (Dual-port 10GbE Card with

10 Gigabit Ethernet PCIe card with dual-ports and two SFP28 transceivers for adding 10GbE Fibre Optic connectivity. Compatible with Mac, Windows, and

Cisco 10 Gigabit Modules

New optical transceivers enable cost-effective 10 Gigabit Ethernet LANs. Discover Cisco 10 Gigabit Ethernet Modules, offering high-speed, reliable connectivity to

Optic Modules Datasheet

These platforms support multiple interface types and technologies such as Ethernet, ATM, and SONET. Depending on the deployment scenario, they support different pluggable optic modules that can be

AOC, DAC, Fiber Optic Transceivers | One-Stop Shop for Datacenter

DAC AOC Fiber Optical NIC/CNA Converter 10Gtek Applications Events Products 10Gtek Extender Cables - for Under-liquid Solution

Network Interface Device Fiber: 2026 Guide

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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

EOS 4.36.1F

100 Gigabit Ethernet The 100 Gigabit Ethernet (100GbE) standard defines an Ethernet implementation with a nominal data rate of 100 billion bits per second over 10x10G, 4x25G, or 1x100G. 100 Gigabit

China Optical Transceiver Module & Mellanox Network Switch

MFS1S00-H020V (980-9I45T-00H020) Mellanox Aoc Cable Ethernet 200GbE QSFP56 Active Optical Cable infiniband cables Mellanox cable MFP7E10-N015 MPO-12/APC to MPO-12/APC Multimode

KD — High-Speed Optical Connectivity Semiconductors

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KD designs semiconductor ICs for multi-gigabit optical networking over fiber optics. Solutions for automotive, industrial, and consumer connectivity.

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

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 Popis : SFP LCx 1 Bus Type: Type-c Transmission Rate: 1000Mbps Chipset: for Realtek RTL8153 LEDs

00E1851 IBM 10Gb/s LC Single-Port SR PCIe x8 Network Adapter

The IBM Single-Port LC 10Gb/s Gigabit Ethernet-SR PCI Express x8 Network Adapter offers a dedicated 10 Gigabit Ethernet connection using short-range fiber optics. It fits into servers via a PCIe

M.2 A E Key to 1 Port for SFP Network Card 10/100/1000Mbps Gigabit ...

M.2 A+E Gigabit fiber server network card, single optical port SFP fiber Ethernet network adapter. Supports 1000M link rate and automatically adapts to the existing Ethernet network

SFP vs. SFP+ vs. QSFP: Key Differences

SFP modules are primarily designed to support speeds up to 1 Gigabit per second (Gbps), although certain SFP modules—often called SFP ''copper transceivers''—can transmit

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