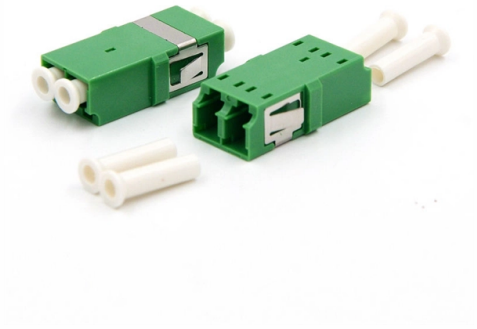
Introduction to 10G Optical Port Module



Overview

Long-range 10G optical modules enable high-speed data over distances up to 80km. Learn about types, specs, compatibility, and choosing the right module.

Key Takeaways

10G optical port modules, commonly known as 10G SFP+ transceivers, enable high-speed 10Gbps connectivity over fiber or copper, offering flexibility, scalability, and low power consumption for modern networks.

Overview

A 10G optical port module is a hot-pluggable transceiver designed to transmit and receive data at speeds of up to 10 gigabits per second. It serves as the physical-layer interface between network devices such as switches, routers, and servers, and the transmission medium, which can be fiber optic cabling or short-range copper connections (DAC). The SFP+ (Small Form-factor Pluggable Plus) form factor is an enhanced version of the original SFP standard, optimized for 10G speeds while maintaining backward compatibility with SFP slots.

Key Features

Data Rate: Supports 10Gbps, with some variants also supporting 1G/2. 5G/5G for backward compatibility. Form Factor: SFP+ allows high port density and reduced power consumption compared to older XFP modules.

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Connector Types: Typically uses LC duplex connectors for fiber or Direct Attach Copper (DAC) for short-range connections. Transmission Distance: Multimode Fiber (SR): up to 300m at 850nm wavelengthSingle-mode Fiber (LR/ER/ZR): 10km to 80km at 1310/1550nmCopper DAC/AOC: 7m (passive) or 15m (active). Power Consumption: Typically 1W or less, making it energy-efficient.

Hot-

Swappable: Can be installed or replaced without powering down the device. Types of 10G Optical Modules10GBASE-SR: Short-range multimode fiber, ideal for intra-data center connections. 10GBASE-LR: Long-range single-mode fiber, suitable for campus or building-to-building links.

10GBASE-ER/ZR: Extended reach single-mode fiber, supporting distances up to 80km for metropolitan or carrier networks.

BID

I Modules: Single-fiber bidirectional modules used in pairs for duplex communication over a single fiber.

Applications10

G optical port modules are widely used in: Data Centers: High-speed server-to-switch and switch-to-switch connections. Enterprise Networks: Backbone and aggregation links requiring 10G performance. Telecom Networks: Long-distance fiber links and metro networks.

Fibre Channel Storage Networks: High-speed storage area networks (SANs). Advantages Over Copper 10G ModulesCompared to 10GBASE-T copper modules, 10G optical modules offer: Longer Transmission Distances: Fiber modules can reach up to 100km, whereas copper is limited to tens of meters. Lower Latency: Optical modules generally provide faster data transmission.

Flexibility: Multiple fiber types and distances allow tailored deployment. Energy Efficiency: Lower power consumption than copper-based 10G modules.

Conclusion10

G SFP+ optical modules are a versatile, high-performance solution for modern networking needs. Their compact form factor, low power consumption, and support for various fiber types and distances make them ideal for data centers, enterprise networks, and telecom applications. Choosing the right module depends on the required transmission distance, fiber type, and network architecture, ensuring optimal performance and cost-effectiveness.

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Article Content

Reach Further, Faster: Your Ultimate Guide to Long-Range 10G

Long-range 10G optical modules enable high-speed data over distances up to 80km. Learn about types, specs, compatibility, and choosing the right module.

10G Optical Module Selection Guide: LRM,SR,LR,ER,ZR

By deeply understanding the differences and performance of LRM, SR, LR, ER, and ZR optical modules, we can make the right choice among many optical modules, thereby building an

10GB SFP Module Guide: Types, Specs, and How to Choose

Learn everything about 10GB SFP modules, including types, specifications, compatibility, and how to choose the right 10G SFP+ transceiver for your network.

Guide to 10G SFP+ Modules: LRM, SR, LR, ER, ZR

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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

10G Optical Module Guide: Compare LRM, SR, LR, ER, ZR for the

As 10G Ethernet continues to be widely deployed in data centers, enterprise networks, and telecom infrastructures, choosing the right 10G optical module is critical for performance, cost

Introduction to the types of 10G EPON optical modules

At present, 10G EPON optical modules on the market can be divided into OLT (optical line terminal) optical modules and ONU (optical network unit) optical modules according to different

The Ultimate 10G Optical Module Guide: Compare LRM, SR, LR, ER,

This comprehensive guide by Svelol will analyze the differences between 10G SFP+ dual fiber optical modules across multiple dimensions: technical parameters, transmission distance, fiber type, and

TI Optical Module 10G SFP+ Total Solution

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TI 10G optical module SFP+ total solution is a complete demonstrated-working optical transceiver solution targeted for the small form factor pluggable (SFP+). This solution reduces customer design

What is SFP Port? Everything You Need to Know

What is an SFP port? The SFP port also refers to a Small Form-factor Pluggable port. It is a compact mechanical slot that accepts an SFP

KB: Creating protection for Hyper-V VMs on Windows Server 2012

First published on TECHNET on Oct 11, 2012 Here''s a new Knowledge Base article we published. This one talks about an issue where using DPM 2012 SP1 to create a protection group for

The Most Comprehensive Guide Of Optical Modules

Explore the ultimate guide to optical modules. Learn types, functions, performance metrics & how to choose the right module for your fiber network.

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What Is A Single-Fiber BiDi Transceiver?--ETU-LINK

Single fiber module also called BiDi transceiver or WDM module. It uses WDM technology to realize the bidirectional transmission of optical signals on one optical fiber. BIDI module only has 1 port, wave

Introduction to the types of 10G EPON optical modules

2. 10G EPON SFP+OLT optical module (asymmetric type) The optical module is packaged with pluggable SFP+, with SC optical port. The downlink rate is 10.3125Gbps&1.25Gbps,

Cisco 10 Gigabit Modules

Cisco currently supports many different port types where each one is optimized for the reach and transmission media demanded by a particular 10 Gigabit

Inventory Of 10G Optical Modules

SFP+ optical modules are widely used in 10G Ethernet due to their advantages of compact size, low cost and high density, and they are currently the most common 10G optical

Optical Transceiver Manufacturer,Introduction of 10G

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1. At present, the link distance between the devices in most data centers is between 10m and 100m. Using 10G SFP+ electric port optical module can make up for the

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