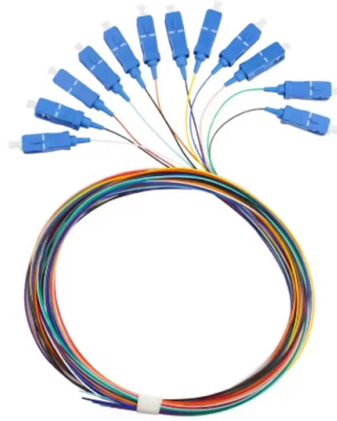


Why it s not recommended to buy optical modules



Overview

CPO Technology Nvidia: Death of Optical Modules and the Future of Nvidia has started mass production of Spectrum-X CPO switches, which leads to the destruc.

Key Takeaways

Buying traditional optical modules is increasingly risky due to supply chain fragility, reliability issues, and the industry shift toward co-packaged optics (CPO) and silicon photonics.

Supply Chain and Reliability Concerns

Optical modules are highly sensitive components, and even small variations in manufacturing can lead to failures. For example, a hyperscale network operator found that 12% of 400G DR4 modules failed within 90 days due to a change in laser bonding adhesive, which caused lens clouding under heat, despite passing standard compliance tests. Batch-to-batch variations in VCSEL bandwidth, DSP equalizer settings, and PCB surface finish can bypass standard qualification, creating hidden reliability risks.

Modules may pass lab tests but fail under real-world thermal and network conditions, leading to increased bit error rates and reduced system performance.



Technological Obsolescence

The optical module market is being disrupted by co-packaged optics (CPO) and silicon photonics. Companies like Nvidia are embedding optical engines directly into ASIC switch packages, eliminating the need for traditional pluggable modules. This integration reduces costs, improves energy efficiency, and increases reliability, but it also renders standalone optical modules less relevant.

As a result, the market for conventional modules is shrinking, and suppliers may be squeezed out, making future support and availability uncertain.

Cost and Maintenance Implications

Traditional optical modules are expensive, often costing \$600–\$2000 each, with a significant portion of the price being supplier markup.

With CP

O, the optical portion is integrated, eliminating housing, connectors, and DSP retimers, which reduces costs and centralizes control. Additionally, servicing CPO systems is more complex; failures require removing or replacing the entire switch, whereas pluggable modules can be swapped easily. This makes investing in traditional modules less cost-effective in the long term.

Market and Supply Constraints

The rapid growth of AI infrastructure has created a bottleneck in optical module supply, particularly for high-speed lasers like EMLs. Lead times are extended, and strategic customers often pre-allocate capacity, making it difficult to secure modules for large-scale deployments. This scarcity, combined with the shift to integrated optics, increases the risk of investing in modules that may soon be obsolete or hard to source.

Conclusion

Purchasing traditional optical modules is not recommended due to high failure risk, supply chain fragility, escalating costs, and impending obsolescence driven by the transition to CPO and silicon photonics. Organizations planning for AI or hyperscale data center deployments should consider integrated optical solutions or closely monitor the evolving market to avoid stranded investments.

Article Content

CPO Technology Nvidia: Death of Optical Modules and the Future of

Nvidia has started mass production of Spectrum-X CPO switches, which leads to the destruction of the traditional optical modules market. The reasons and consequences of the transition

Chinese Optical Modules Own 7 of the Top 10 Seats. So Why Are

Key point: LPO and SiPh lower Chinese optical module companies' DSP/EML dependence, but dependence on the top of the value chain (chip IP, foundries) does not fully disappear.

DAC Cables vs Optical Modules: Best Solution for Reliable Short ...

Explore the pros and cons of DAC cables vs optical modules for 10G links. Make smart choices balancing cost, performance, and reliability for your network.

Incompatible Optical Transceivers: Hidden Network Costs

This article explains why optical transceiver incompatibility can create outages, support escalations and hidden operating costs even when the module price looks attractive.

Why is this SFP+ module almost twice the cost? Both are 10GbE

You can still get generic modules coded to say, Cisco, but that Cisco-coded module will work fine in brands like Ubiquiti, Mikrotik, TP-Link, ect since those smaller vendors just don't have any vendor

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.

Buying the correct SFP Modules : r/networking

From the labels, it appears to be multimode, but multimode has two different core sizes, 62.5u and 50u, and buying the wrong jumper can cause issues. The jacket should say whether it is OM1/2/3/4, which

Yes, You Should Buy OEM Optical Modules Unless You Know Why

Takeaway: The best question you should ask is "Why would I pay 1000% more for a branded off-the-shelf component at all?"

Understanding Optical Modules: A Comprehensive Guide

Understanding this distinction helps in choosing the right device for your network setup and troubleshooting connectivity issues. Selecting the appropriate optical module depends on

Everything You Need to Know About Optical Modules

Optical modules are electronic devices used in communication systems to transmit optical signals. These modules convert electrical signals into optical

China's Dominance in AI Optical Chips and Modules

China secures control over AI data arteries via optical modules. Explore the geopolitical impact on the global semiconductor market. Read the full analysis.

How to Choose Optical Modules Correctly?

How Optical Modules Operate Transmitter Optical Sub Assembly (TOSA) The TOSA manages light emission, converting electrical signals to

Why Is the Whole World Betting on Optical Modules: From Wall Street

Because what NVIDIA really values is not just the current plug - and - play optical modules, but a new technology route called silicon photonics. To put it simply, it's about

Selection and use of optical modules

The optical module is composed of optoelectronic devices, functional circuits and optical interfaces, etc. The optoelectronic devices include two parts: transmitting and receiving. The optical

Optical Module Guide: Demystifying Optical Modules

Optical modules are essential components in modern communication networks, enabling high-speed data transmission over fiber optic cables. As the

How to Install and Remove Optical Modules Safely

Install optical modules safely with ESD protection, proper handling, and dust control. Follow these steps to avoid damage and ensure network reliability.

CPO Technology Nvidia: Death of Optical Modules and

Analysis of Nvidia's announcement from June 3, 2026: why CPO is killing optical module suppliers, who the beneficiaries are (TSMC, Marvell) and

Optical module

An optical module is a typically hot-pluggable optical transceiver used in high-bandwidth data communications applications. Optical modules typically have an electrical interface on the side that

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

