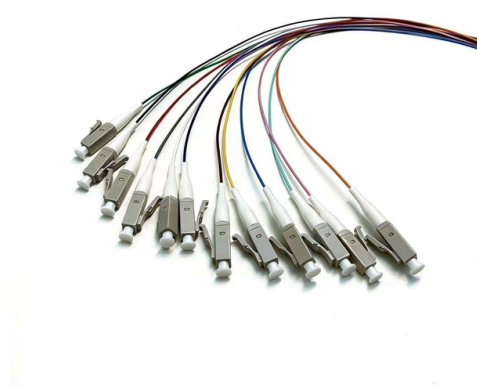


Optical Module Surge



Overview

Optical Module MCUs Become Critical as AI Data Centers Drive The demand surge reflects the explosive growth in AI server shipments and accompanying optical.

Key Takeaways

The optical module market is experiencing a major surge driven by AI data center expansion, 1.6T module commercialization, and adoption of Silicon Photonics and Co-Packaged Optics technologies.

Market Growth and Stock Impact

Shares of leading optical module manufacturers, including InnoLight and Eoptolink, surged over 6% as 1.6T products entered commercial mass production, reflecting strong investor confidence and market demand. The global optical module market is projected to grow 60% in 2026, with sales expected to approach \$26 billion for AI-focused transceivers, and nearly \$60 billion by 2031.

This surge is fueled by rapid AI infrastructure deployment, particularly in hyperscale data centers in North America, where traffic growth exceeds 30% annually.

Technological Drivers

The 1.6T optical module represents a significant upgrade from the 800G standard, doubling bandwidth while improving efficiency. Silicon Photonics (SiPh) is increasingly dominant, enabling integration of complex optical functions onto a single silicon die, reducing costs, and improving reliability.



Co-

Packaged Optics (CPO) further enhances performance by placing optical engines directly on processor packages, reducing electrical path loss from 20–25 dB to approximately 4 dB. These innovations are critical to overcoming the "power wall" in AI data centers and supporting next-generation 102. 4T switching fabrics.

Supply and Demand Dynamics

Demand for high-speed optical modules is being driven by AI server clusters and GPU deployments from companies like Nvidia, OpenAI, and AMD. Nvidia alone is increasing 800G optical module orders by 35%, with InnoLight and Eoptolink capturing 60% of these orders. Supply-side constraints include limited availability of critical optoelectronic chips, high-precision manufacturing bottlenecks, and thermal management challenges.

The surge is described as a "supercycle," with shipments of 1. 6T modules expected to grow from 2. 5 million units to 20 million units in 2026.

Technological Evolution

Optical modules are evolving through higher-order modulation techniques (NRZ → PAM4 → xQAM), increased baud rates, and multi-lane parallel channels using Wavelength Division Multiplexing (WDM),. Packaging methods are also advancing to support higher transmission rates and smaller form factors, including SFP, QSFP, OSFP, and QSFP-DD modules. These developments are essential for building robust HPC systems, scalable cloud infrastructures, and next-generation AI data centers.

Summary

The optical module surge is a convergence of AI-driven demand, rapid technological upgrades, and strategic supply chain positioning. Key factors include the commercialization of 1. 6T modules, adoption of Silicon Photonics and CPO, and massive GPU and AI server deployments.

Leading manufacturers are leveraging these trends to dominate the market, while investors are responding with significant stock gains. This surge marks a historic period in optical communications, shaping the future of high-speed data center interconnects.

Article Content

Optical Module MCUs Become Critical as AI Data Centers Drive

The demand surge reflects the explosive growth in AI server shipments and accompanying optical module demand, pushing supporting MCU chips into short supply. Within an

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Optical Module Stocks Surge Over 6% as 1.6T Era Begins

Driven by accelerating AI infrastructure demand, key optical module stocks like InnoLight and Eoptolink surged after a Huatai Securities report confirmed 1.6T modules have entered

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With the rapid advancement of AI, HPC, and cloud computing, the demand for high-speed optical modules such as 400G, 800G, and even 1.6T is growing exponentially. This surge is driving

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The "CWDM and DWDM Optical Module Market Research Report" provides an in-depth and up-to-date analysis of the sector, covering key metrics, market dynamics, growth drivers,

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