

Progress in the Optical Module Industry Chain



Overview

Our in-depth market data report on optical module industry. Explore verified statistics and the latest research.

Key Takeaways

The optical module industry is rapidly advancing, driven by AI data center demand, with 800G and 1.6T modules, co-packaged optics (CPO), and Chinese manufacturers leading global growth. Technological Advancements

Optical modules serve as the critical interface converting electrical signals from chips into optical signals for high-speed data transmission, and vice versa. The industry is transitioning from 800G to 1.6T modules, with CPO technology emerging as the next-generation solution. CPO integrates the optical engine directly with the switch ASIC/XPU on the same package, reducing power consumption by approximately 3.5 times, increasing bandwidth density, and minimizing signal attenuation compared to traditional pluggable modules. Intermediate technologies like Near-Packaged Optics (NPO) and Linear-drive Pluggable Optics (LPO) are also being explored to bridge current limitations.

Market Growth and Demand



The global optical module market is projected to exceed 150 billion yuan by 2025, with 800G products achieving over 50% penetration . Active optical modules (AOMs) are expected to grow at a CAGR of 14.7% from 2024 to 2032, driven by 5G infrastructure, cloud computing, and AI-driven data centers . In 2026, shipments of 800G modules are projected to surpass 40 million units, while 1.6T modules are entering commercialization with global demand estimated between 8.6 million and 20 million units, largely driven by NVIDIA, Google, Meta, and Amazon .

Key Players and Supply Chain

Chinese companies dominate the optical module market, holding over 60% of global market share . Leading firms include Zhongji InnoLight, Eoptolink, and Huagong Tech, with Zhongji InnoLight controlling over 40% of the 800G market and 50–70% of the 1.6T segment . These companies have accelerated delivery cycles and secured positions in AI cluster supply chains for major global tech firms. Other notable players include Yuanjie Technology, which has achieved mass production of 200G PAM4 EML optical chips, and Zhongji Xuchuang, a leader in 1.6T module production .

Challenges and Future Outlook

Despite rapid growth, the industry faces challenges in advanced packaging, thermal management, repairability, and standardization . Silicon photonics has become mainstream, capturing 72% of the market share in 1.6T modules . The ongoing AI computing power race continues to drive demand, with North American and Chinese data centers leading procurement. Innovations like the 12.8-terabit XPO module, which bundles eight 1.6T modules, exemplify the push toward higher capacity solutions for hyperscale AI clusters .

Summary

The optical module industry chain is experiencing explosive growth, fueled by AI data center expansion, technological innovation, and strong Chinese market leadership. The shift from 800G to 1.6T modules, adoption of CPO, and advancements in silicon photonics are reshaping the supply chain, while market demand continues to rise globally, particularly in North America and China .

Article Content

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