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Driven by the Rise in Optical Module Prices



Overview

The reasons behind the recent sharp price increase of optical modulesCosts are driving optical chip shortages and price increases. High-speed optical chips.

Key Takeaways

Optical module prices are rising due to surging AI and data center demand, supply bottlenecks, high raw material costs, and technological and geopolitical constraints.Supply and Demand Pressures

The rapid expansion of AI computing, cloud data centers, and high-speed networks has sharply increased demand for optical modules, particularly 800G and 1.6T modules, which are critical for high-bandwidth data transmission . Hyperscale cloud providers are investing heavily in infrastructure, creating backlogs extending into 2026 and driving prices up by 50–100% for newer high-speed modules compared to older 400G models . Emerging applications such as FPV drones, military loitering munitions, and AI-driven computing are also reshaping downstream demand, further intensifying competition for limited supply .

Technological and Production Constraints

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High-speed optical modules require advanced optical chips and packaging technologies, such as CoWoS and silicon photonics, which are concentrated among a few manufacturers like TSMC, ASE, and Huawei . The self-sufficiency rate for high-speed optical chips above 25G is below 30%, and production cycles for high-performance optical fibers and modules often exceed two years . Rapid technological iteration, R&D investment, and the introduction of 800G and 1.6T modules increase production costs and create barriers for new entrants .

Raw Material and Component Costs

Key raw materials, including indium phosphide (InP) substrates, have seen sharp price increases, with 2-inch InP substrates rising by 50% . High-purity silicon and optical fiber preforms are also in limited supply, and any disruption in upstream supply chains can significantly affect module production . These material constraints contribute directly to higher manufacturing costs.

Geopolitical and Policy Factors

Geopolitical pressures are influencing supply chains, with European and American customers reducing reliance on Chinese suppliers . Policies supporting domestic production, including subsidies for key materials, are intended to secure supply but can temporarily increase costs . Manufacturers are diversifying strategies to mitigate risks, which adds short-term financial pressure.

Market Implications

The combination of exploding demand, limited production capacity, high raw material costs, and technological complexity has created a structural imbalance in the optical module market . While long-term technological innovation and large-scale production are expected to eventually reduce costs, short-term price volatility is likely to persist. Buyers are advised to consider long-term supply agreements, supply chain diversification, and careful evaluation of module speed and cost-performance trade-offs to manage rising prices . In summary, the rise in optical module prices is driven by a convergence of demand surges, production bottlenecks, raw material inflation, and strategic geopolitical shifts, making it a complex and multi-faceted market phenomenon.

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3) Price trend: From rebound from lows to structural rise As the supply-demand imbalance worsens, the optical fiber

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Economic Watch: From optical modules to chips -

The competitiveness of optical modules also largely hinges on the synergy of the complete upstream industrial chain,

Active Optical Module Market Research Report 2034

Active Optical Module market valued at $10.7 billion in 2025, projected to reach $35.6 billion by 2034 at 14.2% CAGR, driven by data

Optical Module Procurement Guide

The OEM vs. Aftermarket Price Divide: Why the Gap Exists Comprehensive Brand and Price-Performance

Optical Modules

This report aims to provide a comprehensive presentation of the global market for Optical Modules, focusing on the

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How AI Revolutionizes the Optical Module Industry

AI-driven demand fuels global optical module industry growth, with Chinese firms leading innovation and market share

Integrated Optics Modules Market Forecast 2026-2035: Growth Driven

The World Integrated Optics Modules market is entering a sustained growth phase, with demand projected to

High-Speed Optical Module Demand Soars: AI Computing and Market ...

Section 2, Optical Module Market Demand Forecast Driven by Computational Networking The significant surge in

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