Why are the prices of optical communication modules constantly rising

Article Overview

Optical module prices are rising due to a combination of surging AI-driven demand, technological upgrades, raw material cost increases, and limited production capacity.

Supply and Demand Pressures

The rapid expansion of AI computing and data centers has significantly increased demand for high-speed optical modules, particularly 800G and 1.6T models, which are currently in short supply. Cloud vendors are facing higher capital expenditures as they compete for limited inventory, and order backlogs have extended into 2026 . This surge in demand has created a structural supply-demand imbalance, pushing prices upward.

Technological Iteration and Premiums

Newer generations of optical modules, such as 800G and 1.6T, offer higher transmission speeds and improved power efficiency. These technological upgrades allow vendors to charge higher unit prices, even though the cost per bit transmitted actually decreases. This "tech-driven premium" model reflects the value of enhanced performance rather than simple scarcity, supporting long-term industry growth .

Raw Material Cost Increases

Raw materials account for 60%-70% of optical module production costs. Prices of critical metals like gold, copper, tin, and indium phosphide have risen sharply, with indium phosphide substrates increasing by 50% recently. These materials are essential for PCB boards, connectors, and other components, and their rising costs are directly passed on to module prices .

Production Constraints

High-speed optical modules require advanced packaging technologies such as CoWoS, which are limited to a few manufacturers like TSMC and ASE. Expansion cycles for high-performance optical fiber production are long, often exceeding two years, and global capacity is concentrated among a few companies. This bottleneck in production capacity further contributes to price increases .

Geopolitical and Policy Factors

Geopolitical pressures and policies encouraging domestic production and supply chain diversification have also influenced costs. Subsidies for key materials and efforts to reduce reliance on foreign supply chains can

temporarily increase prices as manufacturers adjust their strategies .

Summary

In essence, optical module price increases are driven by exploding demand from AI and data centers, technological upgrades that justify higher unit prices, rising raw material costs, limited production capacity, and geopolitical factors. While unit prices are higher, the cost per transmitted bit often decreases due to improved efficiency, reflecting a long-term growth-oriented trend rather than purely cyclical inflation .

Optical modules are critical components of modern optical communication systems and are widely used in data

Optical module demand is reshaping faster than most forecasts, with 2026 growth pointing to a clear change in where

The fiber optic market is experiencing unprecedented volatility. As an essential component in global

Powering the Next Data Race: How 800G & 1.6T Optical Modules Are Reshaping AI and Cloud Infrastructure Original

Optical Interconnect Market Analysis by Mordor Intelligence The Optical Interconnect Market size is projected to be

Conclusion: Navigating the 2025-2026 Fiber Price Crisis The dramatic surge in fiber optic cable prices from late 2025

Why Fiber Optic Prices Are Rising in 2026 - Market Trends, Cost Drivers, and Strategic Response for B2B Buyers The global fiber

Opportunities in networking optics: Boosting supply for data centers Potential shortfalls in networking optics supply could hinder data

Rising raw material prices are being passed on from the cost side to business operations, and optical module

This structural change is also reflected in optical communication modules. Taking high-speed optical transceiver

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Situated within the broader optical communications industry, the Optical Modules Market is a vital subset of the

The market for "Optical Communication Module Market" is examined in this report, along with the factors that are

In general, the price increase of optical modules is the inevitable result of strong demand (the AI computing power race)

The 2025 optical communication industry is driven by AI data centers (AIDCs) and 5G rollouts, with high-speed

Optical Communication And Networking Equipment Market Overview o Optical Communication And Networking Equipment market

Datacom Optical Module market forecast reveals 12.3% CAGR. Analyze drivers: cloud data centers, 400G adoption.

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