

2021 Optical Modules



Overview

High Speed Cables Report and Forecast This report also examines the product segment that embeds optical interconnect technologies inside computer and commu.

Key Takeaways

In 2021, the optical module market experienced strong growth, driven by data center expansion, 400GbE adoption, and Chinese manufacturing dominance. Market Revenue and Growth

The global optical component market reached US\$14.5 billion in 2021, with datacom optical components alone generating US\$4.7 billion, a 27% increase from the previous year due to hyperscale data center expansion and cloud operator investments . The optical transceiver segment, particularly fiber optic transceivers, accounted for the largest revenue share, driven by high-speed data transmission requirements in data centers . Shipments of 400GbE datacom modules doubled in 2021, with QSFP-DD DR4 formats dominating, while 400Gbps pluggable coherent modules, mainly QSFP-DD ZR, also saw significant adoption .

Technological Trends



High-speed modules above 100G were widely adopted, with 400G, 600G, and 800G modules deployed across data center and metro networks . Ethernet switch ASICs running at 50Gbps lane rates with PAM-4 modulation were common, and co-packaged optics (CPO) emerged as a new deployment model, integrating optics with ASICs to reduce PCB trace lengths and improve performance . Active Optical Cables (AOCs) and Embedded Optical Modules (EOMs) gained traction for high aggregate data rate links at lower costs compared to separate transceivers .

Regional Manufacturing and Supply Chain

China dominated global optical module manufacturing, accounting for over 70% of production, with Shenzhen and Suzhou as major hubs . Supply chain disruptions, including semiconductor shortages, affected delivery times, particularly for high-speed modules, causing delays of up to 15% in 2022 for some 2021 orders . Geopolitical tensions, such as US-China trade restrictions, influenced the global supply chain and market dynamics, impacting companies like Huawei and ZTE .

Applications

- Data Centers: 45% of global optical module revenue, driven by cloud computing and AI workloads .
- Telecommunication Networks: 28% of revenue, including wireless and wired infrastructure .
- Automotive: Emerging demand for LiDAR and V2X communication, with growth of 30% in 2023, reflecting early adoption trends in 2021 .

Key Players

Major global players included Cisco, Huawei, II-VI, Broadcom, Finisar (II-VI), Lumentum, Inphi, Intel, and Applied Optoelectronics, alongside Chinese companies like Accelink, Fiberhome, HG Genuine Optics, and Source Photonics . The market remained fragmented, with new Chinese entrants recognized in 2021, updating the global ranking .

Summary

In 2021, the optical module industry was characterized by rapid adoption of 400GbE modules, strong revenue growth in datacom, technological innovation with co-packaged optics, and Chinese manufacturing dominance, while supply chain and geopolitical factors influenced global distribution and deployment. These trends set the stage for continued growth and higher-speed module adoption in subsequent years.

Article Content

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Optical Transceivers & Silicon Photonics Forum

Based on pictures extracted from teardown and physical analysis of six 100G and 400G optical transceivers from Finisar/II-VI, Cisco,

OPTICAL TRANSCEIVERS FOR DATACOM & TELECOM

This growth is driven by high volume adoption of high data rate modules above 100G by big cloud service operators and national

4Q21 Optical Components Report

This report is the final version of Signal AI's Optical Components Report for 4Q21. This edition (the second release and

Cisco Transceiver Modules

Cisco Transceiver Modules - Learn product details such as features and benefits, as well as hardware and software specifications.

Optical Modules Market Research Report 2034

The optical modules market was valued at \$14.8 billion in 2025 and is projected to reach \$39.6 billion by 2034, growing at a CAGR of

Global Data Center Optical Module Market 2021: By Key Players,

The Global data center optical module market is estimated to grow at a significant CAGR during the forecast period (2021-2027).

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Instead of forcing all regions into a rigid “align-then-fuse” process, the Feature Complementary Module (FCM) suppresses discrepant

What is the 400G Optical Module?

Nowadays, the progress of 400G optical module development and mass production is relatively satisfactory. In the

Optical module

An optical module is a typically hot-pluggable optical transceiver used in high-bandwidth data communications applications. Optical

Optical Modules Market by Type and Application

An optical module is a typically hot-pluggable optical transceiver used in high-bandwidth data communications applications. Optical

Optical & IC Products

Semtech is also investing in leading-edge technologies to enable communication systems at 800Gbps and beyond. For our optical

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Fluorescence microscopy with optical sectioning capabilities is extensively utilized in biological research to obtain three

Everything You Need to Know About Optical Modules

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

LightCounting :: May 2021 Integrated Optical Devices

It also presents a forecast for shipments and sales of discrete and integrated products based on InP, GaAs and SiP technologies for

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 Modules Market

Optical Modules Market - Significant Industry Insights This research report is a meticulous assessment of the optical modules

Latest Ranking Of Top 10 Global Optical Module Suppliers

The latest data shows that Xutron Technology and II-VI acquired Finisar, the leading optical module company, and

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