

Active Optical Cable Market Report by Connector Type (QSFP, CXP, CDFP, CFP, SFP, and Others), Technology (InfiniBand, Ethernet, HDMI, DisplayPort, USB, and Others), Application (Data Center, High-Performance Computing, Personal Computing, Digital Signage, Consumer Electronics, and Others), and Region 2024-2032

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Abstracts

The global active optical cable market size reached US\$ 3,381.9 Million in 2023. Looking forward, IMARC Group expects the market to reach US\$ 18,849.5 Million by 2032, exhibiting a growth rate (CAGR) of 20.6% during 2024-2032. The widespread product utilization in the telecommunication industry, the growing product adoption in consumer electronics, extensive research and development (R&D) activities, and the rising demand for high-speed data transmission are some of the major factors propelling the market.

Active optical cable (AOC) refers to a high-speed data transmission cable that utilizes fiber optics technology to transmit signals over long distances. It is comprised of several components, such as laser diodes, optical fibers, control circuitry, insulating materials, connectors and housing, and photodiodes. AOC is widely used in data centers, telecommunication networks, consumer electronics, professional audio/video applications, medical imaging, and military and aerospace systems. It is a lightweight, flexible, and highly efficient product that provides high bandwidth, low signal loss, and excellent immunity from electromagnetic interference (EMI) and radio frequency interference (RFI).

The widespread product utilization in the aerospace and defense industries to enable

reliable data transfer and provide immunity against EMI interferences in avionics, satellite communications, and unmanned aerial vehicles (UAVs) is positively influencing the market growth. Furthermore, the increasing product adoption in medical imaging systems, such as computed tomography (CT) scanners, ultrasound devices, and magnetic resonance imaging (MRI), to ensure real-time data visualization with minimal latency, is contributing to the market growth. Additionally, the rapid proliferation of the Internet of Things (IoT) devices is facilitating product demand to provide necessary bandwidth, low latency, and long-distance connectivity. Other factors, including increasing emphasis on data security, rising investment in the development of advanced products, and growing demand for high-speed data transmission, are anticipated to drive the market growth.

Active Optical Cable Market Trends/Drivers:

The widespread product utilization in the telecommunication industry

AOC is widely deployed in telecommunication networks as high-speed backhaul connections between base stations and central offices. It offers high capacity and low latency connection, which enables smooth and uninterrupted communication. Furthermore, the widespread product utilization in fiber-to-the-home (FTTH) deployments to provide high-speed broadband connectivity to residential and business premises is positively influencing the market growth. Apart from this, the increasing product adoption in remote radio heads (RRHs) and distributed antenna systems (DAS) to connect radio equipment with central processing units (CPU) is supporting the market growth. Additionally, the growing product demand in metro and long-haul networks to facilitate high-speed optical transmission over extended distances is contributing to the market growth.

The growing product adoption in consumer electronics

AOC finds numerous applications in consumer electronics to enhance connectivity and improve performance. It is extensively used in high-resolution displays, such as televisions (TVs), monitors, and projectors, to transmit large amounts of data quickly and accurately, which provides an immersive viewing experience. Furthermore, the rising product adoption in gaming consoles and accessories to enable the transmission of high-definition (HD) video, audio, and control signals between consoles, monitors, controllers, and headsets is strengthening the market growth. Moreover, the increasing product applications in digital signage to provide the necessary bandwidth and signal integrity is favoring the market growth. Besides this, the widespread product adoption in home theatre systems to connect audio or video components, such as Blu-ray players,

soundbars, receivers, and projectors, is catalyzing the market growth.

Extensive research and development (R&D) activities

The introduction of advanced AOCs that are equipped with improved optical components, advanced modulation techniques, and optimized signal processing to facilitate long-distance connectivity, low signal loss, and lower energy consumption is positively influencing the market growth. Moreover, the recent development of hybrid AOCs, which enable high-speed data and power transmission simultaneously with a single cable, thus saving resources and improving efficiency, is contributing to the market growth. Apart from this, the integration of advanced security features, such as encryption mechanisms, authentication protocols, and anti-tampering measures to ensure the security of sensitive data, is boosting the market growth. Besides this, the utilization of AOC in augmented and virtual reality (AR/VR) applications to enable seamless transfer of high-resolution video, audio, and tracking data between the headset and the computing device is supporting the market growth.

Active Optical Cable Industry Segmentation:

IMARC Group provides an analysis of the key trends in each segment of the global active optical cable market report, along with forecasts at the global, regional, and country levels from 2024-2032. Our report has categorized the market based on Connector type, technology, and application.

Breakup by Connector Type:

- QSFP
- CXP
- CDFP
- CFP
- SFP
- Others

QSFP dominates the active optical cable market

The report has provided a detailed breakup and analysis of the active optical cable market based on the connector type. This includes QSFP, CXP, CDFP, CFP, SFP, and others. According to the report, QSFP represented the largest market segment.

Quad small form-factor pluggable (QSFP) is dominating the active optical cable (AOC)

market owing to its high-speed data transmission. Furthermore, QSFP AOCs offer multichannel capability, allowing multiple data streams to be transmitted simultaneously over a single cable. Additionally, it has a small form factor compared to its alternatives, such as CXP and CFP, which makes it suitable for space-constraint applications, including data centers. Apart from this, QSFP AOCs are compatible with various networking protocols and standards, including ethernet, InfiniBand, and fiber channel, thus making them highly versatile and adaptable to diverse networking environments. Moreover, it is a cost-effective, future-proof, and scalable product that allows easy upgrades and expansion as network requirements evolve.

Breakup by Technology:

- InfiniBand
- Ethernet
- HDMI
- DisplayPort
- USB
- Others

InfiniBand accounts for the majority of the largest share

The report has provided a detailed breakup and analysis of the active optical cable market based on the technology. This includes InfiniBand, Ethernet, HDMI, DisplayPort, USB, and others. According to the report, InfiniBand represented the largest market segment.

InfiniBand is dominating the market due to its large bandwidth, low latency, and high-speed data transfer capabilities, making it ideal for applications in financial trading, scientific simulations, data analytics, and high-performance computing. Furthermore, it utilizes a switched fabric topology, which facilitates network expansion and enables the seamless addition of more devices, nodes, and switches as the network grows. Moreover, InfiniBand incorporates advanced error detection and correction mechanisms, which ensure high reliability and data integrity, minimize transmission errors, and prevent data loss. Apart from this, it features remote direct memory access (RDMA) capability, which allows data to be transferred directly between the memory of computers, bypassing the need for CPU involvement.

Breakup by Application:

Data Center
High-Performance Computing
Personal Computing
Digital Signage
Consumer Electronics
Others

Data center represents the leading application segment

The report has provided a detailed breakup and analysis of the active optical cable market based on the application. This includes data center, high performance computing, personal computing, digital signage, consumer electronics, and others. According to the report, data center represented the largest market segment.

The rising number of data centers across the globe due to the increasing demand for cloud computing, big data analytics, and digital services is providing an impetus to the market growth. AOC is widely used in data centers to provide high-speed, high-bandwidth connectivity between servers, storage systems, and networking equipment. Furthermore, it aids in supporting data-intensive applications, such as virtualization, real-time analytics, and artificial intelligence (AI). Apart from this, AOC provides reliable and long-distance connectivity solutions, which allow seamless connectivity between different buildings, floors, and server racks within a data center campus. Moreover, they offer superior signal integrity compared to copper cables, which aids in ensuring minimal degradation of data. Besides this, they are scalable, compatible, and easy-to-upgrade products that assist data centers in handling the growing demand for data-intensive applications.

Breakup by Region:

North America
United States
Canada
Asia-Pacific
China
Japan
India
South Korea
Australia
Indonesia

Others
Europe
Germany
France
United Kingdom
Italy
Spain
Russia
Others
Latin America
Brazil
Mexico
Others
Middle East and Africa

North America exhibits a clear dominance in the market, accounting for the largest active optical cable market share

The report has also provided a comprehensive analysis of all the major regional markets, which includes North America (the United States and Canada); Asia Pacific (China, Japan, India, South Korea, Australia, Indonesia, and others); Europe (Germany, France, the United Kingdom, Italy, Spain, Russia, and others); Latin America (Brazil, Mexico, and others); and the Middle East and Africa. According to the report, North America represented the largest market segment.

North America is dominating the active optical cable market due to the presence of a strong ecosystem of research and development (R&D), technology companies, and startups focusing on areas such as data analytics, cloud computing, artificial intelligence (AI), and high-performance computing. Moreover, the growing demand for data centers in the region due to rapid digital transformation and significant growth in data-intensive applications is providing an impetus to the market growth. Additionally, the implementation of favorable policies by regional governments to encourage competition and technological innovation is favoring the market growth. Besides this, the presence of a well-developed and extensive telecommunications infrastructure that supports a wide range of services, including fixed-line and mobile communications, internet connectivity, and digital networks, is contributing to the market growth.

Competitive Landscape:

The leading companies in the active optical cable market are expanding their product

offerings by developing advanced AOCs with higher data transfer rates, improved power efficiency, increased cable lengths, and compatibility with emerging industry standards. Furthermore, several key players are designing customized products to cater to the specific requirements of data centers, telecommunications, consumer electronics, and healthcare industries. Moreover, the growing strategic partnerships and collaborations between top companies, technology providers, and industry stakeholders to develop integrated solutions, strengthen market presence, and create synergies to drive sales are contributing to the market growth. Besides this, aggressive marketing and branding activities by manufacturers through social media campaigns, trade shows, and events to improve brand visibility and create awareness about their products are favoring the market growth.

The report has provided a comprehensive analysis of the competitive landscape in the global active optical cable market. Detailed profiles of all major companies have also been provided. Some of the key players in the market include:

3M Company
Amphenol Corporation
Broadcom Inc.
EMCORE Corporation
Fujitsu Limited
II-VI Incorporated
International Business Machines Corporation
Lumentum Operations LLC
Molex LLC (Koch Industries Inc.)
Sumitomo Electric Industries Ltd.
TE Connectivity
The Siemon Company

Recent Developments:

In February 2022, II-VI Incorporated unveiled its pluggable optical line subsystem in QSFP form factor data center interconnects.

In April 2020, Sumitomo Electric Industries Ltd. announced that it had received Thunderbolt 3 certification from Intel Corporation for its new active optical cables (AOCs).

In March 2022, Lumentum Operations LLC showcased its innovative optical and photonic products at the Optical Fiber Communication Conference and Exhibition (OFC) 2022. One of the products in its lineup was vertical-cavity surface-emitting lasers (VCSELs), which can be used for low-cost, high-performance active optical cable

applications.

Key Questions Answered in This Report

1. What was the size of the global active optical cable market in 2023?
2. What is the expected growth rate of the global active optical cable market during 2024-2032?
3. What are the key factors driving the global active optical cable market?
4. What has been the impact of COVID-19 on the global active optical cable market?
5. What is the breakup of the global active optical cable market based on the connector type?
6. What is the breakup of the global active optical cable market based on the technology?
7. What is the breakup of the global active optical cable market based on the application?
8. What are the key regions in the global active optical cable market?
9. Who are the key players/companies in the global active optical cable market?

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