

Announcement

Fiber Optic Component Attenuators Global Market Forecast & Analysis

2017-2023

This report presents the ElectroniCast worldwide forecast of the use of component-level fixed and variable fiber optic attenuators

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Fiber Optic Component Attenuators Global Market Forecast (2017-2023)

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Report Description

This is the ElectroniCast worldwide market forecast of the estimated consumption of component-level fiber optic attenuators in communication applications. The optical attenuators, which are covered in this study, are components used to control (reduce) the power level of an optical signal used in optical fiber communication networks. Fiber optic attenuators are an important part of the optical communication link by allowing the adjustment of signal transmission into the dynamic range of the receiver. Either a fixed or variable attenuator is generally positioned before a receiver to adjust optical power that otherwise might fluctuate above an extreme range of the receiver's design, causing it to generate errors.

Fixed-type (not adjustable) fiber optic attenuators refer to the attenuator that can reduce the power of fiber light at a fixed value loss, for example, 5dB. While variable fiber optic attenuators refer to the attenuator that can generate an adjustable Loss to the fiber optic link. Fiber optic attenuators can be designed to use with various kinds of fiber optic connectors. The attenuators can be female-to-female, which are referred to as bulkhead-types; or male-to-female, which are referred to as plug-types. In-Line fiber optic attenuators are designed with a piece of fiber optic cable at any length and/or connectors.

Variable optical attenuators (VOAs) are either manually adjustable or electronically adjustable. VOAs have been widely used in fiber optic communication, optical signal processing, fiber optic sensing, and testing instruments, as well as many other applications.

This report quantifies stand-alone component-level fiber optic attenuators, as well as component-level fiber optic attenuators that are inside value-added or integrated modules.

When counting (quantifying) variable optical attenuator array modules and integrated modules, which may have more than one component-level attenuator, each component-level attenuator is counted separately. For example: with an integrated value-added module, we count only the complete (component-level) fiber optic attenuator as well as cost-adjusting for the optics, optical fiber alignments, and optical fiber and associated packaging, and other required materials.

Typically, fiber optic attenuators have used filter technology to decrease optical power. Light is usually transmitted from one fiber, through a spatial or temporal filter, and then focused into a second fiber for transmission through the balance of the optical links. Some of the other methods include angular (APC), lateral or axial displacement of two fiber ends, grayscale (neutral density) filters, fiber macro-bending, liquid crystals, PLC, MEMS, magneto-optic, acousto-optic or electro-optic.

Fixed attenuators (not adjustable) afford the network designer an inexpensive lumped element to decrease optical power. Packaged in either panel mount or cable assemblies, fixed attenuator types include bulkhead, connector build out, jumper/pigtailed and in-line. Attenuation is often segmented into whole decibel increments such as 1dB, 3dB, 5dB, 10dB, 13dB, 15dB and 20dB. Fiber attenuators are often associated with a connector-type, such as: LC, SC, ST, FC, MU, SC/APC, FC/APC, and other, as well as optical fiber-type (single mode and multimode).

Variable (adjustable) attenuators are ideal for simulating cable loss for research and development (laboratory) testing of optical communication link power limits or reducing power in the links where receivers are in the process of being overloaded. Fixed in-line (cable assembly/jumper) attenuators can distinguish the color band coding process to simplify the specification identification of the optical communication link components during field installation, stocking, or maintenance operations. VOAs (variable optical attenuators) enable adjustment capabilities, so the injected loss may be simply reduced as specific components degrade and increase their own attenuation over a few years.

The variable optical attenuators (VOA) is a basic building block for several optical systems such as wavelength division multiplexed (WDM) transmission systems, optical beam formers, fiber-optic adaptive controls, and other applications.

The market data are segmented into the following geographic regions, plus a Global summary:

- America (North, Central and South America)
- EMEA (Europe, Middle Eastern countries, plus Africa)
- APAC (Asia Pacific)

In this report, the fiber optic attenuator estimated market is also presented by the following product categories:

- Fixed
 - Bulkhead/Plug/Panel Mount
 - In-Line Jumper
- Variable (VOA)
 - Manually VOA
 - Electronically VOA (EVOA)
 - MEMS-Based EVOA
 - Other EVOA

The worldwide market forecast of the consumption of fiber optic attenuators is segmented into the following communication applications:

- Telecommunications
- Private Data LAN/WAN
- Cable TV
- Specialty

Below, are three levels (or “food chain”) pertaining to the fiber optic attenuator marketplace. For the purposes of this ElectroniCast study, we quantify and provide a market forecast for “Level 2”

Level 1 - The chip, die

Level 2 – The Component-Level fiber optic attenuator

Level 3 – Module (array attenuators, integrated modules, other)

INFORMATION BASE

This study is based on analysis of information obtained continually over the past two decades, but updated through the end of April 2018. During this period, ElectroniCast analysts performed interviews with selected authoritative and representative individuals in the fiber optics, telecommunications, datacom, cable TV and other communication industries, from the standpoint of both suppliers and users of fiber optic transmission links. The interviews were conducted principally with:

- Engineers, marketing personnel and management at manufacturers of fiber optic attenuators, circulators, collimators, specialty fiber, connectors, isolators, couplers, DWDM filter modules, dispersion compensators, photonic switches, modulators, transmitters/receivers, OADMs and other related optical communication components.
- Engineers, marketing, purchasing personnel and market planners at major users of passive and active optical components, such as telecommunication transmission, switching, distribution and apparatus equipment, telephone companies, data communications equipment companies, cable TV system suppliers, and a number of other end users of fiber optic communication components and technology.

The interviews covered issues of technology, pricing, contract size, reliability, documentation, installation/maintenance crafts, standards, supplier competition and other topics.

A full review of published information was also performed to supplement information obtained through interviews. The following sources were reviewed:

- Professional technical journals and papers; Trade press articles
- Technical conference proceedings
- Additional information based on previous ElectroniCast market studies, including the Fiber Optic Forecast Service Data Base, the Fiber Optic Cable Forecast, the Optical Amplifier and Component Global Forecast, the Fiber Optic Installation Apparatus Forecast, the Fiber Optic Circulator Forecast, Fiber Optic Coupler, Isolator, Filter, DWDM, Switch, Optical Add/Drop Multiplexers, Transmitters/Receivers, SONET/SDH, and other related component Market Forecasts
- Personal knowledge of the research team

In analyzing and forecasting the complexities of the Global market for fiber optic communication components, it is essential that the market research team have a good and a deep understanding of the technology and of the industry. ElectroniCast members who participated in this report were qualified.

Bottom-up Methodology ElectroniCast forecasts are developed initially at the lowest detail level and then summed to successively higher levels. The background market research focuses on the projected amount of each type of product used in each application in the base year (last year), and the prices paid at the first transaction from the manufacturer. This forms the base year data. ElectroniCast analysts then forecast the growth rates in component quantity use in device type, along with price trends, based on competitive, economic and technology forecast trends, and apply these to derive long term forecasts at the lowest application (use) levels. The usage growth rate forecasts depend heavily on analysis of overall end user trends toward digital broadband communication equipment usage and economic payback.

Cross-Correlation Increases Accuracy The quantities of fiber optic attenuators, DWDM, optical fiber/cable, connectors, transceivers, transport terminals, optical add/drop MUX, couplers/splitters, isolators, photonic switches and other products used in a particular application are interrelated. Since ElectroniCast conducts annual analysis and forecast updates in each fiber optic related product field, accurate current quantity estimates in each application are part of this corporate database. These quantities are cross-correlated as a "sanity check."

ElectroniCast, each year since 1985, has conducted extensive research and updated their forecasts of each fiber optic component category. As technology and applications have advanced, the number of component subsets covered by the forecasts has expanded impressively.

About ElectroniCast

ElectroniCast, founded in 1981, specializes in forecasting technology and global market trends in fiber optics communication components and devices, as well providing market data on light emitting diodes used in lighting.

As an independent consultancy we offer multi-client and custom market research studies to the world's leading companies based on comprehensive, in- depth analysis of quantitative and qualitative factors. This includes technology forecasting, markets and applications forecasting, strategic planning, competitive analysis, customer-satisfaction surveys and marketing/sales consultation. ElectroniCast, founded as a technology-based independent consulting firm, meets the information needs of the investment community, industry planners and related suppliers.

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Addendum Files

Market Forecast Data Base – Microsoft Excel Spreadsheets:

- Global
- America
- EMEA
- APAC

Data Figures – PowerPoint Slides