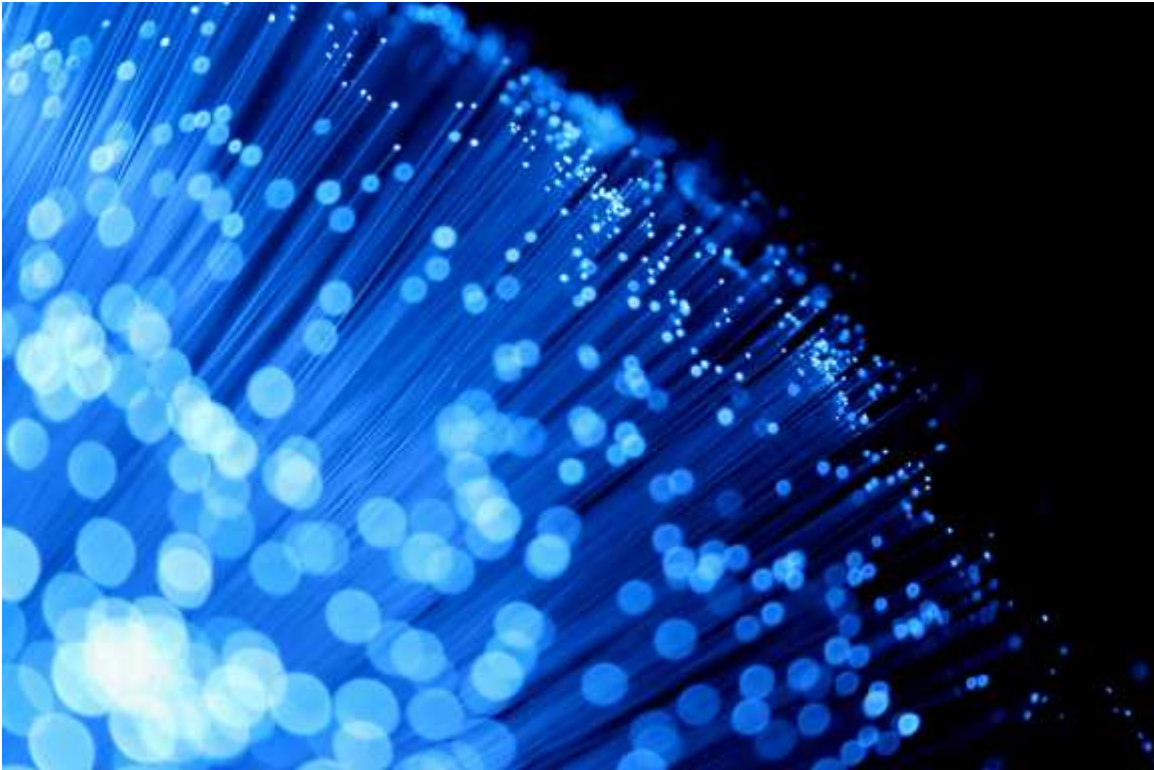
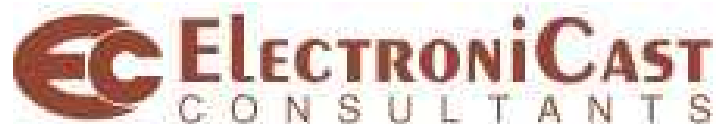


Announcement

**Fiber Optic Sensors
Global Market Forecast & Analysis
2016-2026**



Report Released – May 8, 2017



ElectroniCast Fiber Optic Sensors Global Market Forecast & Analysis 2016-2026

Published: May 8, 2017
Text Pages: 866 pages – PDF
Excel File: Extensive Market Forecast Database (2016-2026)
PowerPoint File: Summary Data Figures
Fee: USD 5,990 Files sent via E-mail
Website: www.electronicastconsultants.com

Report Description

This is the ElectroniCast forecast of global market consumption of Fiber Optic Sensors. The quantitative market forecast data presented in this study report, covering the years 2016-2026, are segmented into the following geographic regions, plus a Global summary:

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

The market forecast data is presented and segmented in two main sections:

- Fiber Optic Point Sensors: Component-Level
- Distributed Continuous Fiber Optic Sensor Systems

ElectroniCast counts each *Point* fiber optic sensors as one unit; however, the volume/quantity (number of units) of *Distributed* fiber optic sensors is based on a complete optical fiber line and associated components, which are defined as a “system”.

Distributed fiber optic sensor systems involve the optic fiber with the sensors embedded with the fiber. ElectroniCast includes the optoelectronic (system board and/or module), connectors, optical fiber, cable (fiber jacket) and the sensor elements in this market forecast data.

Competition Also included in this market forecast and analysis report from ElectroniCast is an extensive list of fiber optic sensor manufacturers and related companies, along with a matrix table classifying the types of sensor technologies of each competitor. Market share estimates for the leading competitors are also provided.

Fiber Optic Point Sensors The ElectroniCast market forecast of the Fiber Optic Point Sensors is segmented by the following end-user applications:

- Manufacturing Process/Factory
- Civil Engineering/Construction (buildings, bridges, tunnels, etc)
- Military/Aerospace/Security
- Test & Measurement used in Telecommunication, CATV, Private/Enterprise
- Biomedical/Science
- Petrochemical/Energy/Utilities/Natural Resources
- Automotive/Vehicle

Sensing/Measuring (Measurand) The ElectroniCast Fiber Optic Point Sensor Forecast further segmented by the following sensing/measuring quantity (measurand) types:

- Mechanical Strain
- Temperature
- Pressure
- Chemical, Gas, Liquid
- Vibration, Acoustic, Seismic
- Displacement, Acceleration, Proximity
- Electric and Magnetic Field - Fiber Optic Sensors
- Rotation (such as Fiber Optic Gyroscopes: FOGs)

Extensive Technology Review This report by ElectroniCast Consultants provides a very detailed review of applicable technologies, including:

- Interferometry
- Intensity
- Polarization
- Fiber Bragg Grating (FBG)
- Raman back-scattering
- Fluorescence
- Brillouin waves
- Doppler Anemometry
- Spectroscopy
- Waveguides/ Specialty Optical Fiber
- Optrode

Distributed Continuous Sensors The market forecast of the Distributed Continuous Sensors is further segmented by application and by technology, as follows:

- Manufacturing Process/Factory
 - Interferometric
 - Raman back-scattering
 - Brillouin waves

- Civil Engineering/Construction (buildings, bridges, tunnels, etc)
 - Interferometric
 - Raman back-scattering
 - Brillouin waves

- Military/Aerospace/Security
 - Interferometric
 - Raman back-scattering
 - Brillouin waves

- Petrochemical/Energy/Utilities/Natural Resources
 - Interferometric
 - Raman back-scattering
 - Brillouin waves

- Biomedical/Science
 - Interferometric
 - Raman back-scattering
 - Brillouin waves

Market Research Methodology Information Base

This study is based on analysis of information obtained continually over 25 years, but updated through the beginning of May 2017. Continuously, ElectroniCast analysts performed interviews with authoritative and representative individuals in the fiber optics industry plus automotive, petrochemical/energy/ utilities, civil engineering/construction, telecommunications, data communication, military/aerospace/security and other (multiple) industries, instrumentation/ laboratory – R&D and factory/manufacturing, from the standpoint of both suppliers and users of fiber optic sensors. The interviews were conducted principally with:

- Engineers, marketing personnel and management at manufacturers of fiber optic sensors, test equipment, biophotonics and medical devices, mechanical splice, connectors, transceivers and receivers, as well as LEDs, laser diodes and photodiodes, and other components used in the fabrication of optoelectronic transceivers, specialty optical fiber, optical fiber/cable and installation apparatus
- Design group leaders, engineers, marketing personnel and market planners at major users and potential users of fiber optic sensor system manufacturers, defense (primary) contractors, weapon system, aircraft and spacecraft electronic equipment producers, optical instrumentation system producers, optic fiber/cable, telecommunication transmission, commercial/industrial, manufacturing switching and distribution equipment producers, data communications equipment producers (switches, hubs, routers), computer and workstation producers, and others. Other industry experts, including those focused on standards activities, trade associations, and investments.

The interviews covered issues of technology, R&D support, pricing, contract size, reliability, documentation, installation/maintenance crafts, standards, supplier competition and other topics. Customers also were interviewed, to obtain their estimates of quantities received and average prices paid, as a crosscheck of vendor estimates. Customer estimates of historical and expected near term future growth of their application are obtained. Their views of use of new technology products were obtained.

The analyst then considered customer expectations of near term growth in their application, plus forecasted economic payback of investment, technology trends and changes in government regulations in each geographical region, to derive estimated growth rates of quantity and price of each product subset in each application. These forecasted growth rates are combined with the estimated

baseline data to obtain the long-range forecasts at the lowest detailed level of each product and application.

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; Product literature
- Company profile and financial information
- Additional information based on previous ElectroniCast market studies
- Personal knowledge of the research team

In analyzing and forecasting the complexities of the total available market for optical interconnect products, 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, then summed to successively higher levels. The background market research focuses on the 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 each application, along with price trends, based on competitive, economic and technology forecast trends, and apply these to derive long term forecasts at the lowest application 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 sensors, transmitters/receivers, test equipment, biophotonic devices, couplers, filters, attenuators, specialty and singlemode/multimode glass fiber and plastic optical fiber and other optical communication components used in a particular application are interrelated. Since ElectroniCast conducts annual analysis and forecast in each component field, accurate current quantity estimates are part of the corporate internal 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.

Director of Study

Stephen Montgomery, MBA in Technology Management, President at ElectroniCast Consultants. He joined ElectroniCast in 1990 and has specialized in photonics and fiber optic components market & technology forecasting at ElectroniCast for over 25-years. He has given numerous presentations and published a number of articles on optical communication markets, technology, applications and installations. He is a member of the Editorial Advisory Board of LIGHTWAVE magazine (PennWell Publishing) and writes a monthly article covering the optical communication industry for OPTCOM Magazine in Japan (Kogyo Tsushin Co., Ltd.).

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One-Fee Policy

All employees of the client company/organization may use this report, worldwide at the consultant service subscription fee shown in the front pages of this announcement.

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Market Forecast Data Base – Excel Spreadsheets:

Fiber Optic Sensor Company / Product Matrix

Market Forecast Data Table

Distribution Fiber Optic Sensor Market Forecast

Global

America

Europe, Middle East, Africa (EMEA)

Asia Pacific (APAC)

Point Fiber Optic Sensors – Global

Point Fiber Optic Sensors – Global

Point Fiber Optic Sensors – Global

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PowerPoint - Market Forecast Data Figures