

# **FIBER OPTIC SOLUTIONS**

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## **FOR AVIONICS & AEROSPACE SYSTEMS**



**Amphenol**  
 *Fiber Systems  
International*

# Avionics Products

Amphenol Fiber Systems International (AFSI) has been an industry leader in providing harsh environment fiber optics for military and aerospace applications since 1993. In addition to our products for the military shipboard and ground systems markets, AFSI also offers an extensive product suite for the military avionics, space and commercial airframe markets. AFSI products have been incorporated in many platforms including the JSF, Global Hawk, Paveway, Predator, B-52, P-8, Orion and ISS. AFSI offers a one-stop shop for fiber optic contacts, connectors, cable assemblies, training, tools and complete systems to support these markets.

## D38999 Connectors

The D38999 circular connector series is designed for harsh environments, particularly those with wide temperature ranges and high mechanical vibration. This electrical connector is adapted for fiber optics by using M29504/4 and /5 termini. These termini fit into any size 16 contact cavity. Precise alignment is critical to fiber optic connectors. The tightly toleranced fiber optic D38999 connectors ensure precise alignment with precision machined polarization keys and keyways which reduce radial misalignment. This precision yields superior optical performance when compared to standard D38999 connectors. Tight tolerance D38999 connectors also have a positive bottoming surface and conductive surface plating, assuring exceptional EMI/RFI performance.



## M29504/4 & 5 Termini

The M29504 /4 & /5 fiber optic termini, the M29K1000 and M29L1000 series, provide superior optical and mechanical performance. Designed to fit into MIL-DTL-38999 Series III, pin size 16 connectors, this low-cost, high-precision terminus family is ideal for harsh environment fiber optic interconnections. Available for single mode and multimode applications these termini conform to the rigorous conditions of the MIL-PRF-29504D specification.



## ARINC 801 Termini

The fully compliant ARINC 801 fiber optic terminus is for aerospace and military applications. It uses a standard 1.25mm ferrule and sleeve and can be terminated with standard LC termination procedures. The terminus can be inserted or removed from the connector with a standard size 16 contact removal tool and is compatible with all existing ARINC801 connectors and competitor's termini.



## Lumière Termini

The Lumière fiber optic terminus is available for commercial airframe, avionics and aerospace applications. AFSI's Lumière termini are a direct replacement in ELIO™ connectors. This fiber optic contact utilizes a 2.5mm diameter field-proven ceramic ST type ferrule which can be inserted into a size 16 cavity. The terminus is hermaphroditic allowing the use of the same contact on the receptacle or plug. In addition, the contact is available in both multimode and single mode versions and an anti-rotation feature allows PC, UPC and APC polishes.



*Elio is a registered trademark of Sourian.*

# Avionics Products

## Space ST Connectors



The Space ST connector and strain relief boot are compliant to NASA EEE-INST-00 material guidelines for space applications. AFSI's Space ST connectors were tested to ASTM E595 to evaluate the boot's outgassing properties and are available for all of the popular fiber sizes. The Space ST is a M83522 style variant which features a higher spring force than commercial ST connectors allowing it to meet the shock and vibration requirements of MIL-C-83522. Stainless steel construction provides excellent mechanical strength and superior corrosion resistance. A companion adapter is available to support bulkhead applications.

## Quadrax Cavity Reducers



AFSI offers an adapter or cavity reducer which converts a size 8 quadrax cavity to a size which supports an ARINC 801 fiber optic termini. This device allows the user to effortlessly convert electrical quadrax contacts in rack and panel connectors (such as ARINC 404 and 600) to fiber optics without major redesign. The replacement of quadrax with optics provides higher data rates over longer distances, eliminates EMI/RFI and enhances security. The AFSI Quadrax Fiber Adapter supports any ARINC 801 termini including single or multimode and PC or APC polish. The adapter uses standard quadrax tools for extraction and insertion.

## MIL-PRF-64266 Style (NGCON) Connectors



MIL-PRF-64266 style (NGCON) compliant fiber optic connectors are designed and manufactured using proven technology and features from existing connector standards of D38999 and M28876. These innovative connectors include genderless contacts and high-density packaging. This connector family includes innovations such as rear-release genderless contacts, wide temperature range and high-density packaging. AFSI also offers the companion M29504/18, /19 and /20 style termini for this connector suite.

## Optron Connectors



The Optron line of circular, hybrid (fiber optic/electrical) connectors uses proven M28876 technology. The high-precision engineered polymer insert provides optical performance superior to that of other hybrid connectors, particularly in high channel configurations. Using widely available M29504/14 & 15 fiber optic termini, the Optron connector supports between 4 and 31 fiber optic and/or electrical contacts in any combination. For power applications, AFSI can provide inserts to support copper contacts up to size 10AWG.

## ARINC 801 Connectors



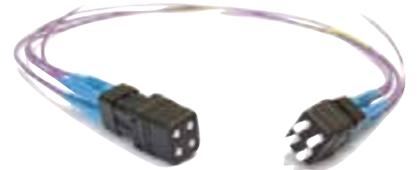
AFSI offers ARINC 801 cylindrical fiber optic connectors. Based on the commercial ARINC 801 specification, this series features a removable insert for termini end face cleaning, guide pins for precision alignment and a scoop proof shell design. It is available in standard D38999 plug and wall mount shells. Inserts are available to support 2 to 32 termini.

# Fiber Optic Cable Assemblies

In addition to fiber optic termini and connectors, AFSI manufactures fiber cable assemblies and harnesses for the avionics and airframe markets. AFSI has produced cable assemblies incorporating all the popular mil-aero connectors such as D38999, ARINC 801/404/600, MIL-PRF-64266 style and others.

For the most demanding applications, AFSI specializes in manufacturing custom cable assemblies with quality components and industry leading workmanship. AFSI is able to assist in designing and producing custom cable assemblies from a set of requirements or building to a customer print. Our highly skilled technicians are trained to a wide variety of industry standard procedures critical to manufacturing harsh environment fiber optic cable assemblies. All AFSI cable assemblies are manufactured by expert technicians in our state-of-the-art, AS9100 certified facility.

We are proud to serve virtually every major defense company in the United States. In addition, the U.S. Army, U.S. Navy, U.S. Air Force, many international defense companies and international militaries are valued AFSI customers.



## Additional connectors that are frequently used in our fiber optic cable assemblies:



RNJOP Connectors



404 and 600 Connectors



MFM Connectors



Cylindrical MT Connectors



EPX Connectors



ARINC 801 Connectors



EN-4165 Connectors

# Value-Added Services



Typically, military or industrial application-specific fiber optic systems are complex, conforming to stringent dimensional and optical standards. For new or existing projects, Amphenol Fiber Systems International (AFSI) provides engineering assistance and value-added services for the most challenging fiber optic interconnect and system requirements.



Whether the application calls for a high-precision fiber optic interconnect or a junction box design, AFSI's engineers and technicians are capable of developing the fiber optic system solution to meet your particular needs.

When it comes to the manufacturing of the system, AFSI can build it to a customer print or design a system from a set of requirements. AFSI's team of trained fiber optic professionals is knowledgeable and adept at specifying, qualifying, testing and assembling a wide variety of components such as splitters, optical switches, transceivers and wavelength division multiplexers. Also, AFSI personnel are proficient at fusion splicing, stripping exotic jacket materials, precision tolerances and fiber winding. All manufacturing is performed in our AS9100, ISO 9001:2008 and MIL-STD-790 certified facility, ensuring the highest levels of workmanship and performance available.



## About AFSI

Amphenol Fiber Systems International (AFSI) designs, manufactures, markets and supports rugged, reliable and innovative fiber optic interconnect solutions that withstand the harsh environments of military, avionics, oil & gas, mining and broadcast applications. With more than a decade of experience, AFSI has emerged as a global leader in fiber optic interconnect components and systems, including termini, M28876, MIL-ST, TFOCA and the AFSI designed and patented TFOCA-II® connector. Today, millions of AFSI fiber optic connectors are in use in more than 34 countries. When there is a need for superior, cost-effective fiber optic systems and products capable of withstanding demanding operating environments, you can rely on AFSI for superior engineering, top-quality products and expert technical support. For more information about AFSI, visit [www.fibersystems.com](http://www.fibersystems.com).



## About Amphenol

Amphenol Corporation is one of the world's leading producers of electronic and fiber optic connectors, cable and interconnect systems. Amphenol products are engineered and manufactured in the Americas, Europe and Asia and sold by a worldwide sales and marketing organization. The primary end markets for the company's products are communication systems for the converging technologies of voice, video and data communications, industrial, automotive, military and aerospace applications. For more information about Amphenol, visit [www.amphenol.com](http://www.amphenol.com).



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