Airborne Optical Cable Applications



Overview

Choosing the Right Optical Cable for Military and By working with experienced manufacturers and understanding your application's exact needs, you can selec.

Key Takeaways

Airborne optical cables are primarily used in aerospace, defense, and space systems to provide high-speed, reliable, and EMI-immune data transmission under extreme environmental conditions.

Key Applications

Aerospace Systems: Airborne optical cables are widely used in aircraft for avionics, cockpit systems, and flight control networks. They support high-speed communication between sensors, controllers, and displays, ensuring real-time data exchange critical for safe and efficient operations. Fiber optic cables are also used in UAVs for surveillance, weapons systems, and internal communication, as well as in fiber optic gyroscopes for navigation.

Space and Satellite Systems: These cables are essential in satellites, including low Earth orbit (LEO) constellations like Starlink, geosynchronous satellites, and deep-space missions such as NASA's Voyager probes. They provide radiation-hardened, vibration-resistant, and outgassing-compliant connections for reliable long-term operation in space. Defense and Military Applications: Airborne optical cables are deployed in military aircraft, missiles, torpedoes, and field communication systems.

© 2026 EXF OPTICAL NETWORKS - All rights reserved

They enable secure, high-bandwidth links for encryption systems, radar, and antenna networks. Hybrid cables that carry both power and optical signals are often used in airborne and naval environments for rapid deployment and operational flexibility. Marine and Submarine Systems: Fiber optic cables are used in ships and submarines for internal communication, radar, and data routing.

They are designed to withstand harsh marine conditions, including corrosion, high pressure, and mechanical stress.

Advantages of Airborne Optical Cables

High Data Rates: Airborne optical cables, such as AirBorn FOCuS Active Optical Cables, support up to 14Gbps per lane, with multi-lane configurations reaching 50Gbps aggregate bandwidth.

EM

I Immunity: Optical signals are immune to electromagnetic interference, making them ideal for high-density avionics and defense systems. Weight and Space Savings: These cables are lighter and smaller in diameter than traditional copper cables, reducing aircraft and spacecraft payload weight. Ruggedized and Reliable: Designed to withstand vibration, temperature extremes, radiation, and mechanical stress, ensuring long-term durability in harsh environments.

Ease of Installation: Factory-terminated and environmentally sealed, they simplify installation and maintenance compared to traditional fiber, which requires field termination and cleaning.

Specialized Features

Airborne optical cables often integrate optical transceivers directly into the connector housing, allowing seamless conversion of electrical signals to optical signals. They are compatible with both copper and fiber systems without pinout adjustments, providing flexibility for complex aerospace and defense designs. Compliance with standards such as ARINC and MIL-STD ensures interoperability, safety, and reliability across critical systems.

In summary, airborne optical cables are indispensable in modern aerospace, defense, and space applications, offering high-speed, secure, and reliable data transmission while meeting the stringent environmental and operational demands of these industries.

© 2026 EXF OPTICAL NETWORKS - All rights reserved

Article Content

Choosing the Right Optical Cable for Military and

By working with experienced manufacturers and understanding your application''s exact needs, you can select fiber optic solutions that don''t just

AirBorn FOCuS Rugged Active Optical Cables | Molex

Launch-ready and vibration-resistant, these cables are ideal for space and defense applications. Cable data rates enable up to 14Gbps per lane to meet high-speed

AirBorn FOCuS Rugged Active Optical Cables

Optimized for mission-critical reliability and flexibility, AirBorn Fiber Optic Copper Solution (FOCuS) Active Optical Cables are expertly engineered for aerospace, defense and space environments,

Airborne optical imaging technology: a road map in CIOMP

This article reviews the development trajectory of CIOMP research on airborne optical imaging issues from the dimensions of historical and technological development, with the main

Fiber Optic Cables for Aerospace, Defense Air & Land

GORE Fiber Optic Cables prove trustworthy in numerous defense aircraft, military land vehicles and commercial aircraft applications. We offer single-mode and

Fiber Optic Connectors, Termini, Cable Assemblies,

Military QPL and MCOTS Fiber optic interconnect technologies (MIL-DTL-38999 Type, MIL-DTL-83526 GFOCA Type, MIL-PRF-28876, ARINC 801 and more)

MILITARY SOLUTIONS

The result was military fiber optic cables that were easy to deploy and performed under the harshest of conditions. The strength of our military-grade cable solutions was the foundation and inspiration for

Fiber Optic Systems in Aerospace Applications

Discover how FSI''s fiber optic systems enhance high-speed data transmission in the aerospace industry, ensuring reliable and efficient communication across complex avionics and flight control systems.

Introduction to Air Blown Optical Cable

Air Blown Optical Cable offers a revolutionary approach to optical fiber installation, providing numerous advantages over traditional cables. In this

© 2026 EXF OPTICAL NETWORKS - All rights reserved

Military & Aerospace

Whether you''re deploying RF cable for airborne communications or rugged fiber for ISR systems, engineers rely on Amphenol Custom Cable to meet MIL-STD requirements, reduce downtime, and

Connected in the Heat of Battle

Revolutionary Data Communications for Mil/Aero Applications AirBorn is excited to introduce the latest disruptive technology to hit the Mil/Aero market in a generation. Our FOCuS® active optical cable

Rugged Active Optical Cables: A Viable Alternative to

Rugged copper cable assemblies like this one, which features AirBorn''s rugged, high-density, and high-speed verSI Series connectors, are

Exploring Aerospace Fiber Cables and Their Applications

Critical Aspects of Radiation-Hardened Fiber for Military and Aerospace Applications We Can Help with Your Aerospace Fiber Cables Selection We''ve got you covered for aerospace applications, including

Alternative to Aviation Cables: The Promising Future of Fiber Optics in ...

Alternative to Aviation Cables: The Promising Future of Fiber Optics in Aircraft Applications Introduction As the aviation industry strives to reduce weight, enhance data transmission speeds, and improve

Active Optical Connectors & Cables

The FOCuS Active Optical Cable product line is designed to meet the requirements for high-speed/signal integrity applications while delivering the quality and reliability customers have come to

Tactical Fiber Optical Cabling

MPS offers ruggedized optical interconnect solutions for these most demanding environments. MPS can provide high density Military ruggedized cable assemblies for shipboard, mobile, airborne and field

Molex Completes AirBorn Acquisition to Expand Offering of Industry ...

Molex completes AirBorn acquisition, driving expansion into aerospace and defense, space exploration, commercial air and other industry sectors.

Molex Completes AirBorn Acquisition to Expand

Molex, a global electronics leader and connectivity innovator, has completed its acquisition of AirBorn, a global manufacturer of rugged and highly

© 2026 EXF OPTICAL NETWORKS - All rights reserved

Related Video Reference

This video was associated with the source search result. Verify technical details against current product documentation and project requirements.

Contact Us

Continue your research online:

Website: https://explosivefunctions.co.za
Technical inquiry: https://explosivefunctions.co.za/contact.html
EU project coordination: Parque das Nações, Lisbon, Portugal

This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

© 2026 EXF OPTICAL NETWORKS - All rights reserved