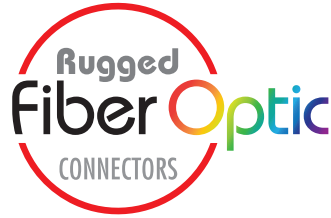


# BENEFITS OF FIBER OPTIC INTERCONNECT SYSTEMS



Five key benefits of fiber optic datalinks in mission-critical land, sea, air, and space applications

FIBER OPTIC BENEFITS

Fiber optic datalinks can transmit the equivalent of 24,000 telephone calls simultaneously through media thinner than a human hair—and do so over longer distances than would ever be possible with even the most high-speed copper media and datalink protocol. But the advantages of fiber optics extend far beyond this mind-boggling data transmission rate to include:



## 1 Reduced Size and Weight



Compared to copper, optical fiber is relatively small in size and light in weight—a major advantage in interconnect systems servicing airborne avionics, sensors, radar, fly-by-light flight controls, and other applications. Optical fiber is easier to install—especially in retrofit programs—since smaller cable diameters fit comfortably within the footprint or layout of existing electrical conduits and harnesses.

This reduction in media size makes it possible to run multiple backup cables for critical electronic systems or devices. The ability to provide complete redundancy for all critical cabling is a major factor driving the use of fiber optics in mission-critical applications.

## 2 EMI Immunity

Optical fiber is frequently applied in high-reliability applications due to its electromagnetic immunity. Since fiber optic media uses light to transmit signals, it is not subject to electromagnetic interference, radio frequency interference, ESD or voltage surges, and so provides greater transmission reliability—particularly in military / aerospace applications that absolutely depend on error-free data transmission.



## Compared to electrical interconnect datalinks

### 3 Unsurpassed Bandwidth Over Long Distances

Fiber can transmit a mind-boggling quantity of data with extremely good transmission quality over long distances: Up to 150 times the data carrying capacity of bulkier copper cable. And since most high-speed data protocols transmit digitally, optical media reduces translation errors and bottlenecks—particularly over longer cable-run distances such as those found in Navy ships and ground-based shelter and vehicle applications.



### 4 Spark/Arc Immunity



The total electrical isolation of fiber also makes it a safer, spark-free media for use in hazardous environments, such as aircraft fuel cells or other applications where volatile gasses might be present. As only light, not electricity, is being transmitted, there is no risk of a spark or short-circuit from a damaged cable. For this same reason there is no shock hazard or risk to users performing routine maintenance to interconnect cabling. As a result, fiber optic media is routinely specified for use in Class I, Division I (Ex) environments such as are found on Navy ships, commercial tankers and other enclosed environments where the risk of a spark/arc event is considered a severe safety hazard.

### 5 Enhanced Security

Light pulses, unlike electrical signals, are almost impossible to intercept or monitor. Fiber optic media therefore enjoys total immunity from wiretapping. This characteristic is particularly valuable to military services, banks, and operators of secure networks. In addition to enhanced transmission security, photonic fiber media itself is invisible to metal or electromagnetic flux detection equipment.



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