

Custom Board Solutions

Ultra-Compact Gigabit Copper-to-Fiber Media Converters

High-Performance Embedded Optical Connectivity for Space-Constrained Environments

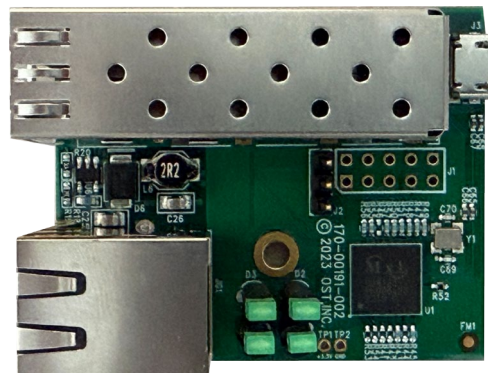
The USB-powered Gigabit copper-to-fiber media converter is the definitive solution for embedded systems demanding miniature form factors and robust fiber connectivity. Engineered for seamless integration, these converters inject directly into computing devices, unmanned systems, robotics, and industrial machinery where conventional standalone hardware is too bulky, heavy, or power-hungry.

By leveraging fiber's native immunity to Electromagnetic Interference (EMI) and Radio-Frequency Interference (RFI), this embedded solution ensures flawless data integrity across long-distance links and electrically noisy environments.

Optimized for Rugged, Embedded Solutions

To meet the stringent demands of mission-critical systems, these miniature converters emphasize:

- **Advanced Architecture:** PCB-mounted construction utilizing ultra-low-profile surface-mount components.
- **Environmental Resilience:** Extended operating temperatures, high shock/vibration resistance, and optional conformal coating.
- **Streamlined Design:** Minimal connector counts and Bi-Directional (BiDi) single-fiber links to maximize efficiency and save physical space.



KEY FEATURES

- **USB-Powered Efficiency:**
Eliminates heavy, bulky external power supplies.
- **Gigabit Copper-to-Fiber Conversion:**
Delivers lightning-fast throughput with zero latency.
- **EMI/RFI Immunity:**
Perfect for high-voltage or signal-congested environments.
- **SWaP-Optimized:**
Engineered specifically to meet strict Size, Weight, and Power constraints
- **Made in the USA**
- **TAA, BAA and NDAA Compliant**

Featured Use Case:

Fiber-Tethered Unmanned Aerial Systems (UAS)

Wireless radio links are vulnerable to jamming, interception, and RF interference. Emerging defense and industrial drone applications are shifting to fiber-tethered UAS architecture, where a drone maintains a physical, ultra-thin optical fiber connection to its Ground Control Station (GCS).

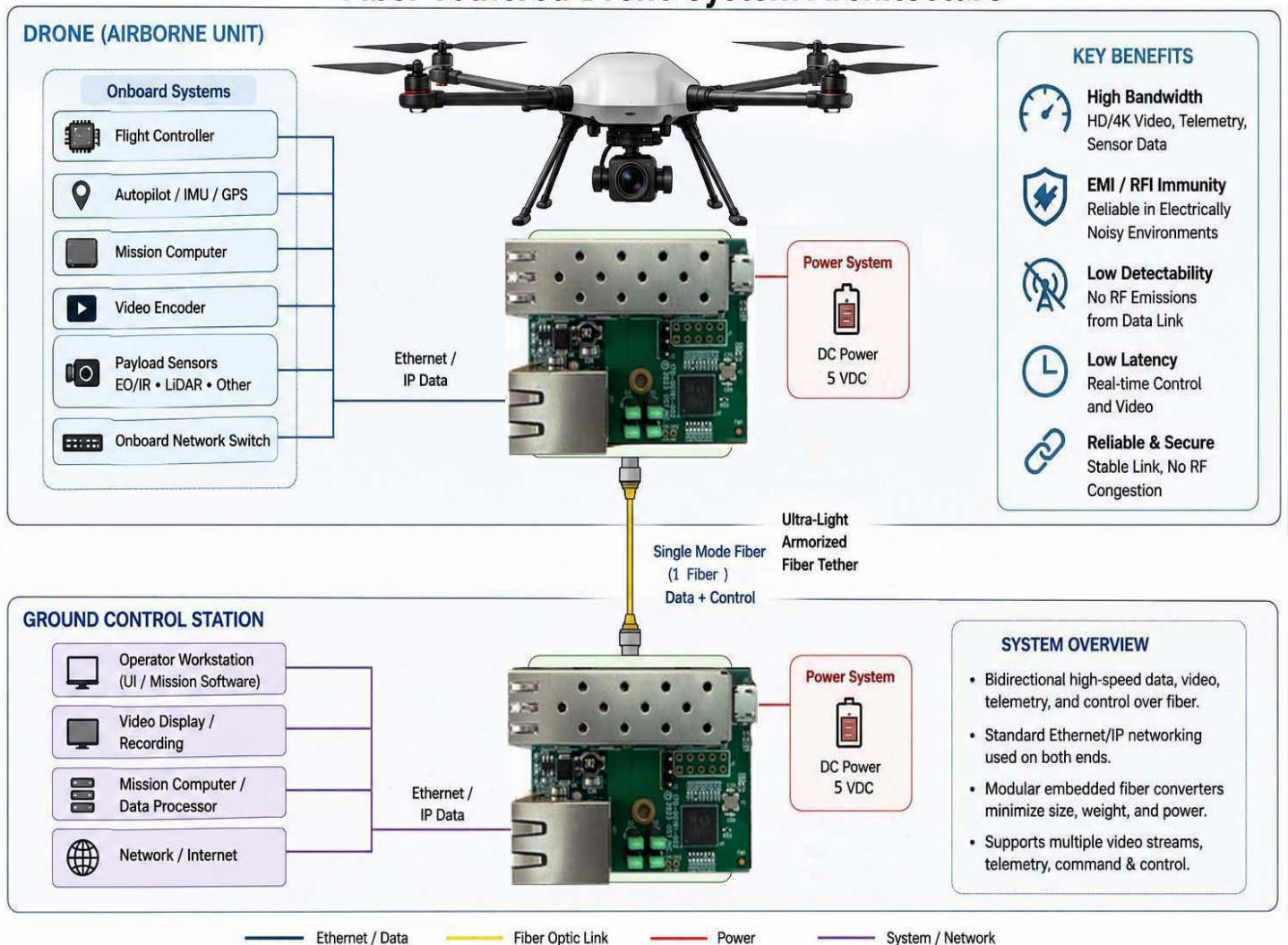
- The Setup: A miniature embedded media converter is integrated directly into both the drone's chassis and the GCS.

- The Benefit: Forms a secure, lightweight, and un-jammable optical interface that supports real-time flight commands, critical telemetry, and uncompressed high-resolution sensor/video data feeds.

Beyond drones, this exact embedded optical networking approach delivers high-performance connectivity across aerospace, defense, robotics, and industrial automation.

The diagram shows a typical fiber tethered drone application with an embedded converter installed.

Fiber Tethered Drone System Architecture



SPECIFICATIONS

Standard Compliances	IEEE 802.3	
Regulatory Compliances*	Safety: UL, cUL, CE, UKCA EMI: FCC 15 Class B ACT: TAA, BAA, NDAA	
Environmental	RoHS, WEEE, REACH	
Frame Size	Up to 9K bytes	
Port Types	Copper: 10/100/1000BASE-T (RJ-45) Fiber: 1000BASE-BX (SC Single-Fiber, SFP)	
Cable Types	Copper: EIA/TIA 568A/B, Cat 5 UTP and higher Fiber: Single-mode: 9/125µm	
DC Power Requirements	+3VDC to +5.5VDC; 0.742 @ 5VDC USB micro-B connector	
Dimensions W x D x H	1.72" x 2.25" x 0.65" (43.7 mm x 57.2 mm x 16.5 mm)	
Weight	0.756 oz. (21.43 grams)	
Temperature	Commercial: 0 to 50°C Wide: -40 to 60°C Extended: -40 to 75°C Storage: -50 to 80°C	
Humidity	5 to 95% (non-condensing)	
Altitude	-100m to 4,000m	
MTBF (hrs)	1,300,000	
Warranty	Lifetime warranty with 24/7/365 free Technical Support	

*Product certified with Metal case

ORDERING INFORMATION

Fiber Type	Connector Type		Tx / Rx Lambda (nm)
	SC	SFP	
SM/SF	1630-1-CBS-6t	-	1310 / 1550
SM/SF	1631-1-CBS-6t	-	1550 / 1310
-	-	1639-0-CBS-6t	
SM = Single-mode, SF = Single-fiber Contact Omnitrion for any product customizations Order the appropriate SFPs separately. Visit the Omnitrion Optical Transceivers web page.			
Temperature (t)			
<leave blank> = Commercial temperature (0 to 50°C)			
W = Wide temperature (-40 to 60°C)			
Z = Extended temperature (-40 to 75°C)			

