The need for reduced weight and small form-factor components, particularly in airframe and other high-performance environments, has led Glenair to develop a revolutionary new opto-electronic product series that incorporates transmitter and receiver functions, fiber-to-copper media conversion, and signal aggregation directly into interconnect wiring systems. These harsh-environment interconnect technologies reduce size and weight, and improve the performance of Ethernet, Video and High-Speed Digital applications—by leveraging the strengths of both electrical and optical media. Glenair offers both standard catalog solutions, as well as the integration of electronics or opto-electronics into rugged custom packages and cable assemblies per customer and application requirements.
SMALL FORM-FACTOR • HARSH-ENVIRONMENT

Opto-Electronic Interconnect Solutions for Ethernet, Video, High-Speed Data, and Signal Aggregation

Digital Opto-Electronic Transceivers, Transmitters and Receivers

Size #8 Cavity Opto-Electronic Transmitter and Receiver Contacts
1.25 mm ARINC 801, 2.5 mm ELIO®, and 1.25 mm LuxCis® integrated solutions

Board-Mount Transceivers, Transmitters and Receivers
Surface-mount opto-electronic interconnect/board assemblies for rugged vibration and shock applications

Opto-Electronic Connectors and Modules
Series 80 Mighty Mouse and MIL-DTL-38999 type connectors and accessories with integrated transmitters and receivers

Copper-to-Fiber Media Converters

Ethernet Media Converters
Electrical/fiber optic Ethernet Media Converters

Video Media Converters
Electrical/fiber optic Video Media Converters

Signal Aggregator Systems
Multiple signal type aggregation to high datarate fiber optics

Ethernet Switches

Ethernet Switches
5- and 7-Port Unmanaged Ethernet Switches and breakout cables
Unlock the huge bandwidth of optical fiber and dramatically reduce the size and weight of interconnect systems

Glenair leverages its extensive portfolio of military and aerospace interconnect products to bring you ruggedized opto-electronic solutions, converting signals between the electrical domain and the fiber domain. These opto-electronic products are designed for harsh military/aerospace system and subsystem environments and will operate reliably over very wide temperature ranges and high shock and vibration conditions; they have been optimized to minimize size, weight and power and offer electrical-to-fiber conversion for Ethernet, video, signal aggregation and high-speed digital signals.

Glenair also offers integration of electronics or opto-electronics into rugged connector packages and cable assemblies per specific customer requirements. We offer rapid response in-house electrical/PCB design, and mechanical connector/backshell engineering from our vertically integrated factory. Our product portfolio is constantly evolving. Please contact Glenair for the latest developments, or custom solutions.

ADVANTAGES OF GLENAIR OPTO-ELECTRONICS

- Reduced size, weight, and power consumption
- Leverages the virtues of fiber optics: EMI immunity, network security, increased transmission distance
- Advanced management and control features
- High shock and vibration to support mil/aero applications
- Wide operating temperature range: -40°C to +85°C and beyond
- Designed IAW military and aviation requirements: MIL-STD-883, MIL-STD-461, DO-160 and others
SERIES 050 OVERVIEW
Harsh-Environment, Small Form-Factor Opto-Electronic Interconnect Solutions

PROVEN-PERFORMANCE OPTO-ELECTRONIC INTERCONNECT SOLUTIONS
- Military, industry-standard and custom connector integration
- Custom aggregation media converters
- Integration of active components into cable assemblies
- Link testing and qualification

Laboratory link test and qualification data for harsh-environment opto-electronic solutions are available—just contact the factory.

SMPTE 3G – SDI at -40°C
Pathological Case 3

SMPTE 3G – SDI at +90°C
Pathological Case 3

10Gbps at -65°C

10Gbps at +100°C
Size 8 Cavity Opto-electronic contacts transmit and receive differential CML or LVPECL electrical signals over Multimode fiber optic cable. Transmitters consist of a laser driver or LED driver with a temperature compensation circuit to maintain optical power over the entire operating temperature range, and a 850nm VCSEL laser or a 1300nm LED. Receivers consist of a PIN Photo Detector, a Transimpedance Amplifier with automatic gain control circuit, and a Limiting Amplifier. Differential output data signals are LVPECL or CML compatible. The transmitter has a Tx Disable pin to turn off transmitter output.

- Transmit (Tx) and Receive (Rx) Opto-electronic contacts for use in ARINC 600 and other size #8 cavity equipped connectors
- Current offerings include 1.25mm ARINC 801 and 2.5mm ELIO® solutions
- Fast and Gigabit Ethernet, DVI, HDMI video capable transmitter and receiver-equipped contacts
- ARINC 664, 801, 803, 804 and 818 standard compliant
- Link distances up to 550 meters, multimode
- Single, 3.3 V power supply
- Wave-solderable termination with RoHS-compliant solders

Evaluation Test Boards Available

4.25 Gbps / +25°C
Size 8 Cavity Opto-Electronic Transmitter and Receiver Contacts for Ethernet, Video and High-Speed Data

**PRODUCT SELECTION GUIDE**

visit glenair.com for detailed product datasheets

---

**TRANSMITTER AND RECEIVER CONTACTS, 850nm LASER, ARINC 801 1.25mm TERMINUS**

Size 8 Cavity Opto-electronic contacts transmit and receive differential CML electrical signals over Multimode fiber optic cable. Transmitters consist of a laser driver with a temperature compensation circuit to maintain optical power over the entire operating temperature range, and a 850nm VCSEL laser. Receivers consist of an 850nm PIN Photo Detector, a Transimpedance Amplifier with automatic gain control circuit, and a Limiting Amplifier. Differential output data signals are CML compatible. The transmitter has a Tx Disable pin to turn off transmitter output and a Tx Fault pin to signal a fault condition. Receiver includes a CMOS compatible Loss of Signal Indicator to prevent invalid data.

**TRANSMITTER AND RECEIVER CONTACTS, 850nm LASER, ELIO® 2.5mm TERMINUS**

Size 8 Cavity Opto-electronic contacts transmit and receive differential CML electrical signals over Multimode fiber optic cable. Transmitters consist of a laser driver with a temperature compensation circuit to maintain optical power over the entire operating temperature range, and an 850nm VCSEL laser. Receivers consist of an 850nm PIN Photo Detector, a Transimpedance Amplifier with automatic gain control circuit, and a Limiting Amplifier. Differential output data signals are CML compatible. The transmitter has a Tx Disable pin to turn off transmitter output and a Tx Fault pin to signal a fault condition. Receiver includes a CMOS compatible Loss of Signal Indicator to prevent invalid data.

**TRANSMITTER AND RECEIVER CONTACTS, 1300 nm LED, ARINC 801 1.25mm TERMINUS**

Size 8 Cavity Opto-electronic contacts transmit and receive differential LVPECL electrical signals over Multimode fiber optic cable. Transmitters consist of an LED driver with a temperature compensation circuit to maintain optical power over the entire operating temperature range, and a 1300nm LED. Receivers consist of a PIN Photo Detector, a Transimpedance Amplifier with automatic gain control circuit, and a Limiting Amplifier. Differential output data signals are LVPECL. The transmitter has a Tx Disable pin to turn off transmitter output.

**OPTO-ELECTRONIC CONTACT EVALUATION BOARD**

The evaluation board is designed as an interface to allow evaluation of the size 8 transmitters or receivers. Devices are powered through the 3.3V and GND connections. For the transmitter fault pin can be monitored and the transmitter disable can be controlled via an external voltage supply. For the receiver, loss of signal (LOS) state can be monitored.

Test configuration options:
- Transmitter only
- Receiver only, and
- Both transmitter and receiver either in a single link or two separate links.

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HIGH-SHOCK, HIGH-VIBRATION

PCB-Mount Opto-Electronics

Connectorized, high-density, board-mount transceivers built for rugged vibration and shock applications up to 10Gbps

Glenair PCB mount transceivers are ruggedized harsh-environment equivalents to SFP transceivers but with mechanical design suited to the harsh temperature and vibration environments found in Military and Aerospace applications. PCB mount optical transceivers support optional Digital Monitoring Interface (DMI) features in accordance with SFF 8472. The Transceiver is comprised of a transmitter section and a receiver section that reside on a common package and interface with a host board through a high-speed electrical connector.

- Smallest footprint available
- Passed jet fighter and space launch shock and vibration testing
- No soldering required
- CML 100 Ohm differential input and output
- -40°C to +85°C operating temperature range—extended temperature ranges available

| GC fiber optic connector retained with mounting screws to withstand high vibration and shock | PCB-mount opto-electronics feature Samtec high-speed surface-mount connectors | Dual-transceiver, Quad-Transmitter and Quad-Receiver form factor with ARINC 801 contacts | Evaluation boards for all PCB mount transceiver configurations are available |
Harsh-Environment PCB-Mount Transceivers, Transmitters and Receivers

## PRODUCT SELECTION GUIDE

Visit glenair.com for detailed product datasheets

### General Purpose Applications:
High-Speed Digital balanced signals (i.e. 48/5B, 88/10B, 628/64B etc)
Fast Ethernet, Gigabit Ethernet, 10G Ethernet Fiber Channel (1X, 2X, 4X, 8X), ARINC 818, AFDX, SFPDP, Serial Rapid I/O (sRIO)

### Video Applications
DVI, ARINC 818, SMPTE (SDI, HD-SDI, 3G-SDI)

### Evaluation Boards

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Data Rate (Gbps)</th>
<th>Wavelength (nm)</th>
<th>Laser Type</th>
<th>Number of Transmitters</th>
<th>Number of Receivers</th>
<th>Fiber Type</th>
<th>General Purpose</th>
<th>Video</th>
<th>SMPTE/HD-SDI</th>
<th>Video SMPTE/HD-SDI</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>050-315</td>
<td>PCB Mount OE Transceiver 5G, MMF</td>
<td>0.1–5</td>
<td>850</td>
<td>VCSEL</td>
<td>1 1 2</td>
<td>MMF</td>
<td>Y</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>1m-500m</td>
</tr>
<tr>
<td>050-316</td>
<td>PCB Mount OE Dual-Transmitter 5G, MMF</td>
<td>0.1–5</td>
<td>850</td>
<td>VCSEL</td>
<td>2 0 2</td>
<td>MMF</td>
<td>Y</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>1m-500m</td>
</tr>
<tr>
<td>050-317</td>
<td>PCB Mount OE Dual-Receiver 5G, MMF</td>
<td>0.1–5</td>
<td>850</td>
<td>N/A</td>
<td>0 2 2</td>
<td>MMF</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td></td>
<td></td>
<td>1m-500m</td>
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<tr>
<td>050-318</td>
<td>PCB Mount OE Transceiver, 4G, SMF</td>
<td>0.1–4.25</td>
<td>1310</td>
<td>FP</td>
<td>1 1 2</td>
<td>SMF</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
<td>1m-2km</td>
</tr>
<tr>
<td>050-319</td>
<td>PCB Mount OE Dual Transmitter, 1310nm FP, 4G, SMF</td>
<td>0.1–4.25</td>
<td>1310</td>
<td>FP</td>
<td>2 0 2</td>
<td>SMF</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
<td>1m-10km</td>
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<tr>
<td>050-320</td>
<td>PCB Mount OE Dual Receiver, 1310nm, 4G, SMF</td>
<td>0.1–4.25</td>
<td>1310</td>
<td>N/A</td>
<td>0 2 2</td>
<td>SMF</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td></td>
<td></td>
<td>1m-10km</td>
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<tr>
<td>050-321</td>
<td>PCB Mount OE Transceiver, 1300nm LED, 200M, MMF</td>
<td>0.05–2</td>
<td>1300</td>
<td>LED</td>
<td>1 1 2</td>
<td>MMF</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
<td>2km</td>
</tr>
<tr>
<td>050-322</td>
<td>PCB mount 10Gbps XVR, 1310nm FP, 2km, SMF</td>
<td>5–10.5</td>
<td>1310</td>
<td>FP</td>
<td>1 1 2</td>
<td>SMF</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
<td>1m-2km</td>
</tr>
<tr>
<td>050-324</td>
<td>PCB Mount OE Transceiver, 1310nm DFB, 4G, SMF</td>
<td>0.1–4.25</td>
<td>1310</td>
<td>DFB</td>
<td>1 1 2</td>
<td>SMF</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
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<td>1m-40km</td>
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<tr>
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<td>PCB Mount OE Dual Transmitter, 1310nm DFB, 4G, SMF</td>
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<td>DFB</td>
<td>2 0 2</td>
<td>SMF</td>
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<td></td>
<td></td>
<td>1m-40km</td>
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<tr>
<td>050-326</td>
<td>PCB Mount OE Dual Receiver, 1310nm DFB, 4G, SMF</td>
<td>0.1–4.25</td>
<td>1310</td>
<td>N/A</td>
<td>0 2 2</td>
<td>SMF</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td></td>
<td></td>
<td>1m-40km</td>
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<tr>
<td>050-327</td>
<td>PCB mount 10Gbps SR Serial XVR, 850nm, MMF</td>
<td>5–10.5</td>
<td>850</td>
<td>VCSEL</td>
<td>1 1 2</td>
<td>MMF</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
<td>1m-400m</td>
</tr>
<tr>
<td>050-328</td>
<td>PCB mount 10Gbps XVR, 1310nm DFB, 10km</td>
<td>5–10.5</td>
<td>1310</td>
<td>DFB</td>
<td>1 1 2</td>
<td>SMF</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
<td>1m-10km</td>
</tr>
<tr>
<td>050-331</td>
<td>PCB Mount OE Dual-Transmitter SMPTE 3G-SDI</td>
<td>2.97</td>
<td>850</td>
<td>VCSEL</td>
<td>2 0 2</td>
<td>MMF</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td></td>
<td></td>
<td>1m-1km</td>
</tr>
<tr>
<td>050-332</td>
<td>PCB Mount OE Dual-Receiver SMPTE 3G-SDI</td>
<td>2.97</td>
<td>850</td>
<td>N/A</td>
<td>0 2 2</td>
<td>MMF</td>
<td>N</td>
<td>N</td>
<td>Y</td>
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<td></td>
<td>1m-1km</td>
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<tr>
<td>050-333</td>
<td>PCB Mount OE Dual-Transceiver 5G MMF, ARINC 801</td>
<td>0.1–5</td>
<td>850</td>
<td>VCSEL</td>
<td>2 2 4</td>
<td>MMF</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
<td>1m-500m</td>
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<tr>
<td>050-336</td>
<td>PCB Mount OE Quad-Transmitter 5G MMF, ARINC 801</td>
<td>0.1–5</td>
<td>850</td>
<td>VCSEL</td>
<td>4 0 4</td>
<td>MMF</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td></td>
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<td>1m-500m</td>
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<tr>
<td>050-337</td>
<td>PCB Mount OE Quad-Receiver 5G MMF, ARINC 801</td>
<td>0.1–5</td>
<td>850</td>
<td>N/A</td>
<td>0 4 4</td>
<td>MMF</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td></td>
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<td>1m-500m</td>
</tr>
<tr>
<td>050-339</td>
<td>PCB Mount OE Dual-Transceiver, 10G MMF, ARINC 801</td>
<td>0.1–5</td>
<td>850</td>
<td>VCSEL</td>
<td>2 2 4</td>
<td>MMF</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td></td>
<td></td>
<td>1m-400m</td>
</tr>
<tr>
<td>050-340</td>
<td>SINGLE FIBER Bidirectional Transceiver, 2,5G, SMF</td>
<td>0.1–2.5</td>
<td>1310/1550</td>
<td>FP/FB</td>
<td>1 1 1</td>
<td>SMF</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
<td>1m-2km</td>
</tr>
<tr>
<td>050-341</td>
<td>SINGLE FIBER Bidirectional Transceiver, 10G, SMF</td>
<td>5–10.5</td>
<td>1310/1550</td>
<td>DFB/DFB</td>
<td>1 1 1</td>
<td>SMF</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
<td>1m-10km</td>
</tr>
<tr>
<td>050-342</td>
<td>CWDM Transceiver, 2,5G, SMF</td>
<td>0.1–2.5</td>
<td>CWDM</td>
<td>DFB</td>
<td>1 1 2</td>
<td>SMF</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
<td>1m-20km</td>
</tr>
<tr>
<td>050-343</td>
<td>CWDM Transceiver, 10G, SMF</td>
<td>5–10.5</td>
<td>CWDM</td>
<td>DFB</td>
<td>1 1 2</td>
<td>SMF</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
<td>1m-10km</td>
</tr>
</tbody>
</table>

### Evaluation Boards

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>for testing Part Number(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>050-329</td>
<td>EVALUATION BOARD supporting Board Mount Transceivers, 1-10Gbps</td>
<td>050-315, 050-318, 050-321, 050-324</td>
</tr>
<tr>
<td>050-330</td>
<td>EVALUATION BOARD supporting Board Mount Dual Transmitters and Board Mount dual Receivers</td>
<td>050-316, 050-317, 050-319, 050-320, 050-325, 050-326, 050-331, 050-332</td>
</tr>
<tr>
<td>050-334</td>
<td>EVALUATION BOARD supporting PCB Mount Dual-Transceiver 050-333+</td>
<td>050-333</td>
</tr>
<tr>
<td>050-338</td>
<td>EVALUATION BOARD</td>
<td>050-336, 050-337</td>
</tr>
<tr>
<td>050-344</td>
<td>FMC Connectivity Card</td>
<td>All Glenair PCB Mount Components</td>
</tr>
</tbody>
</table>

### Accessories

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>FA02454</td>
<td>Fiber Optic jumper cable, GC</td>
<td>Singlemode or multimode connects transceiver to mil/aero connector</td>
</tr>
<tr>
<td>FA03286</td>
<td>Fiber Optic jumper cable, ARINC 801</td>
<td>Singlemode or multimode connects transceiver to mil/aero connector</td>
</tr>
<tr>
<td>059-0007</td>
<td>PCB Threaded Insert</td>
<td>Simplifies installation of PCB transceivers</td>
</tr>
</tbody>
</table>
Glenair is able to offer our Opto-Electronic solutions customers turnkey multichannel receptacle connectors housing integrated transceiver technology for fast/gigabit Ethernet, DVI and HDMI video, as well as various high-speed data transfer protocols. The two available connector designs incorporate Glenair small form-factor opto-electronic contacts (050-301) or an ELIO® equipped configuration that intermates with the standard ELIO® 2.5mm fiber optic terminus (050-307). Receptacles are populated with factory-tested size #8 contacts, and are ready for immediate use as fiber-optic-to-electrical circuit board I/O connectors. Special size #8 cavity adapters are also available to enable construction of compatible plug connectors on the cable side.
## Opto-Electronic Connectors for Ethernet, Video, and High-Speed Data Applications

**PRODUCT SELECTION GUIDE**

Visit glenair.com for detailed product datasheets.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>050-304</strong></td>
<td>MIL-DTL-38999 Series III Type Receptacle Connectors with Size 8 Opto-Electronic Contacts</td>
</tr>
<tr>
<td><strong>059-0001</strong></td>
<td>Size 8 cavity adapter kit for 1.25mm ARINC 801 terminus</td>
</tr>
<tr>
<td><strong>059-0002</strong></td>
<td>Size 8 cavity adapter for ELIO® 2.5mm terminus</td>
</tr>
<tr>
<td><strong>050-313</strong></td>
<td>Opto-Electronic Transceiver, MIL-DTL-38999 Type 2.5mm ELIO® Compatible, 100Mbps – 4.25Gbps</td>
</tr>
<tr>
<td><strong>050-303</strong></td>
<td>Opto-Electronic Receiver with Mighty Mouse connectors, 100Mbps – 2.5 Gbps</td>
</tr>
</tbody>
</table>
Glenair offers turnkey harsh-environment media converters for in-line and select panel mount applications. The devices facilitate conversion of 10/100/1000BASE-SX/LX fiber optic gigabit Ethernet data streams to electrical signals servicing switches, routers, and other peripherals. Designed for use in ruggedized applications such as geophysical, naval, commercial and military aerospace, these reduced form-factor electrical-to-optical transceivers deliver proven performance with significant size and weight savings compared to conventional form-factor technologies. Available for a wide range of fiber optic formats, including 1.25mm, 1.57mm, 2.0mm, and 2.5mm ferrules, in both singlemode and multimode, Glenair’s complete range of media converters meets virtually every fiber-optic-to-copper application requirement.
Copper-to-Fiber Media Converters for Ethernet Applications

PRODUCT SELECTION GUIDE

EXAMPLE FUNCTIONAL BLOCK DIAGRAM FOR GLENAIR 050-105 ETHERNET MEDIA CONVERTER

Table I: Signal Protocol

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Medium</th>
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</thead>
<tbody>
<tr>
<td>-SX</td>
<td>1000BASE-SX</td>
<td>Multimode Fiber</td>
</tr>
<tr>
<td>-LX10</td>
<td>1000BASE-LX10</td>
<td>Singlemode Fiber</td>
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</table>

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>050-101</td>
<td>1000BASE-T to 1000BASE-SX/LX Media Converter</td>
<td>050-112</td>
<td>10/100/1000BASE-T to SX, LX10, or FX Fiber Optic Ethernet, GFOCA Fiber Optic interface</td>
</tr>
<tr>
<td>050-103</td>
<td>10/100/1000BASE-T to 1000BASE-SX/LX Media Converter with Mighty Mouse Connectors</td>
<td>050-113</td>
<td>10/100/1000BASE-T to SX, LX10, or FX Fiber Optic Ethernet, MIL-DTL-1560 interface</td>
</tr>
<tr>
<td>050-104</td>
<td>10/100/1000BASE-T to 1000BASE-SX/LX Active Cable with Mighty Mouse Connectors</td>
<td>050-115</td>
<td>10/100/1000BASE-T to 1000BASE CWDM Media Converter</td>
</tr>
<tr>
<td>050-110</td>
<td>10/100/1000BASE-T to 1000BASE-SX/LX, GFOCA, 38999 Quadrx (signal and BIT), 38999 (Power)</td>
<td>050-117</td>
<td>LRU Media Converter, Single or Dual Channel, 10/100/1000BASE-T to SX/LX Lightning Strike Protection DO160 level 3</td>
</tr>
</tbody>
</table>

visit glenair.com for detailed product datasheets
Copper-to-Fiber Media Converters

Reduced form factor media converters for harsh-environment video applications

Glenair Copper-to-Fiber-Optic Video Media Converters enable extended link distances, improved EMI and security in harsh environments and provide solutions for both MMF and SMF applications. These media converters support ruggedized military systems applications and are tailored to support a variety of Video protocols including DVI, HDMI, SMPTE (SDI, HD-SDI and 3G-SDI), ARINC 818 and more.

Many options for mil-spec and military-grade electrical and fiber optic connectors are available. Contact Glenair for custom configurations, application-specific designs and engineering services.
Copper-to-Fiber Media Converters for Video Applications

PRODUCT SELECTION GUIDE

MIL-DTL-38999 SERIES III TYPE DVI VIDEO MEDIA CONVERTER

How To Order

<table>
<thead>
<tr>
<th>Product Series</th>
<th>Transmitter = TX</th>
<th>Receiver = RX</th>
<th>Dash Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>050-201-TX NF-01</td>
<td>DVI Media Converter (See Table)</td>
<td>Plating Code</td>
<td></td>
</tr>
</tbody>
</table>

ENVIRONMENTAL PERFORMANCE

- -40°C to +85°C operating temperature range
- Meets MIL-STD-810 Mechanical Shock and Vibration
- Meets MIL-STD-1344 immersion resistance

Video Media Converter Selection Guide

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>050-201</td>
<td>DVI Copper-to-Fiber Media Converter</td>
</tr>
<tr>
<td>050-203</td>
<td>DVI Copper-to-4-Fiber, VCSEL, DO160 Lightning Strike level 3 and “dirty” 28V power</td>
</tr>
<tr>
<td>050-206</td>
<td>DVI Copper-to-Fiber Media Converter</td>
</tr>
<tr>
<td>050-207</td>
<td>4 Channel SMPTE HD-SDI &amp; 3G-SDI Transmitter or Receiver</td>
</tr>
<tr>
<td>050-204</td>
<td>4 Channel 3G-SDI MMF TX and 3G-SDI MMF RX, GHD Fiber, Mighty Mouse (Coax and Power).</td>
</tr>
<tr>
<td>050-205</td>
<td>DVI Copper-to-Fiber Media Converter, Inline</td>
</tr>
</tbody>
</table>

VIDEO MEDIA CONVERTER FUNCTIONAL BLOCK DIAGRAM

Transmitter

- Graphics Card Source
- TMDS - Red
- TMDS - Green
- TMDS - Blue
- TMDS - Data/Clock
- 18-36V

- Lasers x 4
- Laser Drivers
- TMDS - Red
- TMDS - Green
- TMDS - Blue
- TMDS - Data/Clock

- Fiber optic Cable up to 500m MMF
- Power R,G,B, Clock
- 050-201-TX

Receiver

- PIN/TIA x 4
- Limiting Amplifiers
- TMDS - Red
- TMDS - Green
- TMDS - Blue
- TMDS - Data/Clock
- 18-36V

- Monitor R,G,B, Clock
- Power
- 050-201-RX
SIGNAL AGGREGATION

Copper-to-Fiber Media Converters

Low data-rate signal multiplexing copper-to-fiber media conversion

Glenair signal aggregation media converters integrate a set of compact opto-electronic modules to digitize and/or aggregate multiple common signal types, and combine them onto high-data-rate serial optical fiber channels. Silicon field-programmable gate array (FPGA) technology provides a flexible way to accommodate many signal I/O types.

- Dramatically reduce size, weight, wire count, and shielding of copper cables
- Leverage the high bandwidth of optical fiber by multiplexing many lower-data-rate signals onto a few fibers
- One high-speed opto-electronic interface can serve practically all signal types
- Ideal solution to enable optical rotary joints
- -40°C to +85°C operating temperature range
- Meets MIL-STD-810 Mechanical Shock and Vibration
- Meets MIL-STD-1344 immersion resistance
- Advanced monitor & control functions via serial interface to facilitate network management and BIT

<table>
<thead>
<tr>
<th>Signal Aggregation Media Converter Selection Guide</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>050-501 12-Channel RS422 Copper-to-Fiber Media Converter</td>
<td></td>
</tr>
<tr>
<td>050-502 6x RS-422 and 6x ARINC 429 Copper-to-Fiber Media Converter</td>
<td></td>
</tr>
<tr>
<td>050-503 DVI/HDMI (Dual fiber) + USB(HID) interface (KVM) Copper-to-Fiber Media Converter</td>
<td></td>
</tr>
<tr>
<td>050-504 CAN Bus “bridge”(ARINC 825), ARINC 429, ARINC 664 (AFDX ethernet) DO-160 compliant Copper-to-Fiber Media Converter</td>
<td></td>
</tr>
<tr>
<td>050-505 2x Ethernet, 2xRS-422 or 2xRS-232 (422 &amp; 232 not simultaneously) Copper-to-Fiber Media Converter</td>
<td></td>
</tr>
</tbody>
</table>
Copper-to-Fiber Media Converters
Multiplexing Signal Aggregator

PRODUCT SELECTION GUIDE

SIGNAL AGGREGATOR FUNCTIONAL DIAGRAMS

- One compact LRU digitizes or aggregates multiple electrical signals on copper using an FPGA
- FPGA digitizes and serializes the signals onto a high-speed data stream
- Opto-electronic converters get the serialized signals on and off the optical fiber

FPGA MAIN BOARD AND DAUGHTER CARD ARCHITECTURE CAN HANDLE MANY SIGNAL TYPES

SERIAL
- RS422/RS485
- RS232
- USB
- MIL-STD-1553
- CAN Bus
- ARINC 429
- SMBus
- I2C
- SPI
- Ethernet 10/100/1000

VIDEO
- DVI
- HDMI
- SMPTE SDI
- SMPTE HD-SDI
- SMPTE 3G-SDI
- ARINC 818
- VGA

ANALOG
- RF/IF Sampling
- Analog Sensor Data

Contact the factory for other signal formats and custom configurations
SMALL FORM-FACTOR

Ethernet Switches and Breakout Cables

Glenair unmanaged Ethernet switches are layer 2 switches with Auto negotiation and Auto MDI / MDIX circuitry that enables port expansion with IEEE-802.3U 10/100/1000Base-T Ethernet ports. Developed for use in harsh environment applications, the electronics are incorporated into a panel-mountable housing that is sealed against liquid and solid contaminants and designed for shock and vibration resistance. Standard connector interfaces include high-performance size- and weight-saving Glenair Series 805 Mighty Mouse jam nut receptacles and M28876 type fiber-optic connectors.

- Unmanaged—plug and play operation—no configuration required
- Jumbo frame support in all speeds (10/100/1000 Mbps)
- Operating temperature range: -40°C to +85°C
- Standard ultraminiature Mighty Mouse electrical and M28876 type fiber optic connector interfaces
- Experienced opto-electronic engineering services available for special connector and form-factor configurations
- Breakout cables with industry-standard connector interfaces available
Small Form-Factor Ethernet Switches
and Breakout Cables

PRODUCT SELECTION GUIDE

052-101 7-PORT UNMANAGED ETHERNET SWITCH

- 7 copper (10/100/1000 Mbps) Ethernet ports per IEEE 802.3:2005
- Non-Blocking switch fabric allows 1000 Mbps data rate on all 7 ports simultaneously
- Cable link distances up to 100 Meters (EIA/TIA Cat-5E)
- Full duplex flow control per IEEE Std 802.3X and half duplex back pressure, symmetric and asymmetric
- Shock, vibration and immersion resistant per MIL-STD-810F
- Auto sensing of half or full duplex operation
- Mighty Mouse Series 805 shell is water-tight to MIL-STD-810 when mated
- 3 form-factors available

050-118 5-PORT UNMANAGED ETHERNET SWITCH

- 1 PORT: 10/100/1000 BASE-T consistent with IEEE 802.3
- 4 PORTS: 1000BASE-LX (IEEE 802.3)
- Non-blocking switch fabric allows 1000 Mbps on all ports
- Material/Plating: Aluminum with Cadmium Olive Drab over electroless Nickel (500 hours salt spray plating)
- 6 Status LEDs to Denote: (Power, Ethernet activity with one LED for each of the 5 ports)
- 4 M28876 type fiber-optic connectors
- Mighty Mouse ultraminiature electrical connector interface
- IP67 in mated condition

BREAKOUT CABLES FOR 7-PORT ETHERNET SWITCH

How To Order

<table>
<thead>
<tr>
<th>Active Product Code</th>
<th>Material/Finish (see Table I)</th>
<th>Length (in Inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8071 - 3089 - M A - 48</td>
<td>3089 = L-Com Cable 3667 = PIC Cable</td>
<td>Key Polarization (see Table II)</td>
</tr>
</tbody>
</table>
# Glenair, Inc.

**Glenair Power**  
**Products Group**  
860 N. Main Street Extension  
Wallingford, CT  
06492  
Telephone: 203-741-1115  
Facsimile: 203-741-0053  
sales@glenair.com

**Glenair Microway Systems**  
7000 North Lawndale Avenue  
Lincolnwood, IL  
60712  
Telephone: 847-679-8833  
Facsimile: 847-679-8849

**Glenair Electric GmbH**  
Schaberweg 28  
61348 Bad Homburg  
Germany  
Telephone: 06172 / 68 16 0  
Facsimile: 06172 / 68 16 90  
germany@glenair.com

**Glenair Italia S.p.A.**  
Via Del Lavoro, 7  
40057 Quarto Inferiore –  
Granarolo dell’Emilia  
Bologna, Italy  
Telephone: +39-051-782811  
Facsimile: +39-051-782259  
info@glenair.it

**Glenair UK Ltd**  
40 Lower Oakham Way  
Oakham Business Park  
P.O. Box 37, Mansfield  
Notts, NG18 5BY England  
Telephone: +44-1623-638100  
Facsimile: +44-1623-638111  
sales@glenair.co.uk

**Glenair Nordic AB**  
Gustav III : S Boulevard 46  
S - 169 27 Solna  
Sweden  
Telephone: +46-8-50550000  
Facsimile: +46-8-50550001  
sales@glenair.se

**Glenair Iberica**  
C/ La Vega, 16  
45612 Velada  
Spain  
Telephone: +34-925-89-29-88  
Facsimile: +34-925-89-29-87  
sales@glenair.es

**Glenair France SARL**  
7, Avenue Parmentier  
Immeuble Central Parc #2  
31200 Toulouse  
France  
Telephone: +33-5-34-40-97-40  
Facsimile: +33-5-61-47-86-10  
sales@glenair.fr

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