0500-3024
PRODUCT BRIEF

D-SUB 2 × SIZE 8 ELECTRO-OPTICAL CONNECTOR
1.25 GBPS – 5.0 GBPS
MULTI-MODE, 1.25MM FERRULE ARINC 801
FRONT INSERT – FRONT RELEASE

<table>
<thead>
<tr>
<th>REV</th>
<th>DESCRIPTION</th>
<th>Date</th>
<th>APPROVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Released</td>
<td>03/07/2019</td>
<td>YA/DM</td>
</tr>
</tbody>
</table>
Copper to Fiber Electro-Optical Converter housed within D-sub connector

The Glenair 0500-3024 is a D-sub with two size 8 cavities that can be configured to be either transmitters or receivers. 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.

KEY FEATURES/BENEFITS

- 850nm Lasers for MMF up to 500m links
- GaAs PIN PD for MMF up to 500m Links
- Low power consumption
- Operate from 3.3V
- Data rates from 100Mbps to 5 Gbps
- 100 ohms differential CML inputs with Tx Fault and Tx Disable
- Rugged machined one-piece shell
- Optimized panel mount features
- PC Tail
- Configurable to be transceiver, dual transmitter or dual receiver
- ARINC 801 1.25mm ceramic fiber ferrule are excellent for Avionics and other high vibration applications
- Supports Fast and Gigabit Ethernet, AFDX, 1x/2x, Fibre Channel, DVI, HDMI, SFPDP, Serial Rapid I/O (sRIO).

APPLICATIONS

- Harsh Environment Airborne, Tactical and Shipboard applications

How To Order

Cavity B Function
T = Transmitter
R = Receiver

Material/Finish for Shell
MT = Aluminum, Nickel-PTFE
NF = Aluminum, Cadmium Olive Drab
Other finishes available

Cavity A Function:
T = Transmitter
R = Receiver

Basic PN
0500-3024 - T R - MT

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www.glenair.com E-mail: sales@glenair.com
2 × Size 8 Copper to Fiber Electro-Optical Converter (1.25 Gbps – 5.0 Gbps) housed within D-sub connector

Functional Block Diagram

Dual Transmitter (0500-3024-TT)
DUAL TRANSMITTER BLOCK DIAGRAM

Dual Receiver (0500-3024-RR)
DUAL RECEIVER BLOCK DIAGRAM
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Transceiver (0500-3024-TR)
TRANSCEIVER BLOCK DIAGRAM

Transceiver (0500-3024-RT)
TRANSCEIVER BLOCK DIAGRAM
Recommended Interface Circuit

**Transmitter**

**RECOMMENDED INTERFACE CIRCUIT**

**Receiver**

**RECOMMENDED INTERFACE CIRCUIT**
## Connectors

<table>
<thead>
<tr>
<th>NAME</th>
<th>Insert Arrangement</th>
<th>Function</th>
<th>Receptacle OE Converter</th>
<th>Mating PLUG Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1</td>
<td></td>
<td>Electro-Optical Conversion</td>
<td>Contacts are contained within the connector</td>
<td>Glenair PN 059-0017-2-2-# 181-076-P-126 126.0 micron, pull proof design, MMF</td>
</tr>
</tbody>
</table>

Note: # = Environmental Class (Material/Finish)
# Ratings and Specifications

## Absolute Maximum Ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Units</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage Temperature</td>
<td>$T_s$</td>
<td>-55</td>
<td></td>
<td>+100</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>Supply Voltage</td>
<td>$V_{cc}$</td>
<td>-0.4</td>
<td>4</td>
<td></td>
<td>V</td>
<td>1 second maximum</td>
</tr>
<tr>
<td>TX Disable Input Voltage</td>
<td></td>
<td>-0.4</td>
<td></td>
<td>$V_{cc}$</td>
<td>V</td>
<td></td>
</tr>
</tbody>
</table>

## Operating Conditions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Units</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>$T_{op}$</td>
<td>-40</td>
<td></td>
<td>+85</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>Supply Voltage</td>
<td>$V_{cc}$</td>
<td>3.14</td>
<td>3.3</td>
<td>3.46</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Power Supply Noise</td>
<td>$V_{cc}$</td>
<td>Ripp</td>
<td>0.15</td>
<td>V_p-p</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply Current - Transmitter</td>
<td>$I_{cc\text{-}rx}$</td>
<td>60</td>
<td>80</td>
<td>mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply Current - Receiver</td>
<td>$I_{cc\text{-}tx}$</td>
<td>75</td>
<td>90</td>
<td>mA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Optical Characteristics – Transmitter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Units</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optical Output Power</td>
<td>$P_{OUT}$</td>
<td>-7</td>
<td></td>
<td>-1</td>
<td>dBm</td>
<td>VCSEL, 50/125μm MMF</td>
</tr>
<tr>
<td>Optical Wavelength</td>
<td>$\lambda_{OUT}$</td>
<td>830</td>
<td>850</td>
<td>860</td>
<td>nm</td>
<td></td>
</tr>
<tr>
<td>Spectral Width</td>
<td>$\Delta\lambda$</td>
<td></td>
<td>0.85</td>
<td>nm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extinction Ratio, 5 Gbps</td>
<td>ER</td>
<td>5</td>
<td>9</td>
<td></td>
<td>dB</td>
<td></td>
</tr>
<tr>
<td>Total Jitter, 5 Gbps</td>
<td>$T_j$</td>
<td></td>
<td>60</td>
<td>ps</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Optical Characteristics - Receiver

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Units</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min. Sensitivity, BER 10⁻¹², PRBS 7, 5 Gbps, Er 9dB</td>
<td>$P_{IN\text{-}MIN}$</td>
<td>-17</td>
<td>-15</td>
<td>dBm</td>
<td>PIN PD</td>
<td></td>
</tr>
<tr>
<td>Overload, BER 10⁻¹², PRBS 7</td>
<td>$P_{IN\text{-}MAX}$</td>
<td>-2</td>
<td>-1</td>
<td>dBm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optical Wavelength</td>
<td>$\lambda_{IN}$</td>
<td>770</td>
<td>850</td>
<td>860</td>
<td>nm</td>
<td></td>
</tr>
</tbody>
</table>
**Ratings and Specifications - (continued)**

### Compliance Specifications

<table>
<thead>
<tr>
<th>CHARACTERISTIC</th>
<th>Standard</th>
<th>Condition</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical Shock</td>
<td>MIL-STD-810</td>
<td>40g</td>
<td>6 ms</td>
</tr>
<tr>
<td>Mechanical Vibration</td>
<td>MIL-STD-810</td>
<td>30g rms</td>
<td></td>
</tr>
<tr>
<td>ESD</td>
<td>MIL-STD-883</td>
<td>Class 1C</td>
<td>1000V HBM</td>
</tr>
<tr>
<td>Eye Safety</td>
<td>CDRH and IEC-825</td>
<td>Class 1 Laser Product</td>
<td>No safety interlocks required</td>
</tr>
</tbody>
</table>

### Material/Finish

<table>
<thead>
<tr>
<th>Item</th>
<th>Material/Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>057-0078 Shell</td>
<td>Aluminum, 300 Series CRES</td>
</tr>
<tr>
<td>Contact Shell</td>
<td>Shell 300 Series CRES/Passivate or NM6</td>
</tr>
<tr>
<td>Seal</td>
<td>Silicone elastomer</td>
</tr>
<tr>
<td>Fiber Ferrule &amp; sleeve</td>
<td>Zirconia ceramic</td>
</tr>
<tr>
<td>PC tail contacts</td>
<td>Copper alloy/gold plated</td>
</tr>
<tr>
<td>PCB flex</td>
<td>FR4 &amp; Polyimide</td>
</tr>
<tr>
<td>Encapsulant</td>
<td>HYSOL EE4215</td>
</tr>
<tr>
<td>Solder type</td>
<td>RoHS compliant Sn95/Sb5 (232°C melting temp) &amp;</td>
</tr>
<tr>
<td></td>
<td>RoHS compliant Sn96.5/Ag3.0/Cu0.5 (217°C melting)</td>
</tr>
</tbody>
</table>
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OUTLINE DRAWING, PANEL CUT OUT & PCB LAYOUT

Outline Drawing

Label includes part number, serial number, date code, manufacturer and cage code.

Dimensions inches
x.x ± 0.1"
x.xx ± 0.03"
x.xxx ± 0.005"

Recommended Panel Cut out
Recommended PCB Layout

2 × Size 8 Copper to Fiber Electro-Optical Converter (1.25 Gbps – 5.0 Gbps) housed within D-sub connector

PCBA Mounting Locations
(#4-40 screws)
Input/Output Definition
Recommended Inspection & Cleaning Tools/Kits

The following recommendations are suggested for this product:

- GBS-1001 Inspection Kit which includes GIT-003 tip for ARINC 801 fiber contacts.
- GCLT-H200 or GCLT-HA125 cleaning tool for ARINC 801 system.

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GBS1001 Specifications

- **Weight**: .11 Kg / .25 lb
- **Resolution**: Better than 1.5 Microns
- **Cable**: Integrated USB 2.0 coil cable
- **Certification**: CE
- **Warranty**: 1 year

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Fiber Chek Software

**Fiber Optic Analysis Program**

Fiber Chek is an integrated hardware/software package engineered with the single purpose of critically and consistently grading fiber end-faces. Works hand in hand with the Quick Capture Analog Probe for visual inspection, taking pictures and testing fibers.

- Automatic debris and defect detection, including fine scratches
- Measures epoxy ring for out-of-tolerance conditions
- Inspection results, including image data, can be printed or archived
- Utilizes industry standards or user-defined threshold settings

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The GBS1001 is the only inspection probe today with a high resolution, all digital sensor and USB2 video stream which delivers high-resolution uncompressed images directly to your personal computer.
Recommended Inspection & Cleaning Tools/Kits – (Continued)

Dry action cleaning tool for ARINC 801 systems

Dry action cleaning tool for ARINC 801 test adapters

- A simple push motion engages tool
- Audible click when tool is fully engaged
- Durable — over 525 engagements per tool
- Crush resistant to over 250N
- Impact resistant to survive drops over 1.5M