# 0500-3024

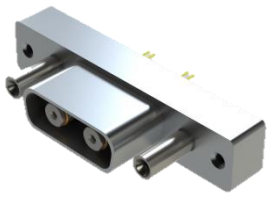
## PRODUCT BRIEF

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

| REV | DESCRIPTION | Date | APPROVED |
|---|---|---|---|
| 1 | Released | 03/07/2019 | YA/DM |

BF19U2-6033

## *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.

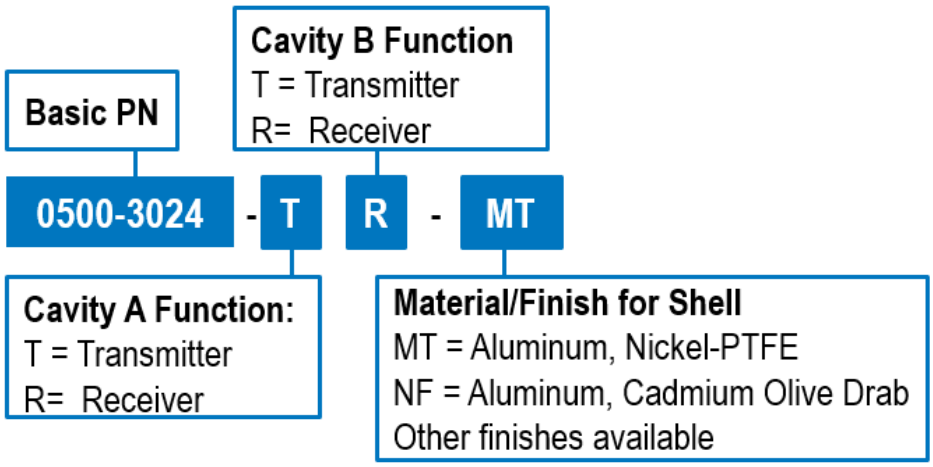
### KEY FEATURES/BENEFITS

- 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

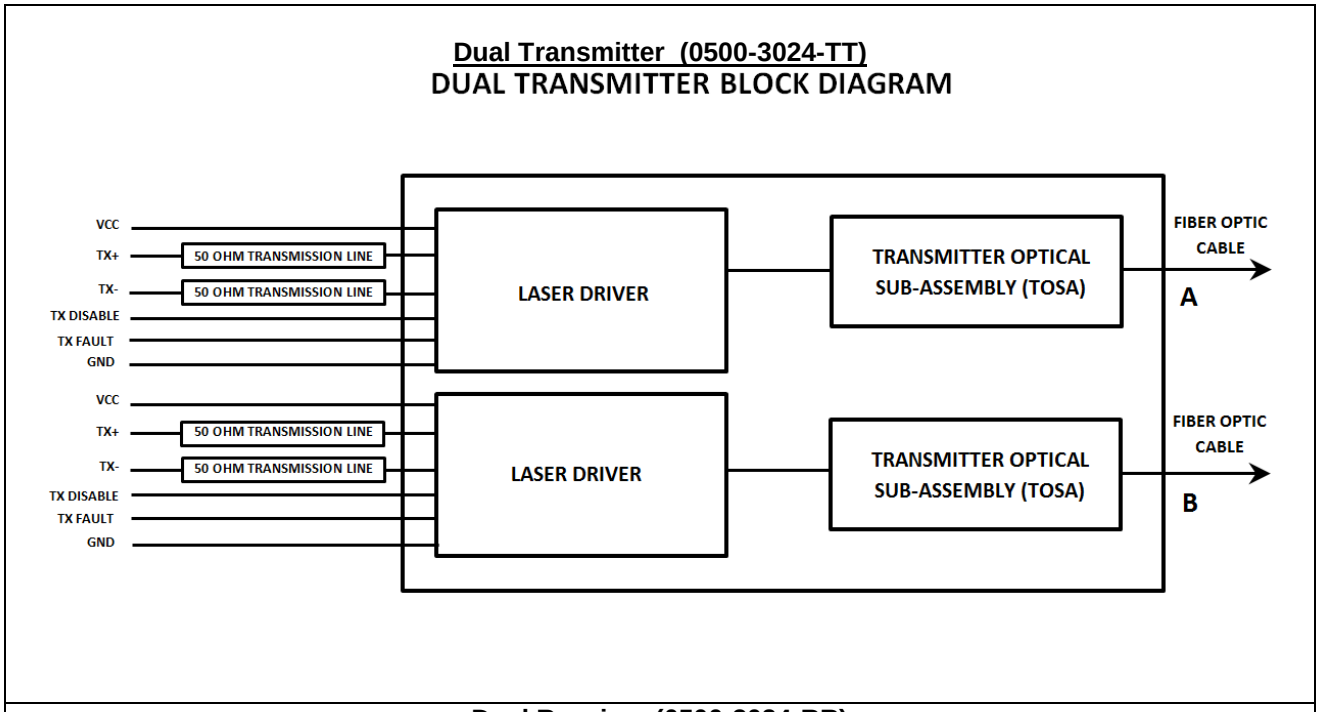
## How To Order



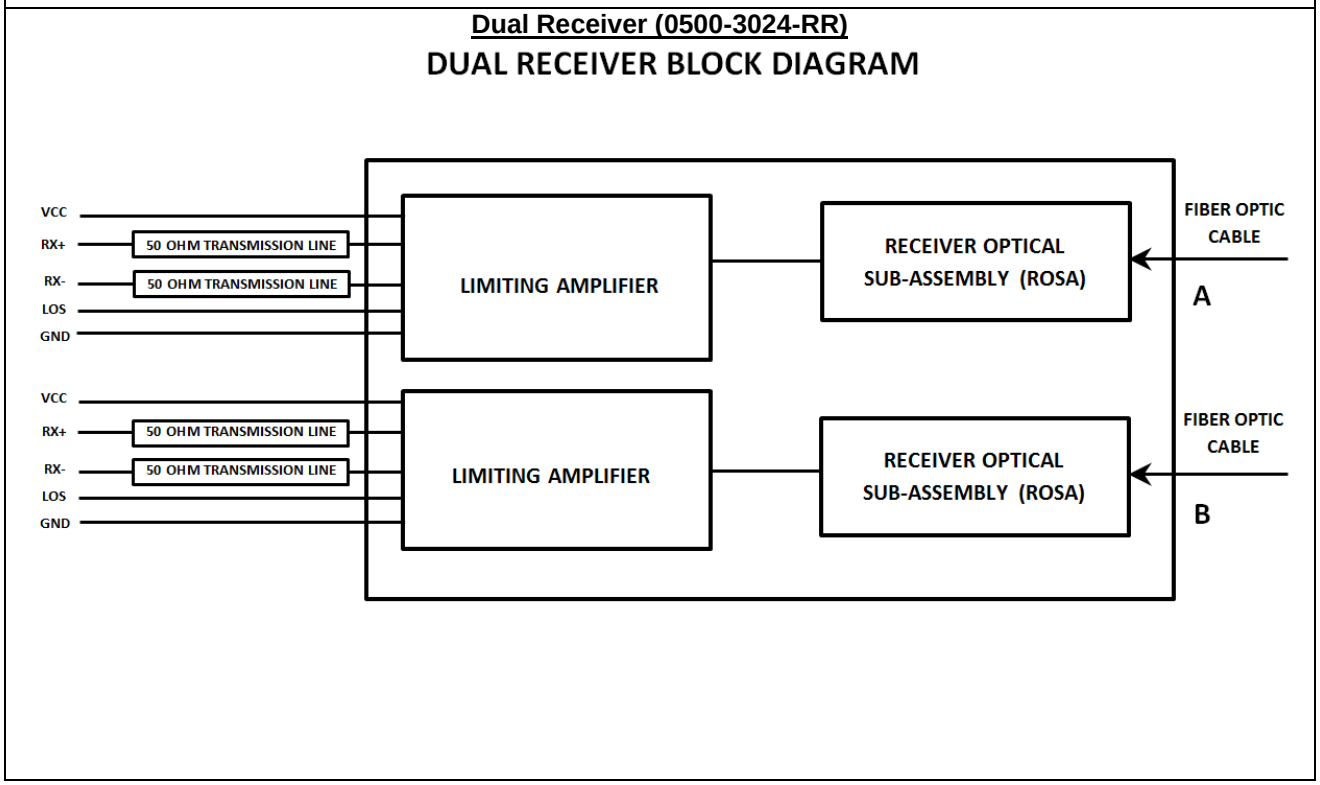

 REV: 1 US Cage Code 06324 Printed in USA

## *Functional Block Diagram*

**Dual Transmitter (0500-3024-TT)**




**Dual Receiver (0500-3024-RR)**



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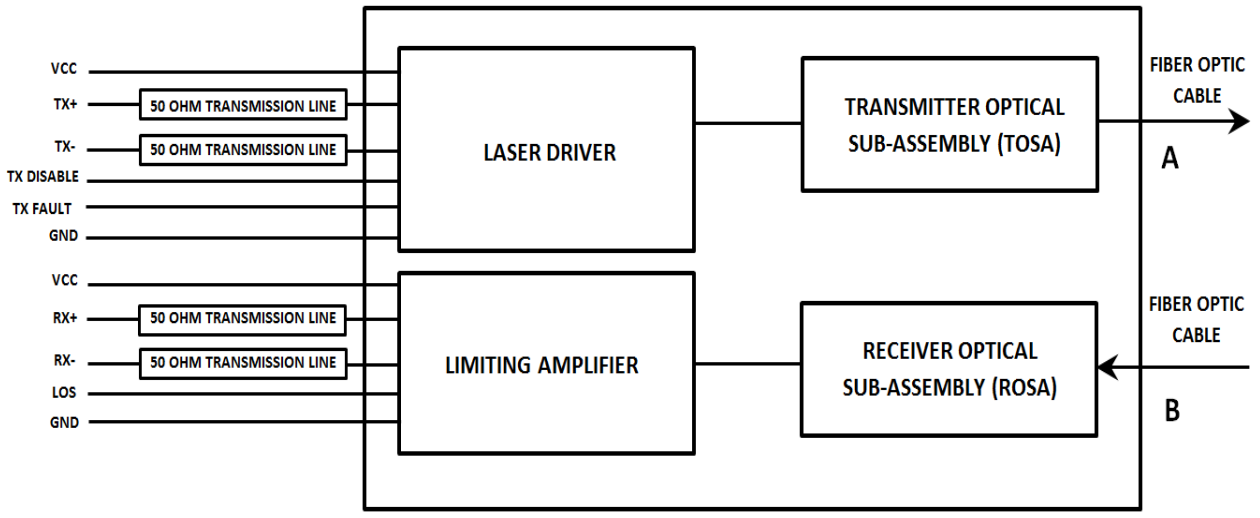
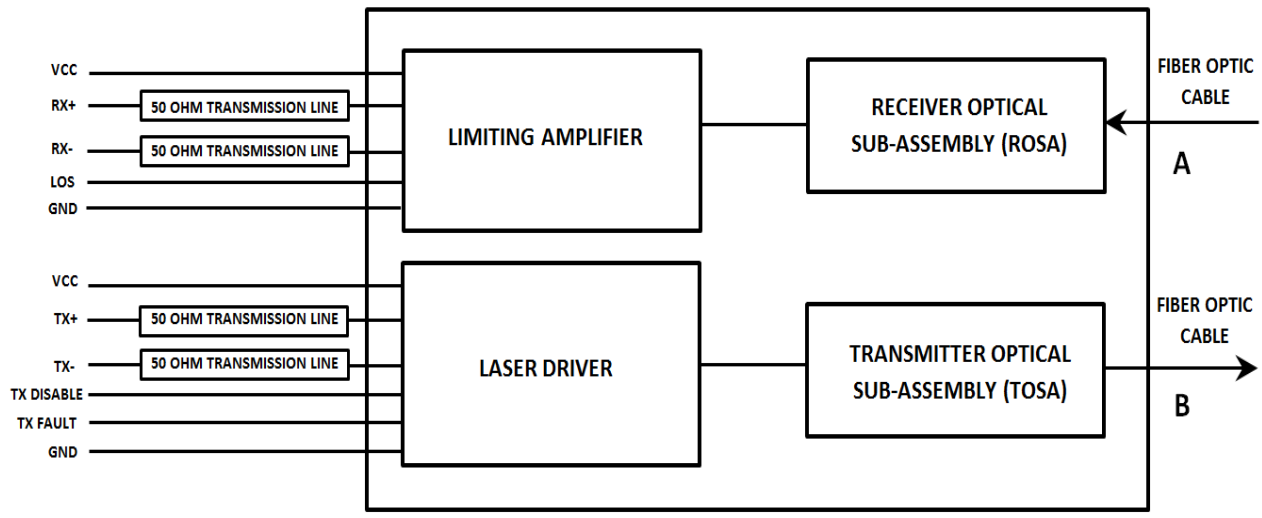
**Transceiver (050-3024-TR)**

## TRANSCEIVER BLOCK DIAGRAM




**Transceiver (0500-3024-RT)**

## TRANSCEIVER BLOCK DIAGRAM

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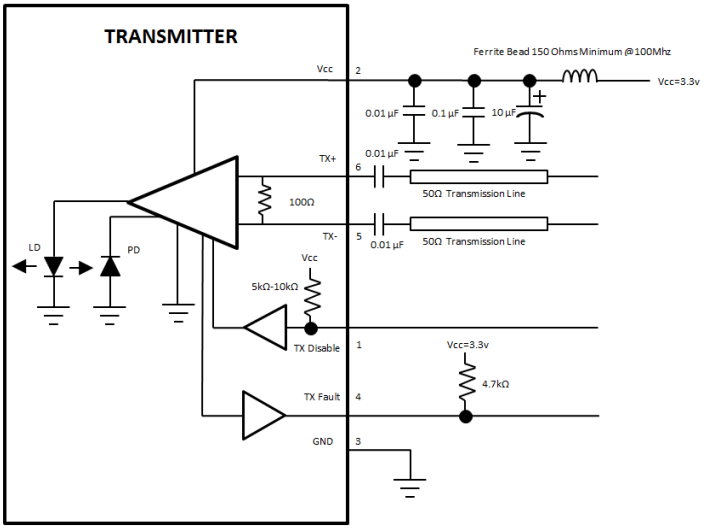
## *Recommended Interface Circuit*

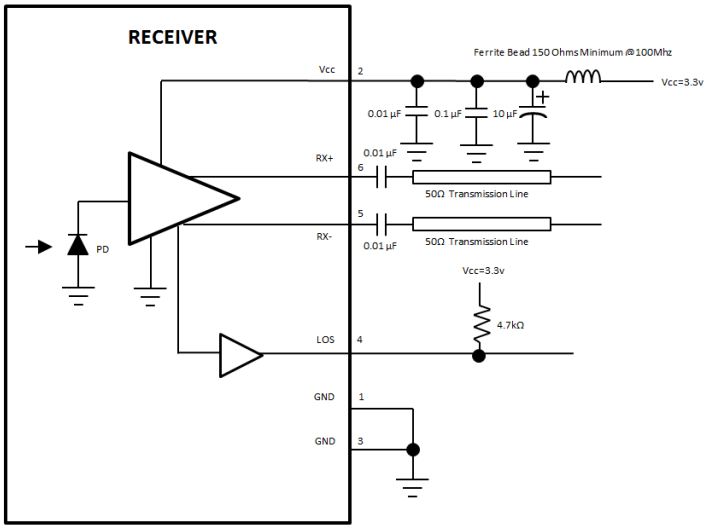
**Transmitter**

**RECOMMENDED INTERFACE CIRCUIT**



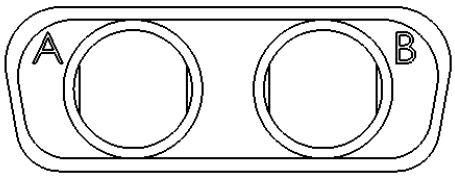

**Receiver**

**RECOMMENDED INTERFACE CIRCUIT**



## *Connectors*

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

***Note: # = Environmental Class (Material/Finish)***

## *Ratings and Specifications*

### ABSOLUTE MAXIMUM RATINGS

| Parameter | Symbol | Min | Typ | Max | Units | Notes |
|---|---|---|---|---|---|---|
| Storage Temperature | Ts | -55 | | +100 | °C | |
| Supply Voltage | $V_{cc}$ | -0.4 | | 4 | V | 1 second maximum |
| TX Disable Input Voltage | | -0.4 | | Vcc | V | |

### OPERATING CONDITIONS

| Parameter | Symbol | Min | Typ | Max | Units | Notes |
|---|---|---|---|---|---|---|
| Operating Temperature | $T_{op}$ | -40 | | +85 | °C | |
| Supply Voltage | $V_{cc}$ | 3.14 | 3.3 | 3.46 | V | |
| Power Supply Noise | VccRipp | | | 0.15 | Vp-p | |
| Supply Current - Transmitter | Icc_rx | | 60 | 80 | mA | |
| Supply Current - Receiver | Icc_tx | | 75 | 90 | mA | |

### OPTICAL CHARACTERISTICS – TRANSMITTER

| Parameter | Symbol | Min | Typ | Max | Units | Notes |
|---|---|---|---|---|---|---|
| Optical Output Power | $P_{OUT}$ | -7 | | -1 | dBm | VCSEL, 50/125µm MMF |
| Optical Wavelength | $\lambda_{OUT}$ | 830 | 850 | 860 | nm | |
| Spectral Width | Δλ | | | 0.85 | nm | |
| Extinction Ratio, 5 Gbps | ER | 5 | 9 | | dB | |
| Total Jitter, 5 Gbps | Tj | | | 60 | ps | |

### OPTICAL CHARACTERISTICS - RECEIVER

| Parameter | Symbol | Min | Typ | Max | Units | Notes |
|---|---|---|---|---|---|---|
| Min. Sensitivity, BER $10^{-12}$, PRBS 7, 5 Gbps, Er 9dB | $P_{IN\_MIN}$ | | -17 | -15 | dBm | PIN PD |
| Overload, BER $10^{-12}$, PRBS 7 | $P_{IN\_MAX}$ | -2 | -1 | | dBm | |
| Optical Wavelength | $\lambda_{IN}$ | 770 | 850 | 860 | nm | |

## *Ratings and Specifications - (continued)*

### Compliance Specifications

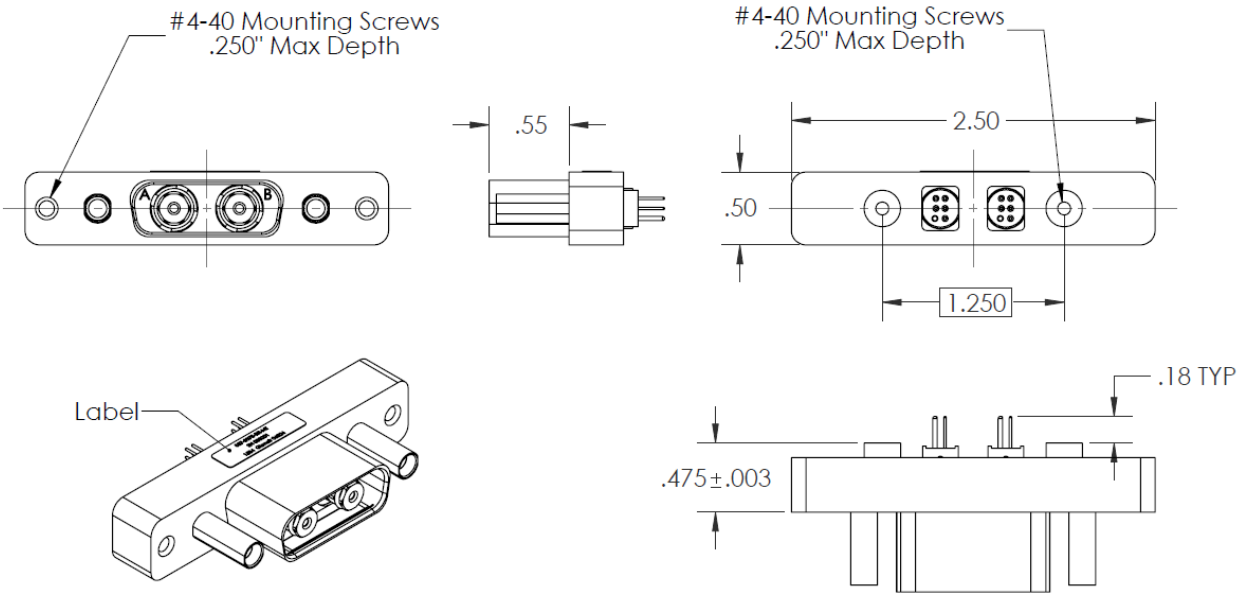
| CHARACTERISTIC | Standard | Condition | Notes |
|---|---|---|---|
| Mechanical Shock | MIL-STD-810 | 40g | 6 ms |
| Mechanical Vibration | MIL-STD-810 | 30g rms | |
| ESD | MIL-STD-883 | Class 1C | 1000V HBM |
| Eye Safety | CDRH and IEC-825 | Class 1 Laser Product | No safety interlocks required |

### Material/Finish

| Item | Material/Finish |
|---|---|
| 057-0078 Shell | Aluminum, 300 Series CRES |
| Contact Shell | Shell 300 Series CRES/Passivate or NM6 |
| Seal | Silicone elastomer |
| Fiber Ferrule & sleeve | Zirconia ceramic |
| PC tail contacts | Copper alloy/gold plated |
| PCB flex | FR4 & Polyimide |
| Encapsulant | HYSOL EE4215 |
| Solder type | RoHS compliant Sn95/Sb5 (232°C melting temp) &<br>RoHS compliant Sn96.5/Ag3.0/Cu0.5 (217° melting) |

## *OUTLINE DRAWING, PANEL CUT OUT & PCB LAYOUT*

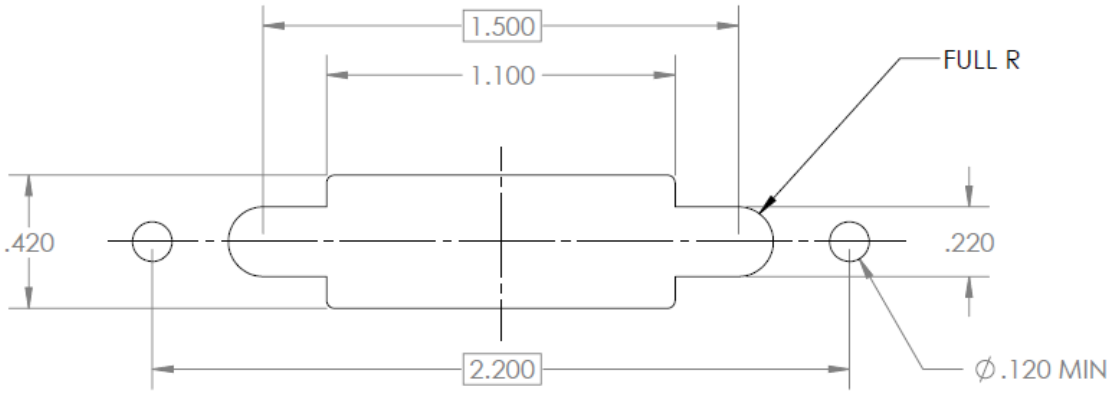
### Outline Drawing



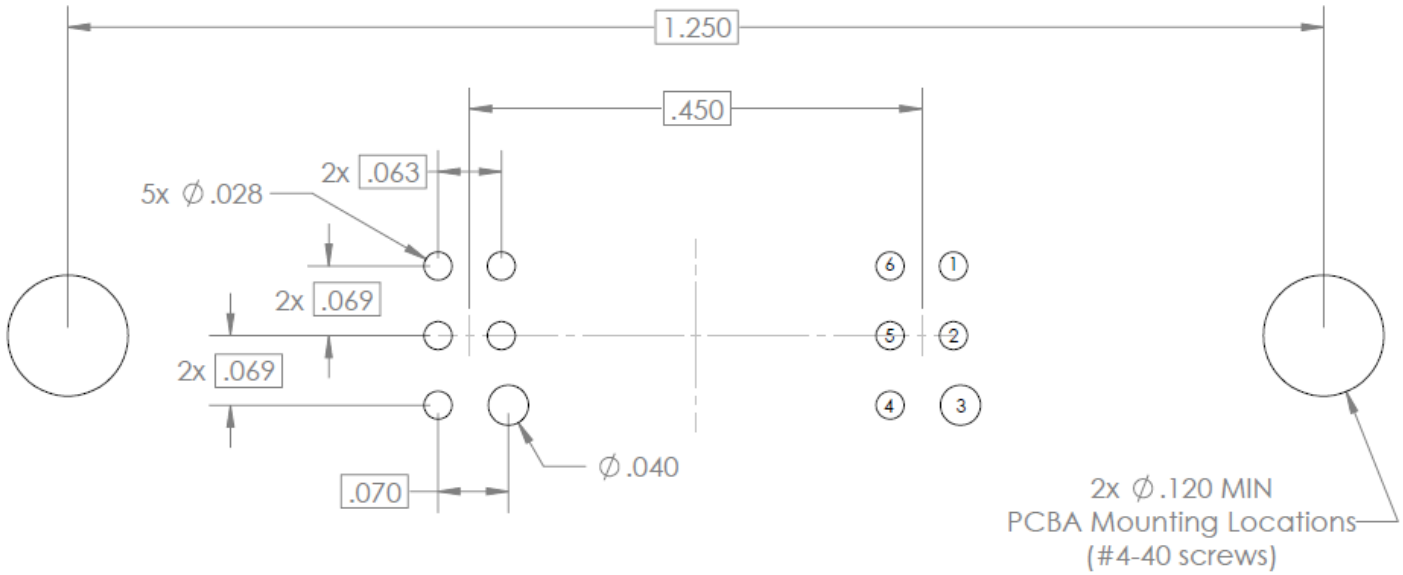

***Label includes part number, serial number, date code, manufacturer and cage code.***

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

### Recommended Panel Cut out



## Recommended PCB Layout



## *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.**

### GBS1001 Inspection Probe with USB Adapter and Fiber Chek 2 Software

**How To Order**

**GBS1001**

**Basic Part Number Includes:**
- *Inspection probe with USB adapter*
- *Fiber Chek 2 Software*

**Comes with**
*(installed on the probe):*
*GIT-003 Universal 1.25mm patch cord*

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.

| GBS1001 Specifications | |
|---|---|
| Weight | .11 Kg / .25 lb |
| Resolution | Better than 1.5 Microns |
| Cable | Integrated USB 2.0 coil cable 2.5′ relaxed, 10.5′ fully extended |
| Certification | CE |
| Warranty | 1 year |

### 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

## *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**