



050-134

Product Brief

Ethernet Media Converter, Dual or Single Channel, Panel Mount
10/100/1000BASE-T to Fiber Optic Ethernet
(1000BASE-SX, 1000 BASE-LX10 or 100BASE-FX), 28VDC,
M38999 (Signal & Power), M28876 (Fiber Optic)

BF16U2-6594

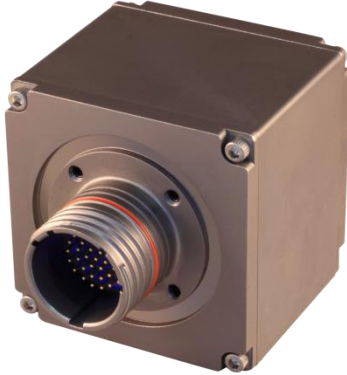
THIS COPYRIGHTED DOCUMENT IS THE PROPERTY OF GLENAIR, INC. AND IS FURNISHED ON THE CONDITION THAT IT IS NOT TO BE DISCLOSED, REPRODUCED IN WHOLE OR IN PART, OR USED TO SOLICIT QUOTATIONS FROM COMPETITIVE SOURCES, OR USED FOR MANUFACTURE BY ANYONE OTHER THAN GLENAIR, INC. WITHOUT WRITTEN PERMISSION FROM GLENAIR, INC. THE INFORMATION HEREIN HAS BEEN DEVELOPED AT GLENAIR'S EXPENSE AND MAY BE USED FOR ENGINEERING EVALUATION AND INCORPORATION INTO TECHNICAL SPECIFICATIONS AND OTHER DOCUMENTS WHICH SPECIFY PROCUREMENT OF PRODUCTS FROM GLENAIR, INC.

050-134 Product Brief

Media Converter, Single or Dual Channel, Panel Mount
10/100/1000BASE-T to Fiber Optic Ethernet (SX, LX10, or FX)



10/100/1000BASE-T to 1000BASE-SX, 1000 BASE-LX10 or 100BASE-FX



The Glenair 050-134 is a 10/100/1000BASE-T to Fiber Media converter that can be configured for 1 or 2 channels and can support conversion to 1000BASE-SX, 1000BASE-LX or 100BASE-FX protocols. It is designed for harsh environments and incorporates electronics in an environmentally sealed enclosure that incorporates an M28876 and M38999 connectors. One connector is utilized for power and electrical signal and the second connector is used for the Fiber Optic signals and can be configured to support either single mode or multi-mode fiber applications.

KEY FEATURES/BENEFITS

- 1310nm FP Lasers for 1000BASE-LX10
- InGaAs PIN PD for 1000BASE-LX10
- 850nm Laser for 1000BASE-SX
- GaAs PIN PD for 1000BASE-SX
- 1300nm LED for 100BASE-FX
- PIN PD for 100BASE-FX
- Wide Input Voltage Range: 18-36V
- Electrical Interface compliant with IEEE 802.3 (10/100/1000BASE-T)
- Optical Interface compliant with IEEE 802.3 (100BASE-FX)
- Wide Operating temperature: -40°C to +85°C
- Ethernet MDI/MDIX automatic crossover
- Magnetics on the electrical signal input side to support 10/100/1000BASE-T operation over 100m Cat 5E

- Contact Glenair if Flow Control is required
- IP67 in mated condition
- M38999 Electrical Signal & Power
- M28876 Fiber Optic Connector
- Panel Mount, either J1 or J2 with Heli coil thread inserts

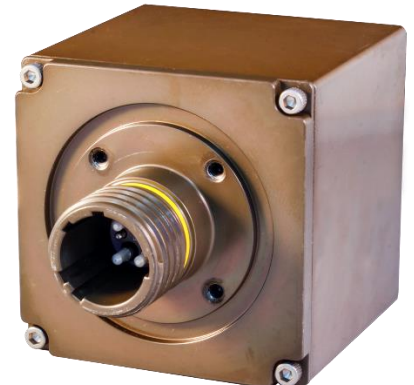
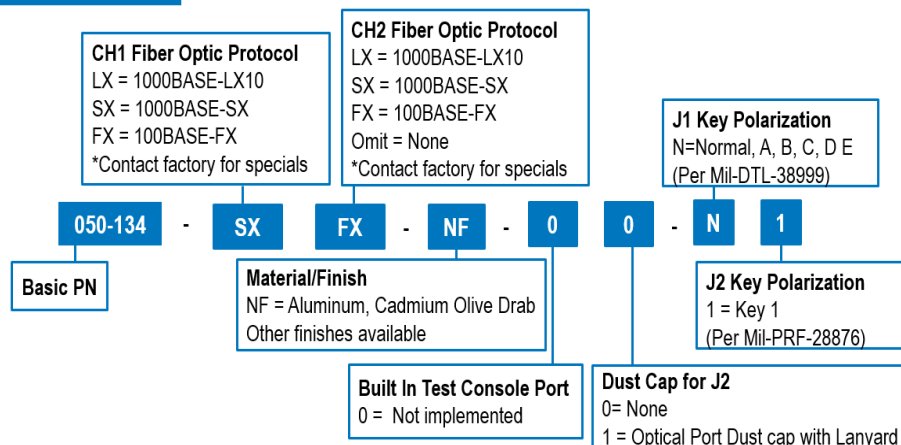
OPTIONAL FEATURES

- Built In Test Console Port accessible via USB2.0
- Built in Test Console Port accessible via UART

APPLICATIONS

- Harsh Environment such as: Airborne, Tactical, Railway, Industrial, Oil and Gas, and Shipboard applications

How To Order

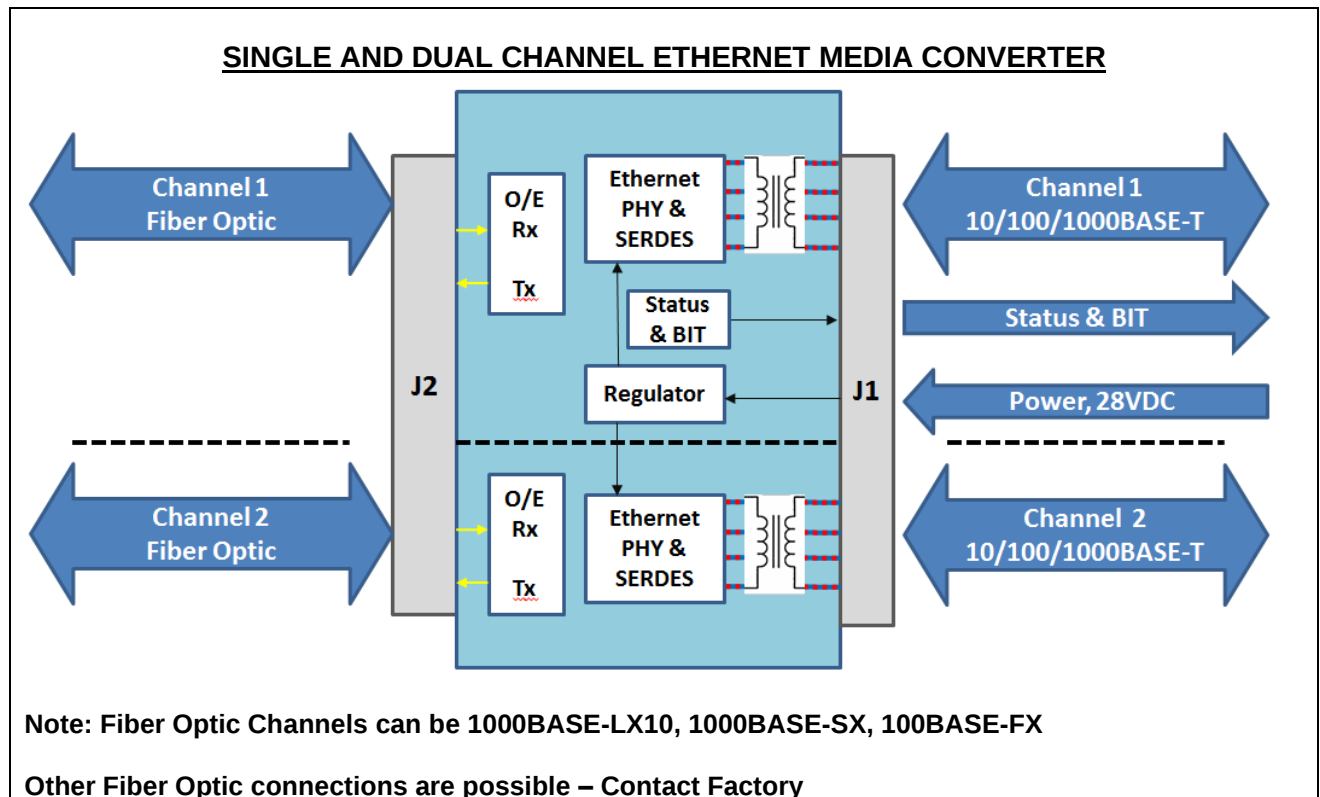


050-134 Product Brief

Media Converter, Single or Dual Channel, Panel Mount
10/100/1000BASE-T to Fiber Optic Ethernet (SX, LX10, or FX)



Functional Block Diagram

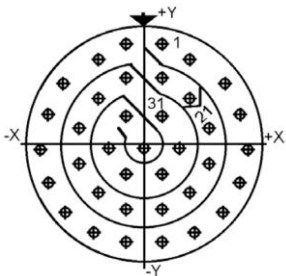
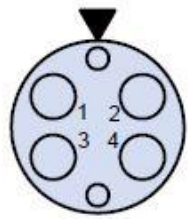


050-134 Product Brief

Media Converter, Single or Dual Channel, Panel Mount
10/100/1000BASE-T to Fiber Optic Ethernet (SX, LX10, or FX)



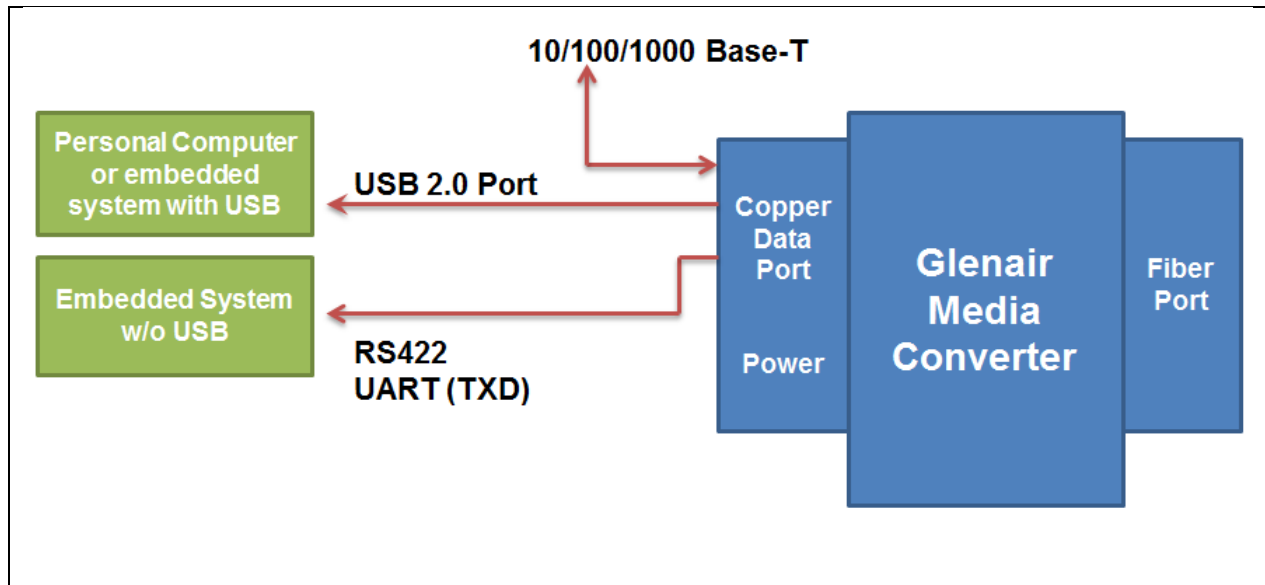
Connectors

NAME	Insert Arrangement	Function	Media Converter	Mating PLUG Connector
J1	 D38999 Series III MIL-STD-1560 Arrangement 15-35	Electrical Signal, Status and Built In Test (BIT), & Power	D38999 Series III type 15-35 <u>PIN CONTACTS, 22D</u>	Generic PN D38999/26#D35SN Glenair PN 233-105-G6#15-35SN <u>SOCKET CONTACTS, 22D</u>
J2	 28876 Style Shell Size 13 Socket insert face	Fiber Optic Signal	M28876 type Shell Size 13 <u>SOCKET CONTACTS</u> M29504/15-4181C Glenair PN 181-040-1260C	MIL-Spec PN M28876/*B1P1 Where * = 6, 7, 8, or 9 Glenair PN 180-040NF*-13-04-1-1P Where * = 06, 16, 26 or 36 <u>PIN CONTACTS</u> M29504/14-4141C Glenair PN 181-039-1260C

Note: # = Environmental Class (Material/Finish)

Built In Test (BIT) Functionality - Optional Features

This media converter can be offered with built in test functionality accessible through a Console Port via Universal Serial Bus 2.0 (USB 2.0) or via RS422 UART (TXD) or both options can be made available. Functional block diagram for this is shown below.



Universal Serial Bus (2.0) BIT

- Presents itself as a "Virtual" Communications Port
- Compatible with Microsoft Windows, Mac, and Linux OS's.
- On the computer side, open any terminal application (PuTTY, HyperTERM, TeraTERM, etc.) to communicate with the media converter hardware.
- Simple "Human Readable" status messages.

050-134 Product Brief

Media Converter, Single or Dual Channel, Panel Mount
10/100/1000BASE-T to Fiber Optic Ethernet (SX, LX10, or FX)



TYPICAL USB CONSOLE WINDOW (PuTTY)

A screenshot of a PuTTY terminal window titled 'COM1 - PuTTY'. The window displays the following text:

```
*****
Glenair *
Media Converter Service Port *
*****
Unit Identification Information
*****
Product Code: 050-134-FXSX
Unit Serial Number: 0145
Firmware Revision: 1.2.0
Product Description: 10/100/1000 Mbps Ethernet Copper to Fiber Media Converter

*****
Unit Status
*****
Temperature: 45 degrees C
Power Supply Status: Good
RX Loss of Signal, CH1: False
Transceiver Disable, CH1: False
Transceiver, TX Fault, CH1: False
Copper-Side Link Status, CH1: Up
Fiber-Side Link Status, CH1: Up
RX Loss of Signal, CH2: False
Transceiver Disable, CH2: False
Transceiver, TX Fault, CH2: False
Copper-Side Link Status, CH2: Up
Fiber-Side Link Status, CH2: Up
```



Built In Test (BIT) Functionality – UART

This media converter can be offered with built in test functionality accessible via an RS-422 Port. The UART Bit message is a 10 bit message with an update rate of 1 Hz. The message format can be seen below.

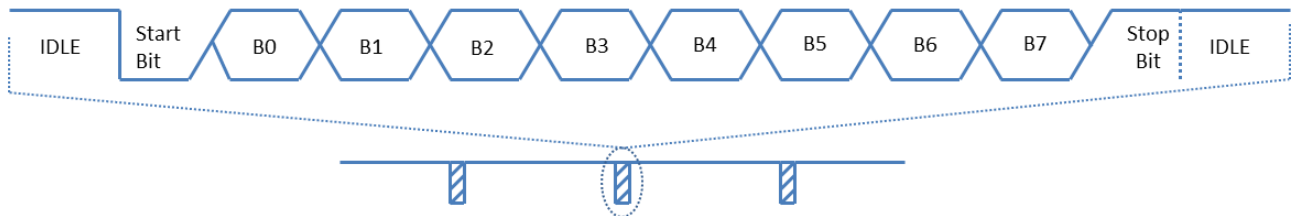
ALARM STATUS MESSAGES

- Fiber Link Status (Up or Down)
- Copper Link Status (Up or Down)

Ethernet Media Converter Status Message Format

Standard UART-Type Format (Start and Stop Bits, 8 Data bits, no parity)

Data Rate = 9600 baud, RS422 Output, Message Repetition Rate = 1 Sec



SERIAL STATUS MESSAGE BIT MAPPING

Bit	Description
0	Channel 1 Fiber Optic TX Fault (1 = Fault, 0 = No Fault)
1	Channel 1 Ethernet copper Link UP (1 = Link Up, 0 = Link Down)
2	Channel 1 Fiber Link UP (1 = Link Up, 0 = Link Down)
3	Channel 1 Rx_LOS (1 = Loss of Signal, 0 = Signal is present)
4	Channel 2 Fiber Optic TX Fault (1 = Fault, 0 = No Fault)
5	Channel 2 Ethernet copper Link UP (1 = Link Up, 0 = Link Down)
6	Channel 2 Fiber Link UP (1 = Link Up, 0 = Link Down)
7	Channel 2 Rx_LOS (1 = Loss of Signal, 0 = Signal is present)

050-134 Product Brief

Media Converter, Single or Dual Channel, Panel Mount
10/100/1000BASE-T to Fiber Optic Ethernet (SX, LX10, or FX)



Ratings and Specifications

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Typ	Max	Units	Notes
Storage Temperature		-55		+100	°C	
Supply Voltage – 28V Input		-0.5	28	40	V	1 second maximum, 40V
Supply Voltage – USB Bus Powered		-0.5	5	5.75	V	

OPERATING CONDITIONS

Parameter	Symbol	Min	Typ	Max	Units	Notes
Operating Temperature		-40		+85	°C	
Supply Voltage – 28V Input		18	28	36	V	
Supply Current – 28V Input			70	110	mA	

050-134 Product Brief

Media Converter, Single or Dual Channel, Panel Mount
10/100/1000BASE-T to Fiber Optic Ethernet (SX, LX10, or FX)



Ratings and Specifications – LX VERSION

OPTICAL CHARACTERISTICS – TRANSMITTER

Parameter	Symbol	Min	Typ	Max	Units	Notes
Optical Output Power	P_{OUT}	-8.5	-4	-1	dBm	1310nm Fabry-Perot
Optical Wavelength	λ_{OUT}	1280	1310	1345	nm	
Spectral Width	$\Delta\lambda$			2.75	nm	

OPTICAL CHARACTERISTICS – RECEIVER

Parameter	Symbol	Min	Typ	Max	Units	Notes
Optical Sensitivity (Input Power Range)	P_{IN_OP}	-20		0	dBm	
Min. Sensitivity, BER 10^{-12} , PRBS 7	P_{IN_MIN}		-22	-20	dBm	PIN PD, LX10 source
Overload, BER 10^{-12} , PRBS 7	P_{IN_MAX}	-1			dBm	
Optical Wavelength	λ_{IN}	1270		1600	nm	

ETHERNET COMPLIANCE

Parameter	Medium Type	Distance	Notes
Gigabit Ethernet, IEEE 802.3ab, 1000BASE-T	TIA/EIA-568-B Cat 5E	100m	
Gigabit Ethernet, IEEE 802.3z, 1000BASE-LX10	Single Mode Fiber (9/125 μ m)	10km	

050-134 Product Brief

Media Converter, Single or Dual Channel, Panel Mount
10/100/1000BASE-T to Fiber Optic Ethernet (SX, LX10, or FX)



Ratings and Specifications – SX VERSION

OPTICAL CHARACTERISTICS – TRANSMITTER

Parameter	Symbol	Min	Typ	Max	Units	Notes
Optical Output Power	P_{OUT}	-7		-1	dBm	VCSEL, 50/125μm MM
Optical Wavelength	λ_{OUT}	830	850	860	nm	
Spectral Width	$\Delta\lambda$			0.85	nm	

OPTICAL CHARACTERISTICS - RECEIVER

Parameter	Symbol	Min	Typ	Max	Units	Notes
Optical Sensitivity (Input Power Range)	P_{IN_OP}	-17		-2	dBm	
Min. Sensitivity, BER 10^{-12} , PRBS 7	P_{IN_MIN}		-22	-17	dBm	PIN PD, 50/125μm MM
Overload, BER 10^{-12} , PRBS 7	P_{IN_MAX}	-2	-1		dBm	
Optical Wavelength	λ_{IN}	770	850	860	nm	

ETHERNET COMPLIANCE

Parameter	Medium Type	Distance	Notes
Gigabit Ethernet, IEEE 802.3ab, 1000BASE-T	TIA/EIA-568-B Cat 5E	100m	
Gigabit Ethernet, IEEE 802.3z, 1000BASE-SX	OM3 MMF (50/125μm) OM1 MMF (62.5/125μm)	550m 275m	850nm VCSEL

050-134 Product Brief

Media Converter, Single or Dual Channel, Panel Mount
10/100/1000BASE-T to Fiber Optic Ethernet (SX, LX10, or FX)



Ratings and Specifications – FX VERSION

OPTICAL CHARACTERISTICS – TRANSMITTER

Parameter	Symbol	Min	Typ	Max	Units	Notes
Optical Output Power	P_{OUT}	-19		-14	dBm	1300nm LED (IEC 9314-3)
Optical Wavelength	λ_{OUT}	1270	1310	1380	nm	
Spectral Width	$\Delta\lambda$		150		nm	

OPTICAL CHARACTERISTICS - RECEIVER

Parameter	Symbol	Min	Typ	Max	Units	Notes
Sensitivity, BER 10^{-10} , PRBS 7	P_{IN}			-32	dBm	PIN PD
Overload, BER 10^{-10} , PRBS 7	P_{IN}	-14			dBm	
Optical Wavelength	λ_{IN}	1270	1310	1380	nm	

ETHERNET COMPLIANCE

Parameter	Medium Type	Distance	Notes
Fast Ethernet, IEEE 802.3u, 100BASE-T	TIA/EIA-568-B Cat 5E	100m	
Fast Ethernet, IEEE 802.3u, 100BASE-FX, IEC 9314-3	MMF (50/125 μ m) & (62.5/125 μ m)	2km	

Ratings and Specifications - (continued)

©2016 Glenair, Inc.

REV: 15

US Cage Code 06324

Printed in USA

GLENAIR, INC. · 1211 AIR WAY · GLENDALE, CA 91201-2497 · TEL: 818-247-6000 · FAX: 818-500-9912

www.glenair.com

PAGE 11 of 18

E-mail: sales@glenair.com

050-134 Product Brief

Media Converter, Single or Dual Channel, Panel Mount
10/100/1000BASE-T to Fiber Optic Ethernet (SX, LX10, or FX)

**COMPLIANCE SPECIFICATIONS**

CHARACTERISTIC	Standard	Condition	Notes
Mechanical Shock	MIL-STD-810	40g	6-9rms
Mechanical Vibration	MIL-STD-810	30g rms	
ESD	MIL-STD-883	Class II	2200V HBM
Conducted Emissions, Power Leads, 30 Hz to 10 kHz	MIL-STD-461F	CE101	
Conducted Emissions, Power Leads, 10 kHz to 10 MHz	MIL-STD-461F	CE102	
Conducted Susceptibility, Power Leads, 30 Hz to 150KHz	MIL-STD-461F	CS101	
Conducted Susceptibility, Transients, Power Leads	MIL-STD-461F	CS106	
Conducted Susceptibility, Structure Current, 60 Hz to 100 kHz	MIL-STD-461F	CS109	
Conducted Susceptibility, Bulk Cable Injection, 10 kHz to 200 MHz	MIL-STD-461F	CS114	
Radiated Susceptibility, Magnetic Field, 30 Hz to 100 kHz	MIL-STD-461F	RS101	
Radiated Susceptibility, Electric Field, 2 MHz to 18 GHz	MIL-STD-461F	RS103	
Radiated Emissions, Magnetic Field, 30 Hz to 100 kHz	MIL-STD-461F	RE101	
Radiated Emissions, Electric Field, 10 kHz to 18 GHz	MIL-STD-461F	RE102	
Eye Safety	CDRH and IEC-825	Class 1 Laser Product	

050-134 Product Brief

Media Converter, Single or Dual Channel, Panel Mount
10/100/1000BASE-T to Fiber Optic Ethernet (SX, LX10, or FX)



Ratings and Specifications - (continued)

Material/Finish

Item	Material/Finish
Housing & Connector Shell	Aluminum
Plating Finish: M	Nickel
Plating Finish: MT	Nickel PTFE
Plating Finish: NF	Olive Drab Cadmium
Contacts	Copper alloy, 50 µInch gold plated
D38999 Inserts	Thermoplastics
Interfacial Seals, 38999 only	Elastomer, Fluorosilicon
Optical Ferrules & Sleeves	Zirconia, Ceramic
Insulators	Liquid crystal polymer (LCP)
Contact retention clip	Beryllium copper alloy
Seal, O-rings	Fluorosilicone rubber
Seal	Silicone elastomer
Spring	Nickel-plated beryllium copper
PC tail contacts	Copper alloy/gold plated
PCB flex	FR4 & Polyimide
Encapsulant	HYSOL EE4215
Solder type: Connector PC Tails to PCBA	Sn63Pb37
Solder type: PCBA component attach	RoHS compliant Sn95/Sb5 (232°C melting temp) & RoHS compliant Sn96.5/Ag3.0/Cu0.5 (217° melting)

050-134 Product Brief

Media Converter, Single or Dual Channel, Panel Mount
10/100/1000BASE-T to Fiber Optic Ethernet (SX, LX10, or FX)



OUTLINE DRAWING & PANEL CUT OUT

See datasheet for details

Dimensional Tolerances Unless specified otherwise:

$0.x \pm 0.1$

$0.xx \pm 0.03$

$0.xxx \pm 0.005$

Weight:

0.6 lbs maximum

Marking:

Assembly is identified with a label in the approximate marking location as shown. The label contains Manufacturer's Name, Cage Code, Part Number, Date Code and Serial Number. The label also includes a UID to report the part number and the serial part number for tracing purposes. The UID is a Construct Number 2 MIL-STD-130N Data Matrix Symbol using ECC 200 encoding/decoding format.

Connectors will be covered with protective caps at time of shipment

Please contact Glenair for other configurations

050-134 Product Brief

**Media Converter, Single or Dual Channel, Panel Mount
10/100/1000BASE-T to Fiber Optic Ethernet (SX, LX10, or FX)**



PANEL CUT OUT – J1

See datasheet for details

PANEL CUT OUT – J2

See datasheet for details

050-134 Product Brief

Media Converter, Single or Dual Channel, Panel Mount
10/100/1000BASE-T to Fiber Optic Ethernet (SX, LX10, or FX)



Input/Output Definition

J1 – ELECTRICAL SIGNAL CONNECTOR – PIN ASSIGNMENTS

See datasheet for details

J2 – FIBER OPTIC CONNECTOR – PIN ASSIGNMENTS

See datasheet for details

050-134 Product Brief

Media Converter, Single or Dual Channel, Panel Mount
10/100/1000BASE-T to Fiber Optic Ethernet (SX, LX10, or FX)



Recommended Inspection & Cleaning Tools/Kits

The following recommendations are suggested for the 050-134 Media Converter:

- **GBS-1001 Inspection Kit (Includes GIT-003 Tip for Arinc801 & GHD Termini)**
- **GIT-004 (FBPT-MIL-1p) tip to inspect the MIL-PRF-28876 (M29504/14/15) pin terminus**
- **GIT-005 (FBPT-MIL-1s) tip to inspect the MIL-PRF-28876 (M29504/14/15) socket terminus**
- **GCLT-H200 cleaning tool for MIL-PRF-28876 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 2.0 mm
MIL-PRF-28876 system***



GCLT - H200

- 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