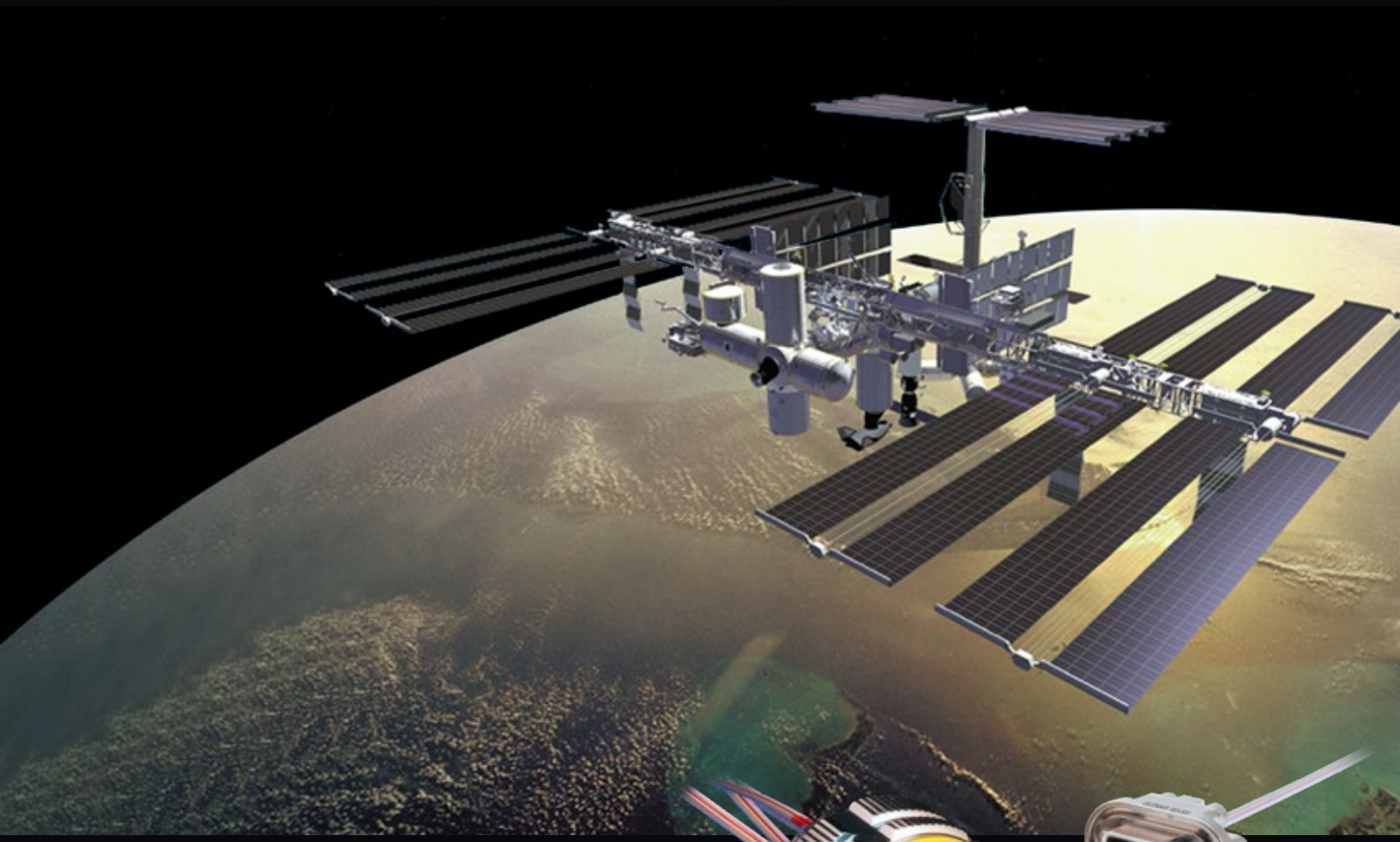
MISSION-CRITICAL
INTERCONNECT
SOLUTIONS

Glenair®



RUGGEDIZED

Photonics for Space Applications

Free Space · Fiber Optic RF · MT Digital Datalinks

AUGUST 2019

Ruggedized **Photonics** for Free Space, Fiber Optic RF and Digital Datalinks

For reduced weight and increased bandwidth in high-throughput satellite applications

No other application environment is as weight conscious as space. The use of non-metallic fiber optic components in multi-gigabit datalinks onboard spacecraft can save significant weight and deliver other benefits compared to traditional copper-based cabling including complete electrical isolation between modules, immunity from radio frequency (RF) interference, and elimination of "ground loops".

The Glenair line of rugged photonic transceiver components is particularly well-suited for space applications and has been purpose-designed to for use in harsh-environment multi-gigabit fiber optic datalinks. Selected components have been subjected to Gamma, proton, and heavy ion radiation testing (consult factory). Data transmission rates between avionics modules onboard spacecraft continue to increase, driven by the use of processors with multi-gigabit-per-second high-speed serial data I/O's. These complex systems support the growing data requirements of onboard sensors and increased bandwidth requirements between communications switches and satellite communication terminals. Optical fiber is an ideal medium for space-based signal transmission platforms, since it supports data rates up to 10–25 Gbps per channel, is far lighter and smaller than copper wiring of equivalent bandwidth, and is immune to radio-frequency (RF) interference from adjacent cables (and therefore does not require heavy RF shielding) as well as ground-loop issues due to the complete electrical isolation provided by non-metallic fiber-optic assemblies.

Radiation-tolerant and other aerospace photonics

PCB-MOUNTED RUGGEDIZED PHOTONIC TRANSCEIVERS

- 50 Mbps to 5 Gbps:
  SpaceFiber, sRIO, GB Ethernet, and FiberChannel
- -40°C to +85°C; Gamma, proton, and heavy ion radiation

PARALLEL OPTICAL 40GBPS PCB-MOUNT PHOTONIC TRANSCEIVER

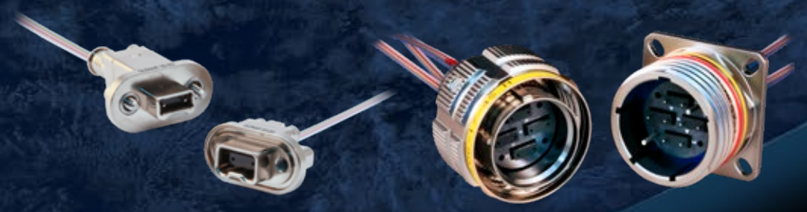
- 4x10 and 4x26 Gbps Parallel Optical Transceivers
- MTP optical connector, removable electrical connector
- Hermetic opto-electronic hybrid
- -40°C to +85°C; Heavy ion tested, high shock and vibe
- Conduction and convection cooling form-factors available

SIZE #8 OPTO-ELECTRONIC CONTACTS / CONNECTORS

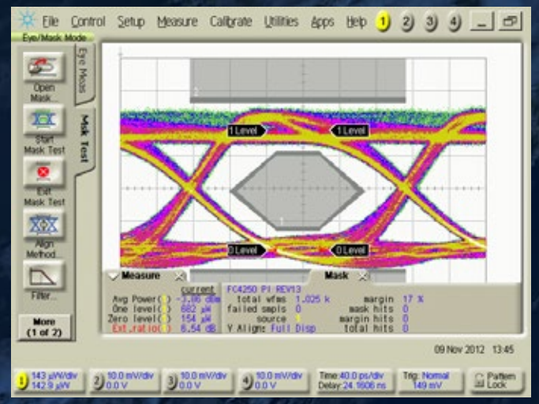
- Fiber-optic transmitter or receiver in a size #8 contact
- 50 Mbps to 5 Gbps
- Supports balanced CML protocols:
  SpaceFibre, sRIO, GB Ethernet, and Fiber Channel
- -40°C to +85°C; Gamma, proton, and heavy ion radiation

HIGH-DENSITY, RUGGEDIZED MULTI-CHANNEL MT FIBER OPTIC CONNECTORS AND CABLE ASSEMBLIES

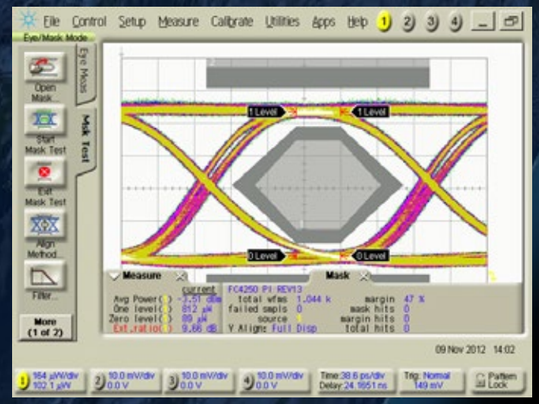
- Ruggedized connectors / cables with MT optical ferrules
- SuperNine™ MIL-DTL-38999; 1, 2, 3 or 4 MT ferrules
- Series 79 Rectangular and Micro-D Subminiature packaging
- -40°C to +85°C operating temperature range



FILTERED EYE DIAGRAM TEST RESULTS



-40°C



+90°C

Performance of Glenair Size #8 optoelectronic contact filtered eye diagrams at 4.25Gbps demonstrates suitability of the technology for high throughput, high-bandwidth demand satellite applications including remote sensing and earth observation (climate, vegetation, forest biomass, aridity, ice caps, wind speeds, sea levels, magnetics), communication, quantum key, telecoms, and worldwide expansion of internet coverage.

Qualification Testing

Comprehensive reliability and qualification tests have been conducted on Glenair Size #8 Optoelectronic contacts, ruggedized space-grade transceivers, and fiber optic datalinks.

The filtered transmitter eye diagram at 4.25 Gbps for the Size #8 contacts at various temperatures is shown in Figure 1. Test data demonstrates stable optical power, acceptable eye-mask margins and extinction ratios over the -40°C to +90°C range of ambient operating temperature. The performance of the board-mount transceivers is similar, as both technologies use the same circuit schematic and components. The eye-mask testing was performed at 4.25 Gbps due to the availability of test equipment with this data rate filter. The links tested using these devices also run error-free at 5 Gbps.

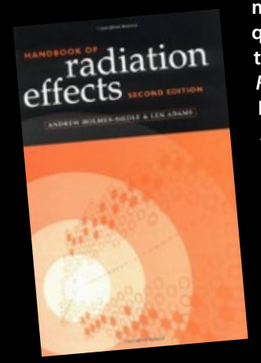
The receiver sensitivity typical for the Size #8 optoelectronic contact measured at 4.25 Gbps is approximately -19 dBm, which is 5 dB of margin beyond the Fiber Channel standard specification for 4.25 Gbps of -14 dBm. Given the transmitter output power of approximately -3.5 dBm, this yields an optical link budget of greater than 16 dB at 4.25 Gbps.

2000-hour accelerated aging tests were performed on 20 transmitter and receiver devices while operating at +85°C, and no failures were observed. Temperature cycle testing was also performed for 1000 cycles from -55°C to +125°C, non-operating on the PCB-mount transceivers as well as the Size #8 contacts. The units were removed at intervals and subjected to additional temperature cycling from -40°C to +85°C to ensure operating temperature performance within specifications.

Transceivers were subjected to operational vibration and shock testing. This was followed by 650 G, 0.9 ms shock pulses, 10 shocks per direction in all three axes. The units were exposed to these levels while operating and errors were monitored at 5 Gbps. No errors were detected during any of these exposures.

Finally, the Size #8 contacts were tested for resistance to radiation exposure to 165 krad of gamma radiation from a cobalt-60 source, and 2.5 X 10^{12} neutrons/cm^2, while operating under continuous error monitoring—with no errors detected. Test results of for proton and heavy ion irradiation are complete and available from the factory on request. The radiation levels these parts have survived are in-line with the most severe requirements for earth-orbiting spacecraft.

Our scientists incorporate the latest research and best practices on the measurement of radiation effects in optoelectronic systems, providing consumers of these solutions with a faster, more reliable path to space qualification. Throughout the process, the *Handbook of Radiation Effects* by Andrew Holmes-Siedle and Len Adams was used for both practical and theoretical validation. In addition to free space applications, these components would be suitable for other radiation-exposed environments such as large-particle physics experiments.

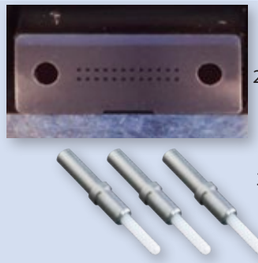


RUGGEDIZED

Ultra high-density MT Ferrule fiber optic connection system—with SuperNine® circular or Series 79 rectangular packaging

Proven-performance MT ferrules in MIL-DTL-38999 advanced-performance connectors or in precision-machined Series 79 rectangulars—only from Glenair

The MT Ferrule High-Density Advantage



Up to 24 fibers in a single compact, lightweight ferrule (7mm x 3mm / .276" x .118") **—same real estate as three size #16 termini side by side**

SuperNine with MT

- **Ruggedized "better than QPL" SuperNine® MIL-DTL-38999 Series III type interconnect packaging**
- **Singlemode and multimode fiber**
- **Low insertion loss**
- **Environmental sealing: IP67 mated, IP68 available at interface**
- **RoHS-compliant finishes available**
- **MT ferrules sold separately**
- **MT assembly tool, P/N 182-062 also available and sold separately**

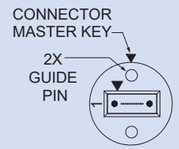
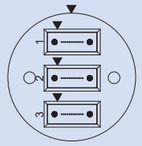
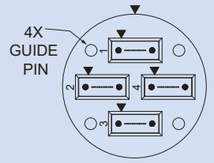
ULTRA HIGH-DENSITY

SuperNine® Connector with MT Ferrule

Signature fiber optic connection system

SUPERNINE® MT CONNECTOR SIZES AND INSERT ARRANGEMENTS

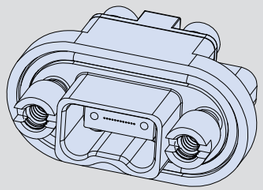
SuperNine® MT MIL-DTL-38999 Series III type connectors with plug-and-play MT ferrule accommodation

			
			
Shell Size 11 Insert Arrangement -1 Up to 24 fibers (1 MT ferrule)	**Shell Size 13 Insert Arrangement -2 Up to 48 fibers (2 MT ferrules)**	**Shell Size 15 Insert Arrangement -3 Up to 72 fibers (3 MT ferrules)**	**Shell Size 17 Insert Arrangement -4 Up to 96 fibers (4 MT ferrules)**

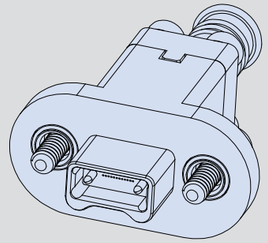
SERIES 79 WITH MT

Series 79 MT fiber optic connector is the world's smallest ruggedized MT connector solution with robust resistance to vibration and shock. Series 79 MT delivers superior low insertion-loss performance (up to 500 mating cycles) compared to commercial solutions. Connectors are supplied in single (consult factory for dual and quad) MT configurations with retaining plate and optional banding porch on plugs, and ultra low-profile retaining plate on receptacles.

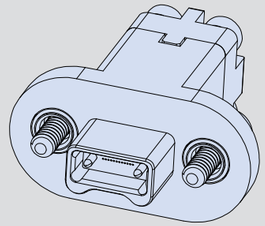
SERIES 79 PRECISION-MACHINED SPACE-GRADE MT FERRULE-EQUIPPED CONNECTORS



Receptacle with female MT ferrule available with or without EMI gasket



Plug with male MT ferrule with retaining plate and banding porch



Plug with male MT ferrule and retaining plate

- **Ruggedized small form-factor, high-density MT fiber optic solution**
- **Temperature tolerance from -40°C to +85°C**
- **Optimized for use with parallel optic transceivers in ribbon or round cable applications**
- **Low insertion loss performance in high vibration and shock environments**

RUGGEDIZED

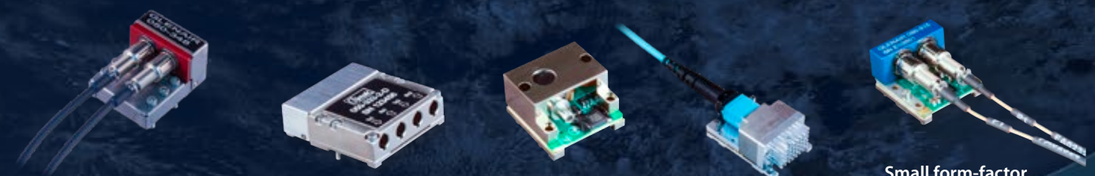
PCB-Mount photonics: connectorized, high-density, board-mount transceivers built for rugged vibration and shock, up to 25Gbps per channel

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 free space, satellite, RF and other military and aerospace applications. Selected components have been subjected to Gamma, proton, and heavy ion radiation testing (consult factory).

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. Parallel optical transceivers leverage new MT fiber optic datalink technology for unprecedented bandwidth and throughput.

- **Radiation tolerant (consult factory), smallest footprint available**
- **Jet fighter and space launch shock and vibration tested**
- **No soldering required**
- **CML 100 Ohm differential input and output**
- **-40°C to +85°C operating temperature range**

RUGGEDIZED PCB-MOUNT MODULES FOR ETHERNET, HIGH-SPEED VIDEO, AND STORAGE



EMI shielded and radiation-tolerant transceivers

Dual transceivers, quad transmitters, quad receivers

Bi-directional transceivers

Parallel optical transceivers

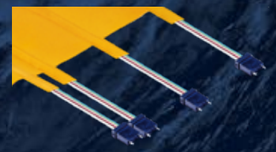
Small form-factor, high-vibration high-temperature tolerant

PARALLEL OPTICS

PCB-Mount Transceivers and Compatible High-Density MT Fiber Optic Connectors

MT HIGH-DENSITY FIBER OPTIC DATALINKS AND RUGGEDIZED OPTOELECTRONICS

Glenair is the only global source for high-reliability parallel optics modules that also manufactures a complete range of ruggedized MT fiber optic connectors for use in space photonic communications. All our parallel optics transceiver technologies are available in both hermetic and non-hermetic configurations. Glenair is currently and uniquely also positioned to provide PhotonicFlex backplanes with seamless integration of fiber optic media, MT interconnect technology, and high-performance radiation-tolerant and other optoelectronic transceivers.



PhotonicFlex with ribbonized MT terminations

Ruggedized small form-factor MT fiber optic connectors

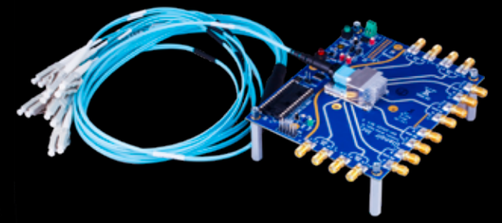
Multi-channel circular ruggedized fiber optic MT connectors

MIL-DTL-38999 Series III Fiber Optic Datalinks with MT Terminations	
Test Description	**Tested Performance / Specifications**
Optical Insertion Loss, Multimode	-0.3 dB typical (50/125)
Optical Insertion Loss, Singlemode	-0.3 dB typical (9/125)
Optical Back Reflection, Singlemode	Better than -30 dB - PC Polish
Mechanical Shock (Operational)	75G half sine, 10ms duration, 3X both directions each axis per TAI-155-14A
Mechanical Shock (Non-Operational	36-44G sawtooth, 10–12ms duration, 3X both directions each axis per MIL-STD-8010F, Method 516.5
Vibration	Figure 514.5C-8 (36Grms), 1 hr. exposure each axis per MIL-STD-810F, Method 514.5, Procedure 1
Mating Durability	500 cycles per TIA-455-21A
Thermal Cycling	5 cycles, -40°C (at step 1) to +85°C (at step 3) with 1 hr. exposure per EIA-364-32F, Condition VIII, Method A
Temperature Life	85°C for 336 hours per TIA-455-4C
Humidity	90% – 95% RH, 96 hr. exposure per TIA-455-5C, Method A, Test ConditionA

Glenair parallel optic transceivers deliver up to 25Gbps per channel high-speed data in free space optics (FSO) applications. Heat tolerant and compatible with conduction cooling for space applications, the transceivers are supplied as discrete printed circuit board mount devices, or with turnkey MTP jumpers or ruggedized MT fiber optic interconnections.

- **4 x 14 to 4 x 25 Gbps per fiber**
- **Compatible with MTP optical connector**
- **Supports 12-fiber ribbon cable**
- **SiGe and GaAs optoelectronic ICs**
- **Hermetic opto-electronic hybrid**
- **Up to 100 Gbps**
- **Conduction-cooling for space applications**
- **46 Grms, 650G shock**
- **-40°C to +85°C case temp**
- **Heavy ion radiation-tested**

Convection cooling (left) and conduction cooling (right) designs as well as custom heat dissipation designs are available.
050-346 parallel optical transceiver, 4 X 10 – 14 Gbps
0500-3007 parallel optical transceiver, 0.1 – 25 Gbps



Available evaluation boards: 050-346 parallel optic transceiver with MT-to-39029 fiber optic terminations

PCB-Mount Modules

Transmitters, Receivers, and Transceivers

Glenair Part Number	ETHERNET											VIDEO				FIBRE CHANNEL				BUS	OTHER	DESCRIPTION	DATARATE (Gbps)	WAVE LENGTH (nm)	LASER TYPE	RECEIVER TYPE	MAX. DISTANCE (km)	PACKAGE TYPE
	100BASE-FX	1000BASE-SX	1000BASE-LX	1000BASE-LX10	1000BASE-EX	1000BASE-BX10	10GBASE-SR	10GBASE-LR	10GBASE-LX4	40GBASE-SR4	100GBASE-SR4	HDMI	DVI/ARINC 818	SMPTE HD-SDI	SMPTE 3G-SDI	1x Fibre Channel	2x Fibre Channel	4x Fibre Channel	8x Fibre Channel	sFPDP	FDDI							
050-315	●											●	●			●	●	●		●		Transceiver	0.1 - 5	850	VCSEL	PIN TIA	0.5	1
050-316	●											●	●			●	●	●		●		Dual Transmitter	0.1 - 5	850	VCSEL	N/A	0.5	1
050-317	●											●	●			●	●	●		●		Dual Receiver	0.1 - 5	850	N/A	PIN TIA	0.5	1
050-318		●	●										●			●				●		Transceiver	0.1 - 1.25	1310	FP	PIN TIA	10	1
050-319		●	●										●			●	●			●		Dual Transmitter	0.1 - 2.5	1310	FP	N/A	10	1
050-320		●	●									●	●			●	●	●		●		Dual Receiver	0.1 - 4.25	1310	N/A	PIN TIA	10	1
050-321	●																				●	Transceiver	0.05 - 0.2	1300	LED	PIN TIA	20	1
050-324			●	●	●								●			●	●	●		●		Transceiver	0.1 - 2.5	1310	DFB	PIN TIA	40	1
050-325			●	●	●								●			●	●	●		●		Dual Transmitter	0.1 - 2.5	1310	DFB	N/A	40	1
050-327							●					●	●			●	●	●	●			Transceiver	1 - 10.5	850	VCSEL	PIN TIA	0.4	1
050-328								●				●	●			●	●	●	●			Transceiver	1 - 10.5	1310	DFB	PIN TIA	10	1
050-331														●	●							SMPTE Dual Transmitter	1.5 - 2.97	850	VCSEL	N/A	1	1
050-332														●	●							SMPTE Dual Receiver	1.5 - 2.97	850	N/A	PIN TIA	1	1
050-333		●										●	●			●	●	●		●		Dual Transceiver	0.1 - 5	850	VCSEL	PIN TIA	0.5	2
050-336		●										●	●			●	●	●		●		Quad Transmitter	0.1 - 5	850	VCSEL	N/A	0.5	2
050-337		●										●	●			●	●	●		●		Quad Receiver	0.1 - 5	850	N/A	PIN TIA	0.5	2
050-340													●			●						BIDI Transceiver	0.1 - 1.25	1310/1550	FP/FP	PIN TIA	4	1
050-341								●				●	●			●	●	●	●			BIDI Transceiver	1 - 10	1270/1330	DFB/DFB	PIN TIA	10	1
050-342			●	●												●	●					CWDM Transceiver	0.1 - 2.5	CWDM	DFB	PIN TIA	20	1
050-343									●			●	●			●	●	●	●	●		CWDM Transceiver	1 - 10.5	CWDM	DFB	PIN TIA	10	1
050-346							●			●						●	●	●	●			Parallel Optical Transceiver	4 X 10 – 14	850	VCSEL	PIN TIA	0.5	3
050-348		●											●			●	●	●		●		EMI Shielded Transceiver	0.1 - 5	850	VCSEL	PIN TIA	0.5	1
050-352	●																				●	Transceiver	0.05 - 0.2	1310	FP	PIN TIA	10	1
050-354			●	●								●	●			●	●	●		●		Transceiver	2.5 - 5	1310	FP	PIN TIA	10	1
050-356			●	●									●			●	●			●		CWDM Dual Transmitter	0.1 - 2.5	CWDM	DFB	N/A	10	1
050-357														●	●							SMPTE Dual Receiver	1.5 - 2.97	1250-1600	VCSEL	PIN TIA	10	1
050-358														●								SMPTE CWDM Dual Transmitter	1.5	CWDM	DFB	N/A	10	1
050-360		●										●	●			●	●	●		●		Radiation-Tolerant Dual Transmitter	0.1 - 5	850	VCSEL	N/A	0.5	1
050-361		●										●	●			●	●	●		●		Radiation-Tolerant Dual Receiver	0.1 - 5	850	VCSEL	PIN TIA	0.5	1
050-362		●										●	●			●	●	●		●		Radiation-Tolerant Transceiver	0.1 - 5	850	VCSEL	PIN TIA	0.5	1
050-363		●										●	●			●	●	●				Radiation-Tolerant Quad Transmitter	0.1 - 5	850	VCSEL	N/A	0.5	2
050-364		●										●	●			●	●	●				Radiation-Tolerant Quad Receiver	0.1 - 5	850	VCSEL	PIN TIA	0.5	2
050-369							●	●				●	●			●	●	●	●			Transceiver MMF TX · SMF RX	1 - 10	850 TX 1310 RX	VCSEL	PIN TIA	10	1
050-373		●										●	●			●	●	●		●		Dual-Transceiver (4 mounting screws)	0.1 - 5	850	VCSEL	PIN TIA	0.5	2
050-374		●										●	●			●	●	●		●		Quad Transmitter (4 mounting screws)	0.1 - 5	850	VCSEL	N/A	0.5	2
050-375		●										●	●			●	●	●		●		Quad Receiver (4 mounting screws)	0.1 - 5	850	N/A	PIN TIA	0.5	2
050-376									●			●	●			●	●	●	●	●		CWDM Dual Transmitter	1 - 10	CWDM	DFB	N/A	10	1
050-379														●								SMPTE CWDM Transceiver	1.5	CWDM	DFB	PIN TIA	10	1
050-385		●										●	●			●	●	●		●		Radiation-Tolerant Dual Transceiver	0.1 - 5	850	VCSEL	PIN TIA	0.5	2
050-386							●					●	●			●	●	●	●			Dual Transmitter	1 - 10.5	850	VCSEL	PIN TIA	0.4	1
050-389														●	●							SMPTE Transceiver	1.5 - 2.97	850	VCSEL	PIN TIA	1	1
050-394						●							●			●						BIDI Transceiver	0.1 - 2.5	1310/1490	DFB/DFB	PIN TIA	10	1
050-397*						●							●			●						BIDI Transceiver	0.1 - 1.25	1310/1550	DFB/DFB	PIN TIA	10	1
0500-3007											●		●			●	●	●	●			Parallel Optical Transceiver	4 X 25	850	VCSEL	PIN TIA	0.1	3
0500-3011						●							●			●	●	●	●			DWDM EML FSO Transceiver	11.3	DWDM	EML	PIN TIA	40	1

*Note: The 050-397 meets 1000BASE-BX10 length standard, but wavelengths used are non-standard

RUGGEDIZED

RF over Fiber low-noise PCB-mounted transmitters, receivers, and transceivers

Radio Frequency over Fiber (RFoF) communication systems integrate wireless radio frequency (RF) transmissions and fiber optic datalinks into a single system. The technology allows designers to far exceed the distance and data-rate capabilities of conventional copper coax wire media used in legacy RF data-link applications. RF over Fiber is an analog conversion process that modulates the laser-generated light within the conversion unit with the RF signal for transmission over optical fiber. RF over fiber is an antenna signal distribution technology ideally suited for mobile and fixed-earth installations such as secure command centers, reduced-footprint airframe applications, naval vessels, phased-array antenna installations and more.

The benefits of RF over Fiber include lower transmission loss (attenuation) as well as reduced sensitivity to electromagnetic noise. The usual range of fiber optic benefits, including immunity to EMI/EMP, unlimited transmission distances, lighter weight, and improved security also apply. Glenair low-noise, shielded RF over Fiber solutions have a useful RF bandwidth from 2 MHz to 3.5 GHz can be embedded inside-the-box, such as with the PCB-mount transceivers highlighted on this spread, or incorporated into stand-alone copper-to-fiber media converters for outside-the-box environmental applications. Higher-frequency units, up to 40 GHz, are currently under development.

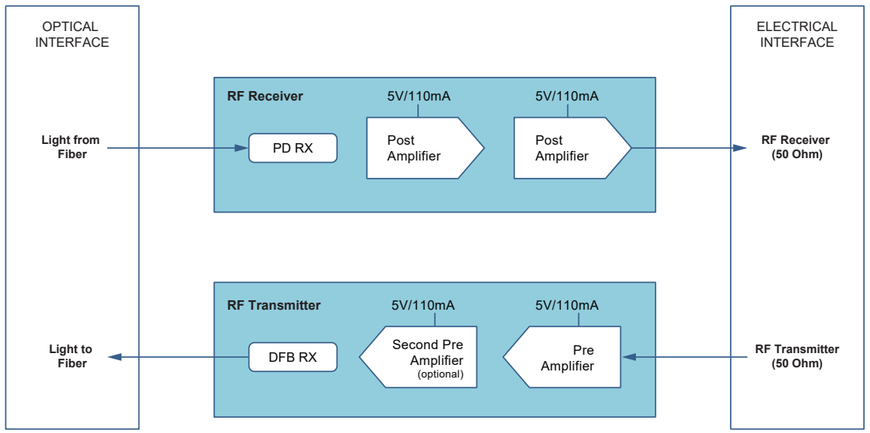
Glenair RF over fiber transmitters, receivers, and transceivers are ruggedized for military and aerospace applications that demand high temperature as well as vibration and shock tolerance. Consult factory for radiation tolerance.

- **2MHz – 3.5 GHz antenna signal distribution**
- **New high-frequency 20 and 40 GHz units in development**
- **High-vibration PCB mount solution**
- **-40°C to +85°C operating case temperature**
- **High Spurious Free Dynamic Range (SFDR) link**
- **APC fiber optic contact standard**
- **Integrated high-speed PIN photo diode and low-noise RF amplifiers**

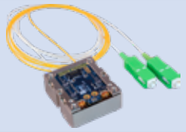
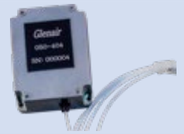
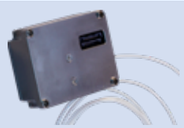
RUGGEDIZED

RF over Fiber PCB-Mount Transmitters, Receivers, and Transceivers

EXAMPLE FUNCTIONAL BLOCK DIAGRAM FOR GLENAIR 050-400 RF OVER FIBER TRANSCEIVER



RF over Fiber PCB-Mount Component Selection Guide

	**050-400**	PCB Mount RF-over-Fiber Transceiver 20MHz to 3.5 GHz
	**050-404**	PCB Mount RF-over-Fiber Transmitter 2 MHz – 3.5 GHz
	**050-405**	PCB Mount RF-over-Fiber Receiver 2 MHz – 3.5 GHz
	**050-406**	PCB Mount RF-over-Fiber Transmitter 2 MHz – 3.5 GHz Low-Noise configuration
	**050-407**	PCB Mount RF-over-Fiber Receiver 2 MHz – 3.5 GHz Low-Noise configuration

APPLICATIONS

- **Ground terminal and intra-facility links for secure shelters**
- **Electronic Warfare (EW) systems**
- **Phased-Array antenna systems**
- **Naval vessels**
- **Reduced-footprint airframe applications**
- **Satellite communications (SATCOM)**
- **Mobile command, control, and communications vehicles**

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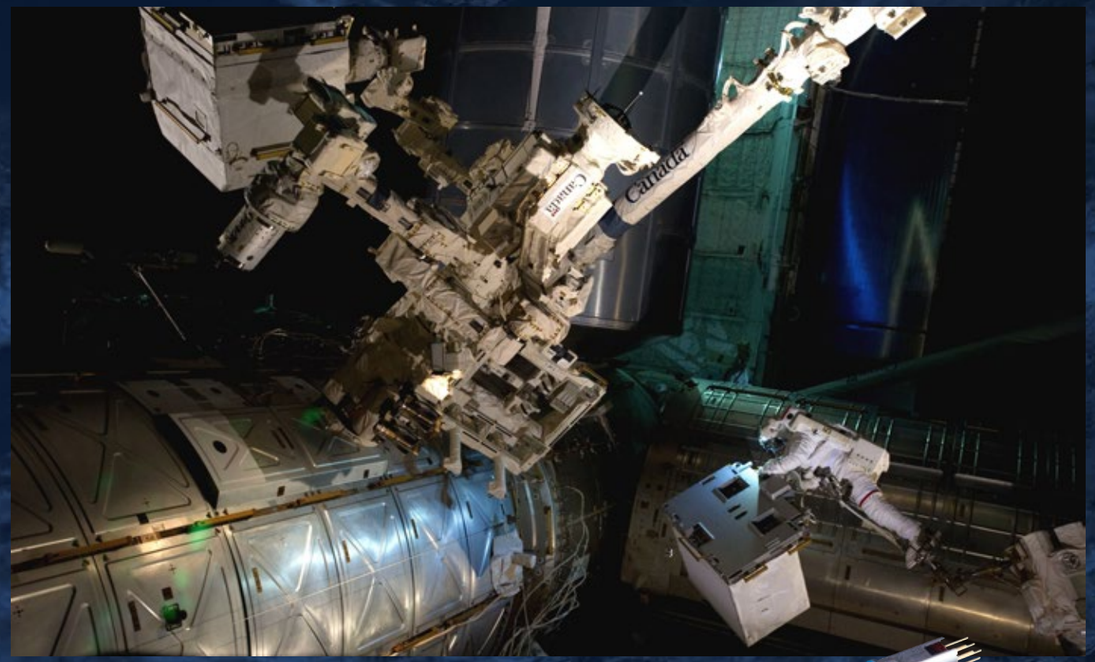
Size #8 photonic transmitter and receiver contacts and connectors for Ethernet, video and high-speed data



Size 8 photonic 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. These optoelectronic contacts may be readily incorporated into space-grade caliber connector packages including MIL-DTL-38999, ARINC 801, as well as low-profile rectangular connector designs.

Patented photonic contacts integrate into Glenair connectors including SuperNine® (D38999 Series III), ARINC 801, ARINC 404, and others. Selected part numbers have been designed and tested for radiation tolerance (consult factory).

Opto-electronic receptacle connectors are populated with size #8 contacts, and ready for immediate assembly in I/O to circuit board applications

- **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**
- **For use in ARINC 600 and other size #8 cavity-equipped connectors**
- **Current offerings include 1.25mm ARINC 801 and 2.5mm ELIO® solutions**

RUGGEDIZED

Photonic Contacts and Connectors for Ethernet, Video and High-Speed Data

050-301 SIZE 8 CAVITY OPTO-ELECTRONIC CONTACTS, 100MBPS TO 5GBPS, MMF, 3.3V

050-301
Radiation Tolerant

- Front-release, front-insert, front-removable Size #8 OE converter designed for ARINC 600
- ARINC 664, 801, 803, 804, and 818 Standard Compliant
- Data rates from 100Mbps to 5.00Gbps
- Supports Fast and Gigabit Ethernet, AFDX, 1x/2x Fibre Channel, DVI, DHMI, SFPDP, Serial Rapid I/O (sRIO)
- 100 ohms differential CML inputs with Tx Fault and Tx Disable
- Link distances up to 550 meters with multimode 50/125µm or 62.5/125 µm fiber
- Single 3.3V power supply
- ARINC 801 1.25mm ceramic fiber ferrule
- Solutions available in 38999 style connectors
- -40°C to +85°C Operating Case Temperature
- Evaluation fixtures available

050-307 SIZE 8 CAVITY OPTO-ELECTRONIC CONTACTS, 100MBPS TO 5GBPS, MMF, 3.3V

050-307
Radiation Tolerant

- Front-release, front-insert, front-removable Size #8 OE converter designed for ARINC 600
- ARINC 664, 801, 803, 804, and 818 Standard Compliant
- Data rates from 100Mbps to 5 Gbps
- Supports Fast and Gigabit Ethernet, AFDX, 1x/2x Fibre Channel, DVI, DHMI, SFPDP, Serial Rapid I/O (sRIO)
- 100 ohms differential CML inputs with Tx Fault and Tx Disable
- Link distances up to 550 meters with multimode 50/125µm or 62.5/125 µm fiber
- Single 3.3V power supply
- ELIO 2.5mm ceramic fiber ferrule
- Solutions available in 38999 style connectors
- Mates with ELIO 2.5mm Termini
- -40°C to +85°C Operating Case Temperature
- Evaluation fixtures available
- Compatible with Souriau ELIO AQ6S Quadrax Adapter

050-367 SIZE 8 CAVITY OPTO-ELECTRONIC CONTACTS, 3G-SDI AND HD-SDI, MMF, 3.3V

050-367
(patented)

- SMPTE EG 34:2004 Compliant to Pathological Conditions CASE 1, CASE 2 and CASE 3.
- SMPTE ST 297:2015 (3G-SDI & HD-SDI)
- SMPTE 424 Compliant (3G-SDI)
- SMPTE 292 Compliant (HD-SDI)
- SFP Compatible Electrical Input signal levels
- 850nm VCSEL support 3G-SDI & HD-SDI
- Industry standard CML input and outputs that make for simple integration on customer host PCB
- Front-release, front-insert, front-removable
- Fits size 8 quadrax cavity for ARINC 600
- Solutions available in 38999 style connectors
- -40°C to +85°C Operating Case Temperature
- Evaluation fixtures available

050-399 SIZE 8 CAVITY OPTO-ELECTRONIC CONTACTS, DC TO 1 MBPS, MMF, 3.3V

050-399
(patented)

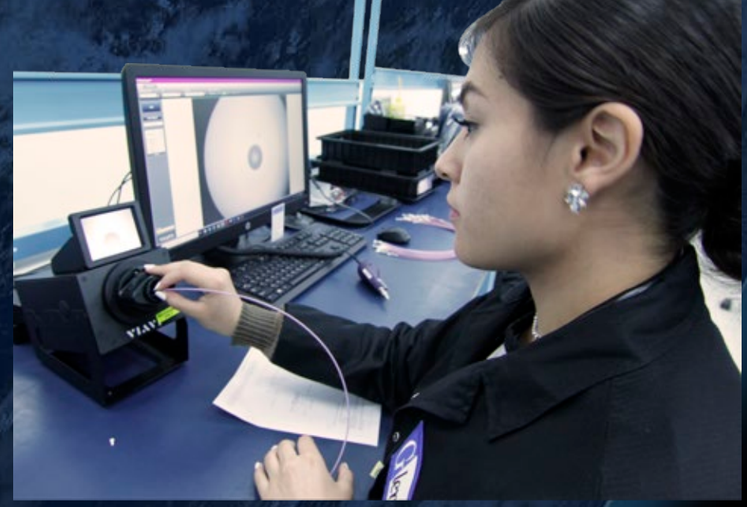
- Front-release, front-insert, front-removable Size #8 OE converter designed for ARINC 600
- ARINC 664, 801, 803, 804, and 818 Standard Compliant
- Data rates from DC to 1 Mbps
- Supports RS232, RS422, and RS485 data rates
- DC coupled transmitter and receiver
- Link distances up to 2Km
- Single 3.3V power supply
- ARINC 801 1.25mm ceramic fiber ferrule
- Solutions available in 38999 style connectors
- -40°C to +85°C Operating Case Temperature
- Evaluation fixtures available

Photonics™

Fiber Optic CONNECTORS

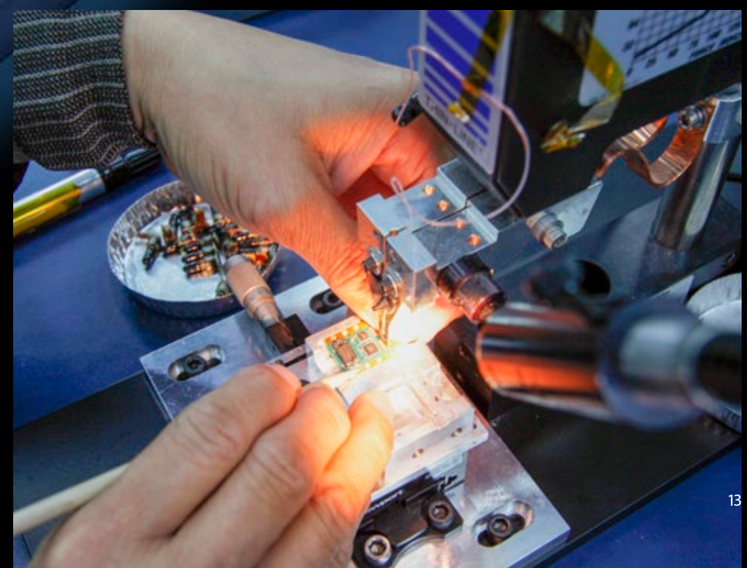
Fiber Optics and Photonics:
Glenair manufactures radiation-tested photonic technologies plus a complete range of harsh-environment fiber optic connectors and cable assemblies—
all in-house in our Glendale, CA facility.

Precision Assembly and Test
Glenair harsh-environment fiber optic connectors, cables, and photonics are manufactured, assembled, and tested under a single quality management system.



Inspection and Test
Each and every fiber optic circuit is 100% polished, cleaned, and inspected prior to shipment.

Small-Volume, High-Touch
Glenair's fiber optic cell can accommodate both large volume as well as the many small-volume requirements common in our mil-aero market.



MISSION-CRITICAL

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