050-313
Opto-Electronic Transceiver
MIL-DTL-38999 Type 2.5mm ELIO® Compatible
100Mbps – 4.25Gbps

Glenair®

Opto-Electronic Solutions

Opto-electronic transceiver with MIL-DTL-38999 type connector interface

Glenair 050-313 is a D38999 Type 11-02 receptacle connector that incorporates an opto-electronic transceiver that operates from 100Mbps-4.25Gbps that converts electrical signals to multimode fiber. The transmitter section incorporates an 850nm Laser and laser driver with APC functionality to maintain output power and extinction ratio over the operating temperature range. The transmitter has a disable function as well as a transmitter fault detect function. The receiver section incorporates PIN/TIA and limiting amplifier to quantize electrical output signals. The receiver also offers a CMOS compatible Loss of Signal indicator. The electrical interface for the transceiver are PC tail pins that intended to mount to a PCB or interface flex circuit; the high speed lines of the Transmitter and Receiver sections are CML compatible.

The Glenair optical transceiver is ideal for harsh-environment, extreme shock, vibration and temperature avionics and military applications where copper cable link distance, bandwidth, weight or bulk make the use of twisted pair, twinax or quadrax copper conductors unacceptable

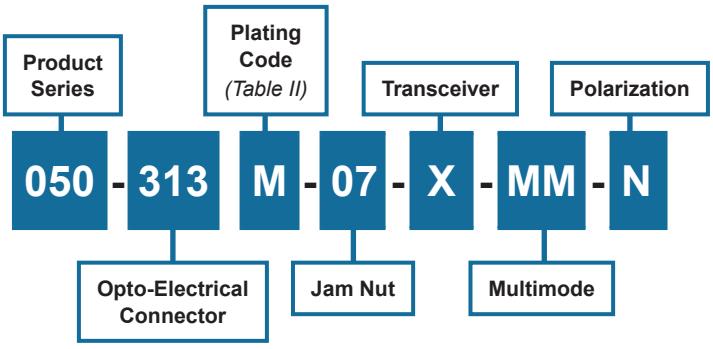
KEY FEATURES

- -40°C to +85°C operating temperature range
- Ideal for military and other harsh environment applications.
- MIL-STD-810 mechanical shock and vibration compliance
- MIL-STD-1344 immersion resistance compliance
- Up to 550 Meters for VCSEL 850nm version with Multimode fiber
- Power supply operation from 3.3V

APPLICATIONS

- Military tactical communication Systems
- Harsh environment telemetry or communications
- Satcom systems
- Avionics communication and telemetry systems

How To Order



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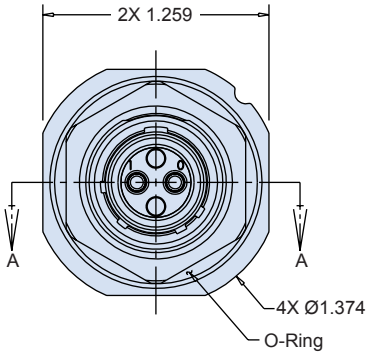

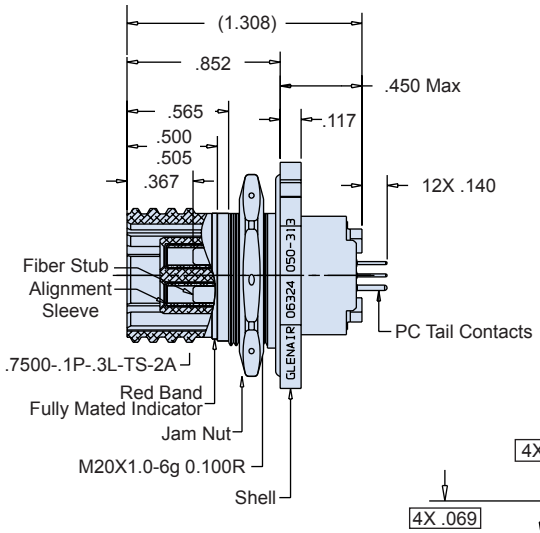

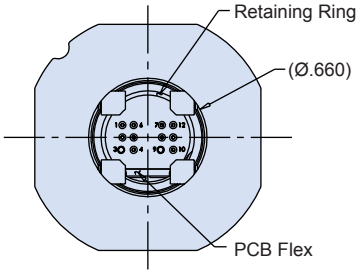

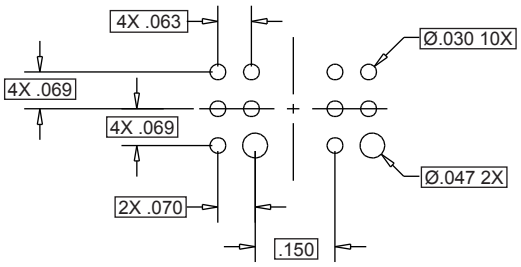

Recommended PCB Footprint
(Viewed from Top)

Simplified I/O Transceiver Schematic

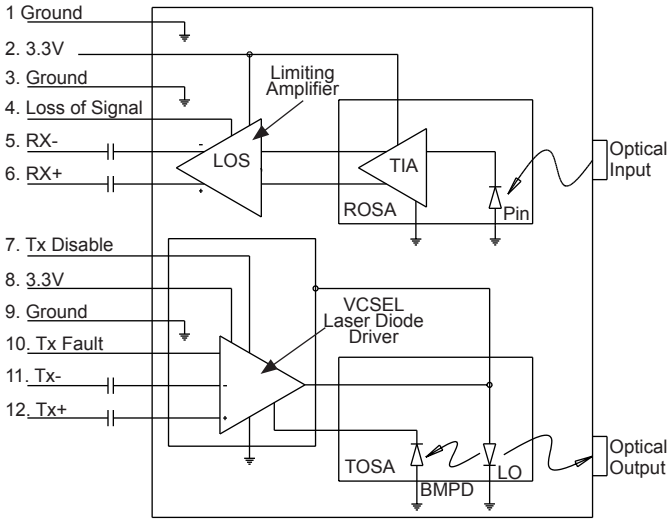

Table II: Material And Finish	
Shell & Jam Nut	Aluminum/Cad over Nickel
Retaining Ring	300CRES/Passivation
Seal & O-Ring	Silicone Elastomer
Fiber Ferrule & Sleeve	Zirconia Ceramic
PC Tail contacts	Copper Alloy/Gold Plated
PCB Flex	FR4 & Polyimide
Solder Type	RoHS Compliant Sn96.5/Ag3.0/Cu0.5 (217° C melting) and RoHS Compliant Sn95/Sb5 (232°C Melting Point)
Encapsulant	Epoxy

Material and Finish
See Table II

Assembly Notes
For mating connector, see Souriau plug connector P/N 8D5E11X02AN
This connector meets applicable mechanical requirements of MIL-DTL-38999/24 Size 11
PCB installation contacts (part of PCB flex) can float approximately .010" – .030" radially and axially for ease of installation
Laser safety information: class 1 21CFR1040.10
Product is RoHS compliant
Recommended PCB installation soldering: Contacts can withstand locally applied soldering heating of pins typical RoHS compliant solder temperature of 260° for 10 seconds

Ratings and specifications—Transmitter

Absolute Maximum Rating					
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**
Storage Temperature	Ts	-55		+100	°C
Supply Voltage	Vcc	-0.4		+4	V
Tx Disable Input Voltage	V Disable	-0.4		V_{cc}	V

Operating Conditions					
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**
Operating Temperature	Top	-40		+85	°C
Supply Voltages	Vcc	3.14	3.3	3.46	V
Differential Input Voltage	Vid	250		2200	mVp-p
Power Supply Noise	VccRipple			0.1	Vp-p

Optical Transmitter					
Parameter	**Symbol**	**Minimum**	**Typ**	**Maximum**	**Unit**
Optical Output Power	Pout	-6.5		-1.5	dBm
Optical Wavelength	λout	830	850	860	nm
Spectral Width	Δλrms			0.85	nm
Extinction Ratio	Er	6.0	10		dB
Total Jitter	TJ			55	ps

Power Supply Current Vcc = 3.14 to 3.46V					
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**
Supply Current	Icc			90	mA

Example Optical Link Distances		
Protocol	**Cable Type**	**Distance**
Gigabit Ethernet	62.5/125µm, 200 MHZ*Km 50/125µm, 500 MHZ*Km	275 meters 550 meters

Electrical Pin Arrangement			
Pin #	**Symbol**	**Description**	**Logic**
7	Tx Disable	Transmit Disable (Input) Logic "1" Input->Disable Transmitter Output	CMOS Internal 5 – 10K Pullup
8	Vcc	Power Supply	
9	GND	Signal Ground	
10	Tx Fault	Transmitter Fault Indicator (Output) Logic "1" Output->Transmitter Fault Condition	CMOS Open Drain
11	Tx-	Transmitter Inverted Data (Input)	CML (Current Mode Logic)
12	Tx+	Transmitter Non-Inverted Data (Input)	CML (Current Mode Logic)

Ratings and specifications—Receiver

Absolute Maximum Rating					
Parameter	Symbol	Min	Typ	Max	Unit
Storage Temperature	Ts	-55		+100	°C
Operating Voltage	Vcc	-0.4		+4	V

Operating Conditions					
Parameter	Symbol	Min	Typ	Max	Unit
Operating Temperature	Top	-40		+85	°C
Supply Voltages	Vcc	3.14	3.3	3.46	V
Power Supply Noise	VccRipple			0.1	V

Optical Receiver					
Parameter	Symbol	Minimum	Typ	Maximum	Unit
Optical Sensitivity 125Mbps – 1.25 Gbps, ER = 9dB, PRBS 2^ 7-1, BER = 10^ -12		-17			dBm
Optical Overload				0	dBm
Optical Wavelength	λout	830		860	nm
Differential Output Swing (P-P)	Vdiff	600		1200	mV
LOS Assert Level	LOSh		-24	-22	dBm
LOS Hysteresis	LOS HYS	1.5	2.3		dB

Power Supply Current Vcc = 3.14 to 3.46V					
Parameter	Symbol	Min	Typ	Max	Unit
Supply Current	Icc	50		90	mA

Electrical Pin Arrangement			
Pin #	Symbol	Description	Logic
1	GND	Signal Ground	
2	Vcc	Power Supply	
3	GND	Signal Ground	
4	LOS	Loss of Signal (Output) Loss of Valid Optical Signal->Logic "1" Output	CMOS Open Drain
5	RX-	Receiver Inverted Data (Output)	CML (Current Mode Logic)
6	RX+	Receiver Non-Inverted Data (Output)	CML (Current Mode Logic)

