050-307

PRODUCT BRIEF

SIZE 8 ELECTRO-OPTICAL CONTACT TRANSMITTER OR RECEIVER
MULTI-MODE, 2.5MM TERIMINUS ELIO
FRONT INSERT – FRONT RELEASE

REV	DESCRIPTION	DATE	APPROVED
2	Preliminary	07/06/2016	MF/RAS/GC
4	Rev up to 4. No change to datasheet	08/02/2016	GC
5	Change PRBS Specification to 2^7-1. Add compatibility with Souriau ELIO AQ6S Quadrax Adapter	10/18/2016	GC/SZ
6	Revised 050-307 to include patent #, increased outline drawing resolution; Remove SMPTE Application;	02/03/2017	GC/NH
7	Revise supply current rating for Transmitter and Receiver	06/01/2017	SZ/GC
8	Update notes for differential input impedance	06/04/2018	GC
9	Edit note on outline drawing to say “Maximum PCB thickness”	08/15/2018	RAS/GC

050-307 PRODUCT BRIEF

SIZE 8 ELECTRO-OPTICAL CONTACT TRANSMITTER OR RECEIVER, MULTI-MODE, 2.5MM FERRULE, ELIO

FRONT INSERT – FRONT RELEASE

Size 8 Cavity Opto-Electronic Contacts, 100Mbps to 5Gbps, MMF, 3.3V

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 an 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 single a fault condition. Receiver includes a CMOS compatible Loss of Signal Indicator to prevent invalid data.

These Size 8 Opto-Electronic Contacts are compatible with the Souriau ELIO AQ6SB Quadrax Adapter.

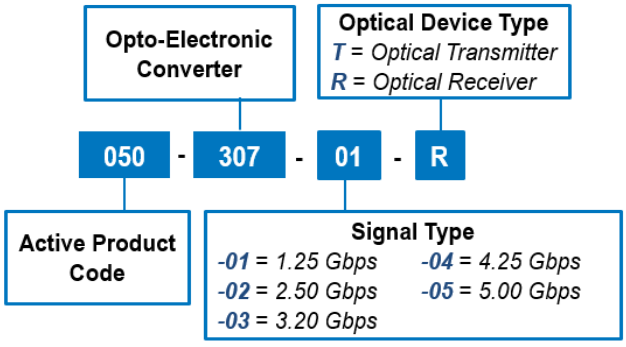
KEY FEATURES/BENEFITS

- 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

APPLICATIONS

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

How To Order



Ratings and Specifications

TABLE 2 ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Typ	Max	Units	Notes
Storage Temperature	Ts	-55		+100	°C	
Supply Voltage	V_{cc}	-0.4		3.8	V	VccT may not differ by more than 0.5V

TABLE 3 OPERATING CONDITIONS

Parameter	Symbol	Min	Typ	Max	Units	Notes
Operating Temperature, Case	T_{op}	-40		+85	°C	
Supply Voltage	V_{cc}	3.135	3.3	3.465	V	
Supply Current (Transmitter)	IccT		60	80	mA	Typical @ +25°C
Supply Current (Receiver)	IccR		75	90	mA	Typical @ +25°C
Power Supply Noise (Peak-Peak)	$V_{cc\ ripple}$			150	mV	

TABLE 4 ELECTRO-OPTICAL CHARACTERISTICS – TRANSMITTER

Parameter	Symbol	Min	Typ	Max	Units	Notes
Optical Output Power	P_{OUT}	-6.5		-1.5	dBm	850nm VCSEL
Extinction Ratio	Er	6	8		dB	1.25Gbps, 2.5Gbps
Extinction Ratio	Er	5	8		dB	3.2Gbps – 5Gbps
Optical Wavelength	λ_{OUT}	830	850	860	nm	
Spectral Width, rms	$\Delta\lambda$			0.85	nm	
Relative Intensity Noise	RIN			-117	dB/Hz	
Transmitter Differential Input Impedance	Zin		100		Ohms	Requires external AC coupling on customer's board
Differential Input Voltage	Vin_d	250		2200	mV_{p-p}	CML, 100 ohm

TABLE 5 ELECTRO-OPTICAL CHARACTERISTICS - RECEIVER

Parameter	Symbol	Min	Typ	Max	Units	Notes
Sensitivity, BER 10^{-12}, PRBS 2^7-1, Er 10 dB	P_{IN}			-17	dBm	1.25Gbps, 2.5Gbps
Sensitivity, BER 10^{-12}, PRBS 2^7-1, Er 10 dB	P_{IN}			-15	dBm	3.2Gbps – 5Gbps
Overload, BER 10^{-12}, PRBS 2^7-1	P_{IN}	-1			dBm	@1.485 Gbps or @ 2.970 Gbps
Optical Wavelength	λ_{IN}	830		860	nm	
Receiver Differential Output Impedance	Zout		100		Ohms	Requires external AC coupling on customer's board
Differential Output Voltage Swing	Vout_d	600		1200	mV_{p-p}	CML, 100 ohm
LOS Assert Level	LOS		-23	-21	dBm	@1.485 Gbps or @ 2.970 Gbps
LOS Hysteresis	LOS_{HYS}	1.25	2.3		dB	@1.485 Gbps or @ 2.970 Gbps

Ratings and Specifications (continued)

TABLE 6 COMPLIANCE SPECIFICATIONS

CHARACTERISTIC	Standard	Condition	Notes
ESD	MIL-STD-883		1000V HBM
Eye Safety	CDRH and IEC-825	Class 1 Laser Product	

FIGURE 1 - OUTLINE DRAWING CONTINUED (MARKING)

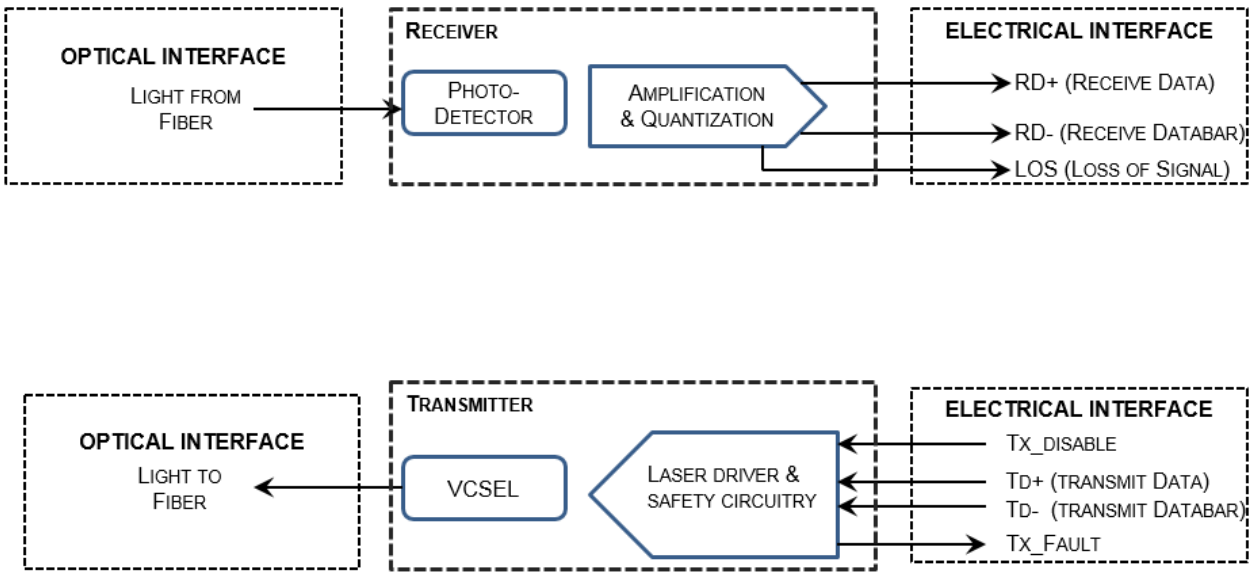
LABELING:

Each unit will be shipped in an antistatic bag. The label on the antistatic bag shall be at a minimum Arial size 10 black font and contain at a minimum the following information:

ANTISTATIC BAG LABEL:
Glenair
Cage Code: 06324
PN: 050-307-XX-X
Rev: X
QTY: X
J/N: X
D/C:X
S/N*: XXXXXX
*If QTY is more than 1, there is no S/N

FUNCTIONAL DESCRIPTION

Figure 2 **Functional Block Diagram**



FUNCTIONAL I/O

The Size 8 transmitter accepts industry standard differential signals such as LVPECL and CML within the scope of the SFP MSA. The module is DC-coupled and internally terminated.

Figure 3 illustrates a recommended interface circuit to link the PC board mount dual-transmitter to the supporting Physical Layer integrated circuits.

The PC board mount dual-transmitter interfaces with the host circuit board through twenty I/O pins identified by function in Table 7. The dual-transmitter high speed transmit and receive interfaces require SFP MSA compliant signal lines on the host board. The TX1_DISABLE, TX2_DISABLE, TX1_FAULT and TX2_FAULT require TTL lines on the host board (per SFF-8074i) if used. If an application chooses not to take advantage of the functionality of these pins TX1_Disable and TX2_Disable need to be tied to GND, TX1_Fault, TX2_Fault do not need to be connected.

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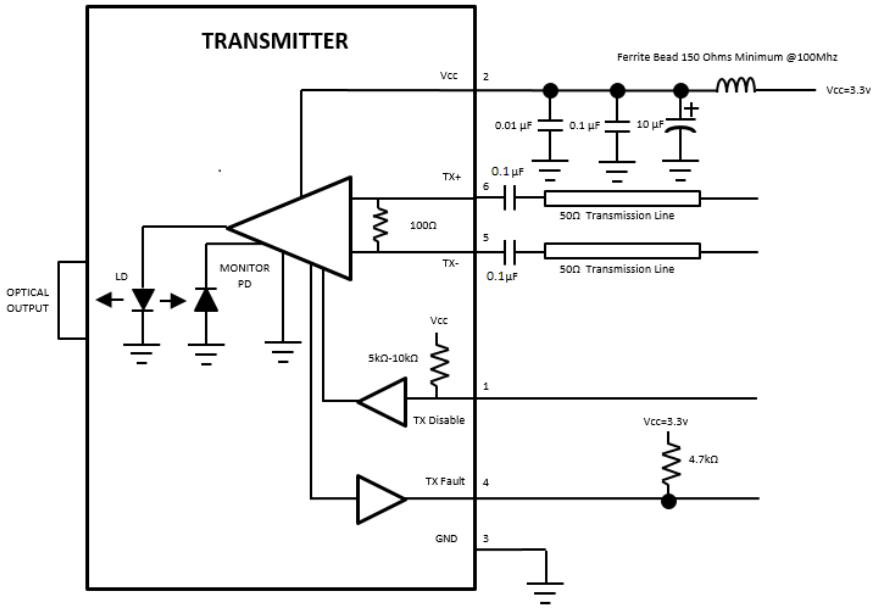
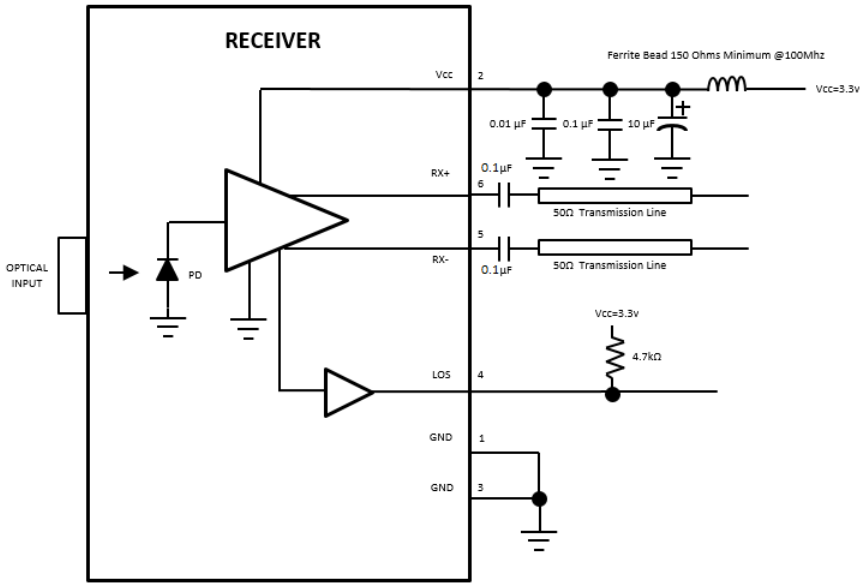
FIGURE 3 RECOMMENDED BOARD HOST BOARD SCHEMATIC

TRANSMITTER



RECEIVER



Required Host Board Components

A power supply noise rejection filter as described in Figure 3 is required on the host PCB to meet data sheet performance. The required filter is illustrated in Figure 3. Also, the host PCB for the Size 8 transmitter requires 4.7 K to 10 KΩ pull-up resistors for TX_FAULT and LOS Lines for the receiver.

Fiber Compatibility

The link is capable of error free signal detection for 2 to 500 meters with OM2 50/125 µm fiber and at 2 to275 meters with OM1 62.5/ 125 µm fiber, for 1.25 Gbps data rate.

Application Support

To assist in the dual-transmitter design and evaluation process, Glenair offers the following aids:

- Evaluation board & Product Manual
- 3D Step file to support modeling of mechanical fit and routing