



050-400

PRODUCT BRIEF

20 MHz TO 3.5 GHz

PRINTED CIRCUIT BOARD (PCB) MOUNT RF OVER FIBER TRANSCEIVER
SMALL & COMPACT WITH RUGGED CONSTRUCTION FOR
HARSH ENVIRONMENTS

REV	DESCRIPTION	DATE	APPROVED
7	Preliminary	12/12/2016	BH/MT/RAS
8	Edit Bag and Tag Labeling	12/15/2016	RAS/GC

PRELIMINARY

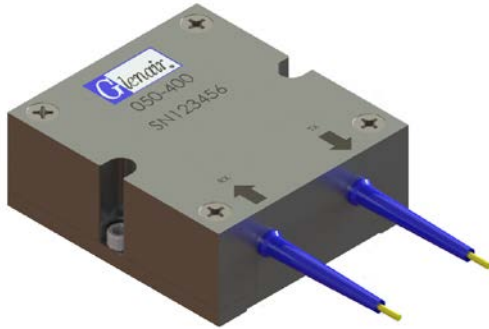
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PCB Mount Analog Transceiver
20 MHz – 3.5 GHz



PCB Mount Analog Transceiver, 20 MHz – 3.5 GHz



Glenair 050-400, is a PCB Mount, “RF over Fiber” Transceiver that has useful RF bandwidth from 20 MHz to 3.5 GHz with excellent Spurious Free Dynamic Range (SFDR) performance, and with mechanical design that is suited to the harsh temperature and vibration environments found in the Military, Aerospace, Railway, Oil and Gas, and Industrial applications. The transceiver is comprised of a transmitter section and a receiver section that resides in a fully enclosed, EMI shielded package and interface with a host board through a high speed electrical connector.

The transmitter section includes a 1310nm DFB Laser module, laser bias and control, RF amplification and equalization circuitry.

The receiver section includes a PIN photodiode, RF amplification and equalization circuitry.

KEY FEATURES/BENEFITS

- Rugged design
- 20 MHz to 3.5 GHz Bandwidth
- Low Noise Figure (NF)
- High Spurious Free Dynamic Range (SFDR)
- Transceiver is securely mounted with screws to PCB to ensure excellent shock and vibration performance
- High-Speed Electrical plug-in connector eliminates the need for soldering & enables ease of servicing
- Captive screws to simplify manufacturing logistics and assembly

- High-Speed Electrical plug-in connector eliminates the need for soldering & enables ease of servicing
- Captive screws to simplify manufacturing logistics and assembly
- -40°C to +85°C Operating Case Temperature
- Evaluation fixture available

APPLICATIONS

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

HOW TO ORDER **Table 1 Part Number Options**

Part Number	Description
050-400-1	20 MHz - 3.5 GHz Bandwidth

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Ratings and Specifications

TABLE 2 ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Typ	Max	Units	Notes
Storage Temperature	T _s	-40	--	+85	°C	
Supply Voltage #1 (5V)	V _{cc1}	2.7	--	5.2	V	
Supply Voltage #2 (3.3V)	V _{cc2}	3.0	--	3.6	V	
Maximum RF Input Power	Pin_max	--	--	15	dBm	

TABLE 3 OPERATING CONDITIONS & ELECTRO-OPTICAL CHARACTERISTICS FOR TRANSCEIVER (LINK)

Parameter	Symbol	Min	Typ	Max	Units	Notes
Operating Temperature, Case	T _{op}	-40	--	+85	°C	
Supply Voltage #1 (5V)	V _{cc1}	4.75	5.0	5.25	V	
Supply Current #1 (5V)	I _{cc1}	--	370	425	mA	
Supply Voltage #2 (3.3V)	V _{cc2}	3.135	3.3	3.465	V	
Supply Current #2 (3.3V)	I _{cc2}	--	150	200	mA	
Power Supply Noise (Peak-Peak)	V _{cc_ripple}	--	--	100	mV	
RF Link Gain	RF_Gain	--	8	--	dB	With 1 meter fiber jumper, at 25°C
Input Third-Order Intercept (@ 1 GHz)	IIP3	--	25	--	dBm	With 1 meter fiber jumper, at 25°C
Noise Figure	NF	--	33	--	dB	With 1 meter fiber jumper, at 25°C
3 rd Order Spurious-Free Dynamic Range	SFDR	--	110	--	dB/Hz ^{2/3}	With 1 meter fiber jumper, at 25°C

TABLE 4 ELECTRO-OPTICAL CHARACTERISTICS – TRANSMITTER (T_{OP} UNLESS NOTED OTHERWISE)

Parameter	Symbol	Min	Typ	Max	Units	Notes
Optical Output Power	P _{OUT}	3	6	--	dBm _o	
Optical Wavelength	λ _{OUT}	1270	--	1610	nm	
Relative Intensity Noise	RIN	--	--	-145	dB/Hz	
Transmitter Input Impedance	Z _{in}	--	50	--	Ohms	AC coupled Internally
Transmitter Gain	TG	--	-15	--	dB	
Frequency Response flatness	Flatness	--	1.0	3.0	dBp-p	50 MHz to 3.5 GHz
Input Return Loss	RL	10	15	--	dB	50 MHz to 3.5 GHz

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Ratings and Specifications (continued)

TABLE 5 ELECTRO-OPTICAL CHARACTERISTICS – RECEIVER (T_{op} UNLESS NOTED OTHERWISE)

Parameter	Symbol	Min	Typ	Max	Units	Notes
Optical Input Power	Pin	--	--	8	dBm	
Receiver Output Impedance	Zout	--	50	--	Ohms	AC coupled Internally
Receiver Gain	RG	--	17	--	dB	
Frequency Response flatness	Flatness	--	1.5	2.5	dBp-p	50 MHz to 3.5 GHz
Output Return Loss	RL	10	15	--	dB	50 MHz to 3.5 GHz

TABLE 6 COMPLIANCE SPECIFICATIONS

CHARACTERISTIC	Standard	Condition	Notes
Mechanical Shock	MIL-STD-810	Para. 516.6, proc. I, 650g	0.9 ms operating
Mechanical Vibration	MIL-STD-810	Para. 514.6, 40g rms	Random, operating
ESD	MIL-STD-883		1000V HBM
Flame Resistance	MIL-STD-1344	Method 1012, Cond. B	30 seconds
Altitude Altitude, 25Kft Altitude, 70Kft Decompression Overpressure	RTCA DO160 G	Section 4.6.1 Category B1 Section 4.6.1 Category E1 Section 4.6.2 Category A2 Section 4.6.3 Category A1	Operating Altitude, 25,000 ft Operating Altitude, 70,000 ft Operating Altitude, 45,000 ft 28 psi
Damp Heat	RTCA DO160G MIL-STD-1344	Section 6 Category A Method 1002.2, Cond. B	48 hours, Non-operational 10 cycles, 24 hours, Operational
Eye Safety	IEC 60825-1:2007/ EN 60825-1:2007	Class 1M Laser Product	

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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: 050-400-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

Each unit will be marked, either with a label or laser engraving, as follows:

- Marking font to be Arial, greater than .08 inches in height.
- Marking:
 - FIRST LINE OF TEXT
 - Glenair
 - Serial Number (6 digits)
 - SECOND LINE OF TEXT:
 - Part number

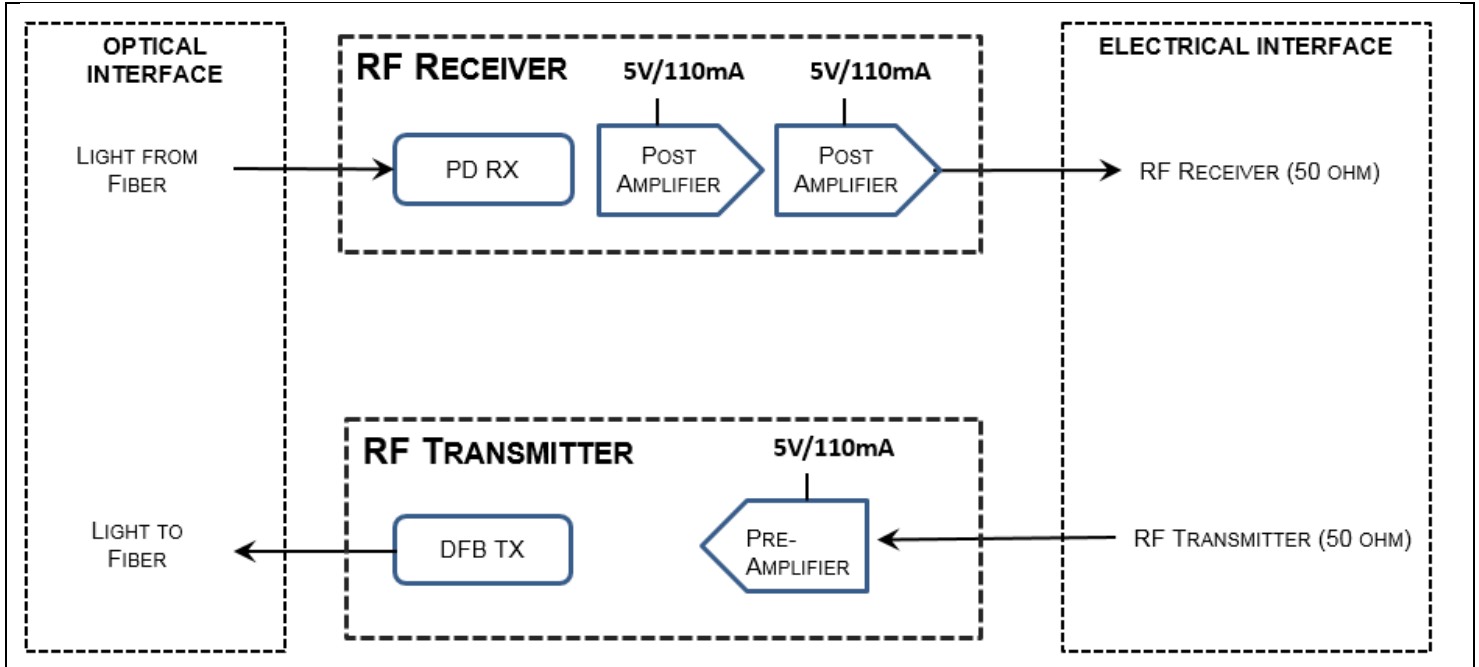
Example:

GLENAIR SN123456
050-400-1

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Functional Block Diagram



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ACCESSORIES

PCB Threaded Inserts, PN 059-00XX

KEY FEATURES

- 2-56 threaded insert, solders into customer host PCB
- Simplifies installation of PCB Mount Transceivers eliminating the need for washers and nuts
- Existing Options to support PCB thickness from 0.03" to 0.92"
- Can support thicker PCB if required

EVALUATION Boards, PN 050-400-EVALBOARD

Include

- PCBA evaluation board with SMA connectors
- DC banana plug cables
- SC/APC to SC/APC adapter