

## Features

- 30 MHz to 2.7 GHz Bandwidth
- Rugged Dust-Tight Housing
- 3 x 5 x 1.25 in. Weight ¾ lb
- -40C to +75C Operating Temperature
- Wide DC Input Range of +9V to +30V Supply
- LD/PD Monitoring and Alarm
- High Spurious Free Dynamic Range
- Automatic Optical Power Control
- 1.3/1.5  $\mu$ m Low Noise DFB Lasers with isolator
- Laser conforms to Class 1 Laser Safety, EN60825-1:2007.

## Options

- Extended Bandwidth of 10 KHz to 3.3 GHz
- CWDM DFB Laser
- Internal Transmitter LNA
- Manual Gain Adjust 30dB
- Multimode Fiber Compatibility
- Internal WDM
- Low Power Dissipation
- Bias-T, +5V or 12V max 100mA

## Applications

- L-band Satcom
- Cellular Backhaul
- MMDS
- 10MHz low phase noise Clock distributions (Optional)
- Remote Antenna Location
- In-Building DAS Solutions
- GPS Distribution
- Optical Delay line
- Public Safety

# OZ600

## Description

The OZ600 is a Broadband Optical Transceiver with a wide Dynamic Range designed for RF over Fiber applications. These linear RFoF links are an excellent alternative to using a coaxial cable link. A pair of OZ600 transceivers creates a bidirectional RF to Optical link. It can also be configured as an individual Transmitter (Tx) or as a Receiver (Rx) unit. Packaged in a rugged dust-tight Cast Metal housing, it offers high Spurious Free Dynamic Range (SFDR) from 30 MHz to 2.7 GHz. Optional extended bandwidth of 10 KHz to 3.3 GHz is also available. The Manual Gain Control feature offers a simple way to adjust receiver output RF level. The standard optical connector is SC/APC (FC/APC available) and the RF interface is a 50 Ohms SMA connector. The transceiver features a high performance InGaAs photodiode and a linear optically Isolated DFB Laser operating at 1.3 or 1.5  $\mu$ m (CWDM wavelength is available) over a 9/125  $\mu$ m Single Mode Fiber. The Average Automatic Power Control (AAPC) is incorporated for optimal optical power stability over the full operating temperature range. Alarm and monitoring functions are available through DB9 connectors and local dual color LED's for Received Optical Power and Laser Bias Current Monitoring.

Patent Number US 10,257,739 B1

## Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Units
Storage Temperature (Case)	$T_s$	-40	+85	$^{\circ}$ C
Operating Temperature (Case) 1310nm DFB Laser, -20C for 1550nm Laser	$T_o$	-40	+75	$^{\circ}$ C
DC Supply Voltage	$V_{cc}$	+8	+32	Volts
Maximum RF Input into TX (no LNA)			+17	dBm
Maximum Optical Input into Rx			12	mW

## Characteristics of OZ600

Parameter	Symbol	Min	Typical	Max	Units	Notes
Power Supply Voltage	VCC		12		Volts	
Power Supply Current	ICC		240	320	mA	*
with LNA			320	380		
Laser Bias Monitor	LBM		1		V/100mA	
Laser Bias Open Collector Trip Point	LBA		110		mA	(or1.1V)
Optical Rx Monitor	ORM		0.1		V/1.mw	
Optical Rx Alarm	ORA		-10		dBm	
Laser Optical Output Power			2	6	mW	5
Transmitter Operating Wavelength A/B		1270	1310 or 1550	1610	nm	
Receiver Operating Wavelength B/A		1270		1610	nm	
High Frequency Cutoff	HFC		2700	3000	MHz	1
Low Frequency Cutoff	LFC	20	30		MHz	2
Frequency Response (30 to 2700 MHz)			±1.5	±2.0	dB	
Input/Output Impedance	Z		50		Ohms	
Input/Output VSWR (30 to 2700 MHz)		1.5:1	2:01			
Spur Free Dynamic Range	SFDR		109		(dB/Hz) <sup>3</sup>	3
RF Link Gain		-1	+1	+3	dB	3
Gain (Tx with LNA Unity Gain Link)		-2	0	+2		
Gain (Tx with LNA 20)		18	20	22		
Input Noise Floor @ 1Ghz	EIN	-129	-133		dBm-Hz	3
Input Noise Floor @ 1Ghz with LNA		-149	-153			
Input Third Order Intercept @ 1Ghz	IIP3	28	32		dBm	4
Input Third Order Intercept @ 1Ghz with LNA		+8	+10			
Isolation		50	60		dB	
Isolation with LNA		40	50			
Group Delay Over 4MHz (30 to 2700 MHz)			0.5	1	ns	

<sup>1</sup> Typical High Frequency Cutoff (HFC) is 2700 MHz. For higher HFC contact Factory.

<sup>2</sup> Typical Low Frequency Cutoff (LFC) is 30 MHz. For lower LFC contact Factory.

<sup>3</sup> Measured with 1 meter of Single Mode Fiber.

<sup>4</sup> Equivalent to IMD 60dB@0 dBm Total Output Power (2 tone measurement).

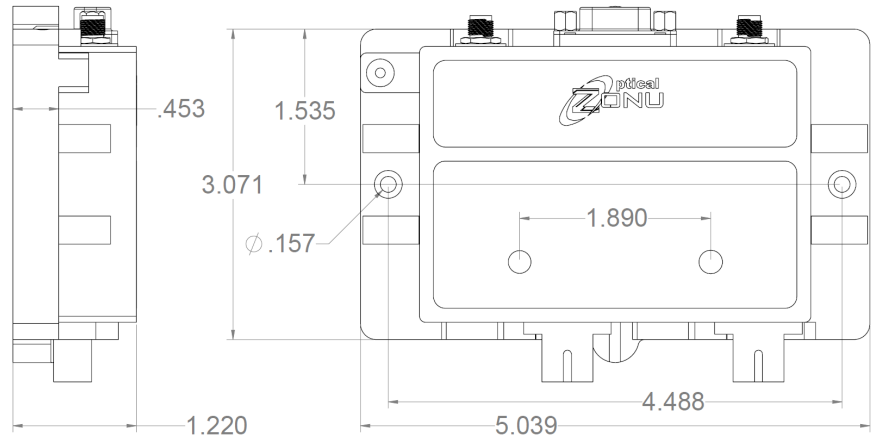
<sup>5</sup> 1310nm max optical power can reach 6mW under factory operational setting @25C

<sup>6</sup> The Bias-T option for +5V or +12V is provided to power the amplifier inside the antennae as is done for GPS. The OZ600 receiver has a built in active antennae load which switches to high impedance if there is a fiber fault or remote antennae failure if powered by the OZ600 transmitter.

\*For lower power dissipation version contact Factory.

## DB-9 Configuration

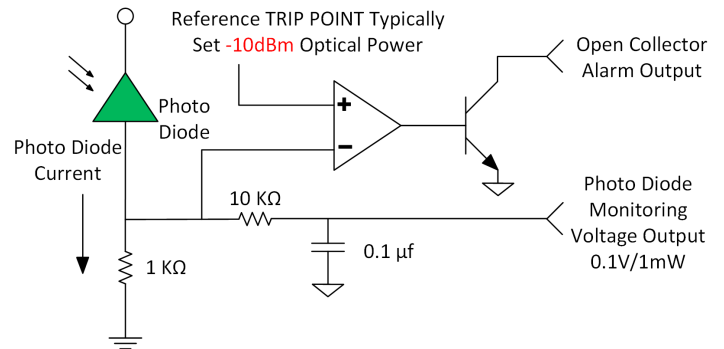
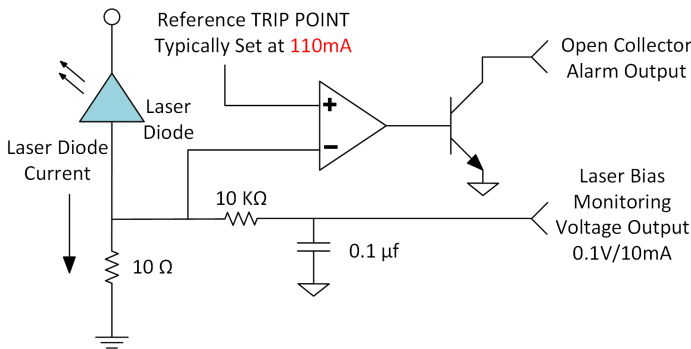
Pin	Function
1	Laser Enable (+12V = Laser ON)
2	Data INPUT (Tx RS232) / OR NC
3	Data OUTPUT (Rx RS232) / OR NC
4	+12 volts (380 mA max)
5	Ground
6	Laser Bias Monitor (0.1V = 10 mA)
7	Laser Bias Alarm (open collector, 25 mA)
8	Received Power Monitor (0.1V = 1mW)
9	Received Power Alarm (open collector, 25 mA)



RF Connector = SMA Female  
Optical Connector = SC/APC or FC/APC  
DATA + ALARM = DB9

## Individual Tx Alarm & Monitoring Circuit Diagram

## Individual Rx Alarm & Monitoring Circuit Diagram

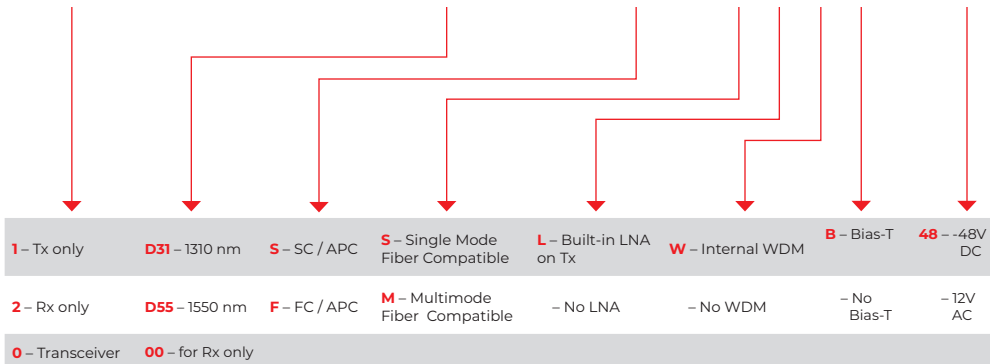


All alarms are Open Collector topology, with Active Low for Normal operations and during Alarm condition the open collector will Pull to High logic levels. Reverse polarity alarm is also available upon request, such as under normal conditions the Open collector will be High and vice versa under fault conditions.

## Ordering Information

PART NO.

**AX3- Z600 – XXX – AX – XXXX – X**



The Bias-T is an that can be added and is used to power antennae LNA (widely used for GPS). The standard delivered voltage at the input IRF connector is 5V (resettable fuse protected). This product enables full monitoring of the antennae status and fiber link. The standard Bias-T implementation monitors antennae current (10mA - 100 mA) and the projected DC load to the RF output of the Rx 230 ohm. Please see included App Note.

## Contacts

### HEADQUARTERS

7510 Hazeltine Avenue, Van Nuys, CA 91405  
Main: 818-780-9701 Fax: 818-780-9739 info@opticalzonu.com

### INSIDE SALES

818-780-9701 x122 ;  
818-616-2043  
sales@opticalzonu.com

### CUSTOMER SUPPORT

818-780-9701 x276 ;  
818-452-5131  
support@opticalzonu.com

### SALES - RF

818-780-9701 x122 ;  
818-579-9630  
sales@opticalzonu.com

### SALES - RF EAST

818-780-9701 x140 ;  
818-579-9594  
sales@opticalzonu.com

### SALES - SATCOM

818-780-9701 x242 ;  
818-452-5896  
sales@opticalzonu.com

### SALES - DIGITAL

818-780-9701 x131 ;  
818-579-9592  
sales@opticalzonu.com

### TECHNICAL SUPPORT

818-780-9701 x134 ;  
818-579-2359  
support@opticalzonu.com



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