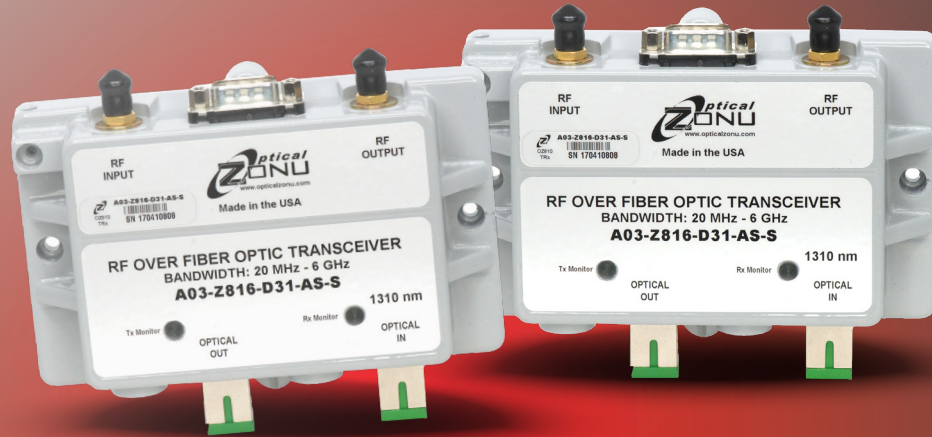




# RF OVER FIBER OPTIC TRANSCEIVER

## OZ816 - Ultra Broadband Standalone 6 GHz



### Features

- 30 MHz to 6.0 GHz Bandwidth
- Approx Size: 3 x 5 x 1.25 in.
- Weight ¾ pound
- -20°C to +75°C Operating Temperature
- Wide DC Input Range of +9V to +30 V Supply
- LD/PD Monitoring & Alarm
- High SFDR
- Automatic Opt. Power Control
- 1.3 and/or 1.5 μm Low Noise isolated DFB Lasers
- Laser conforms to Class 1 Laser Safety, EN60825-1:2007.

### Options

- Extended Bandwidth of 10 KHz to 6.0 GHz
- CWDM DFB Lasers
- Internal WDM
- Internal transmitter LNA RS232 Data Modem
- Manual Gain Adjust
- Low Power Dissipation

### Applications

- L and S band SatCom
- Cellular Backhaul
- MMDS
- Optical delay line
- Remote Antenna Location
- In-Building DAS
- GPS Distribution
- Wireless/PCS
- Shipboard RF distribution
- Satellite Ground station

# OZ816

### Description

The OZ816 is a high performance broadband optical transceiver with wide Dynamic Range designed for RF over Fiber (RToF) Optics applications. A pair of OZ816 transceivers will create a two-way bidirectional RToF link. It may also be configured as individual Transmitter or Receiver units. This solution is designed in a rugged dust tight cast metal housing, in a compact package. The OZ816 offers optional WDM integration, Internally, for bidirectional transmission on a single strand of SM fiber. These Links with bandwidths of up to 6GHz have High Spurious Free Dynamic Range (SFDR) supporting applications such as CBRS LTE-U, 802.11a as well as, other wireless standards within the 6 GHz band and offers operational frequencies from 30 MHz to 6.0 GHz with optional lower frequency cutoff down to 10KHz. Its designed for ease of installation and provides immunity from EMI/RFI and lightning. These RToF Links are excellent alternatives to coaxial cable systems, and deliver significant improvements in the transport of RF signals in their native format, reliably, in many optical networks across a broad range of frequencies. The Standard optical connector is SC/APC (FC/APC Optional) for low back reflection applications. The transceiver features a high performance InGaAs photodiode and a linear Isolated DFB Laser operating at 1.3 μm (A) or 1.5μm (B) over 9/125 μm single mode fiber. Average Automatic Power Control is incorporated for optimal optical power stability over the full temperature range. The RF interface is via a 50 Ohm SMA connector, the RS232, alarm and monitoring functions are available through DB9. Manual Gain control is also available.

### Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Units
Storage Temperature (Case)	T <sub>s</sub>	-40	+85	°C
Operating Temperature (Case 1310nm DFB Laser, -20C for 1550nm Laser)	T <sub>o</sub>	-40	+75	°C
DC Supply Voltage	V <sub>cc</sub>	+8	+32	Volts
Maximum RF Input into TX (with LNA)			+5	dBm
Maximum RF Input into TX (No LNA)			+17	dBm
Maximum Optical Input into Rx			12	mW

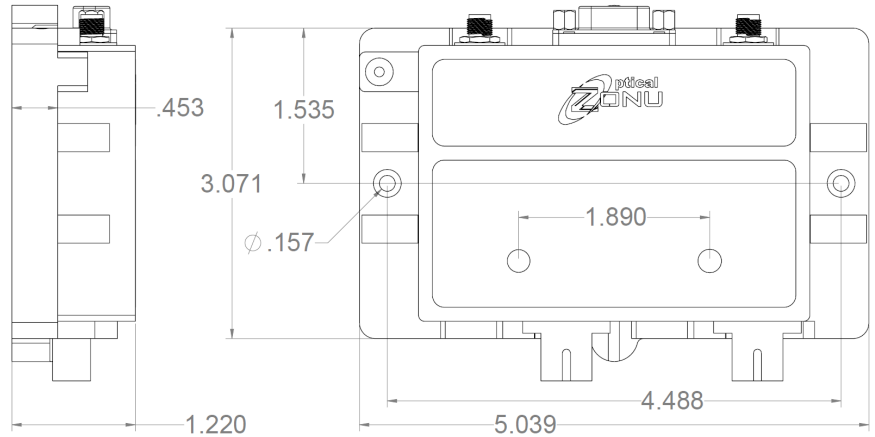
### Characteristics of OZ816

Parameter	Symbol	Min	Typical	Max	Units	Notes
Power Supply Voltage	VCC		+12		Volts	
Power Supply Current	ICC		270	400	mA	2
Power Supply Current Tx (with LNA)	ICC		320	460	mA	2
Laser Optical Output Power ( $\lambda$ dependent)		2	4	6	mW	3
Transmitter Operating Wavelength	$\lambda$	1270	1310 or 1550	1610	nm	
Receiver Operating Wavelength	$\lambda$	1270		1610	nm	
High Frequency Cutoff	HFC		6000		MHz	
Low Frequency Cutoff	LFC	20	30		MHz	5
Frequency Response (30 - 3000 MHz)			$\pm 2.0$		dB	4, 6
Frequency Response (20 - 3000 MHz) (with LNA)			$\pm 2.25$		dB	4, 6
Frequency Response (30 - 6000 MHz)			$\pm 2.5$		dB	4
Frequency Response (20 - 6000 MHz) (with LNA)			$\pm 2.75$		dB	4
Input/Output Impedance	Z		50		Ohms	
Input/Output VSWR (30 - 3000 MHz)			1.6:1	1.8:1		
RF Link Gain (30 - 6000 MHz)		-2	0	+2	dB	7
RF Link Gain (20 - 6000 MHz) (with LNA)		15	17	+19	dB	7
Input Noise Floor, measured @ 1GHz	EIN		-133	-128	dBm-Hz	
Input Noise Floor, measured @ 1GHz (with LNA)	EIN		-148	+146	dBm-Hz	
Input Noise Floor, measured @ 6GHz	EIN		-124	-117	dBm-Hz	
Input Noise Floor, measured @ 6GHz (with LNA)	EIN		-140	-137	dBm-Hz	
Input Third Order Intercept @ 1GHz	IIP3	+26.5	+28		dBm	8
Input Third Order Intercept @ 1GHz (with LNA)	IIP3	+8	+10		dBm	8
Input Third Order Intercept @ 6GHz	IIP3	+16	+19		dBm	8
Input Third Order Intercept @ 6GHz (with LNA)	IIP3	0	+2		dBm	8
RS232 Data Rate (Factory pre-set)		1.2	19.2	38.4	Kbps	1
Group Delay Tx/Rx Link electronics only	GD		0.5	1	nS	

- <sup>1</sup> The Baud rates are advance Factory setting ONLY and NOT auto negotiable.
- <sup>2</sup> Lower operating Voltage (+5 V) and Current Consumption for both Transmitter and Receiver available. Contact Factory for more details. The Max current includes the RS232
- <sup>3</sup> 1310nm Max optical power can reach 9mw under factory operational setting @ 25C
- <sup>4</sup> Contact Factory for lower ripple options.
- <sup>5</sup> Higher (LFC) like 500 MHz is optional. For lower LFC, contact Factory.
- <sup>6</sup> The Frequency Response from 50 MHz to 2.5 GHz is typically better than + 1.5dB.
- <sup>7</sup> Measured with 1 meter of Single Mode Fiber.
- <sup>8</sup> Measured 1 meter of Single Mode Fiber and two-tone tests, each tone at 0 dBm at Receiver output.

### 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
5	Ground
6	Laser Bias Monitor (0.1V = 10 mA)
7	Laser Bias Alarm (open collector, 25 mA)
8	Received Power Monitor (0.1V = 1 mW)
9	Received Power Alarm (open collector, 25 mA)

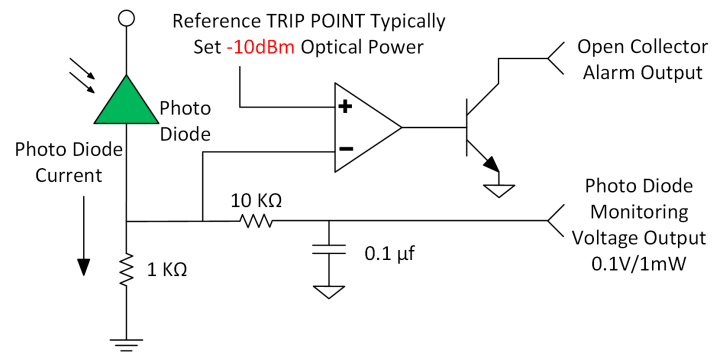
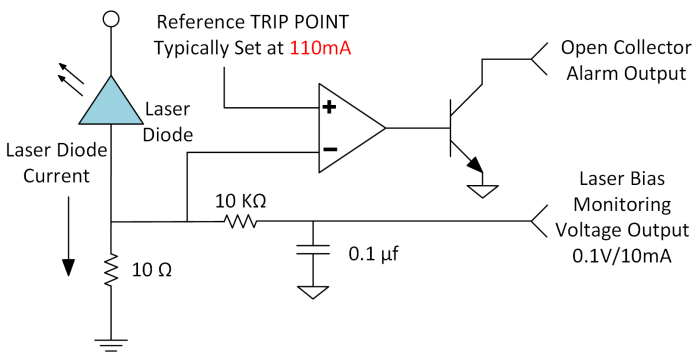


RF Connector = SMA Female  
 Optical Connector = SC/APC or FC/APC  
 DATA + ALARM = DB9

**NOTE:** RS232 remote resets via Transmitter pin 1 Laser Enable. To reset temporarily set the +12V on pin 1 to Zero (0) Volts.

### Individual Tx Alarm & Monitoring Circuit Diagram

### Individual Rx Alarm & Monitoring Circuit Diagram

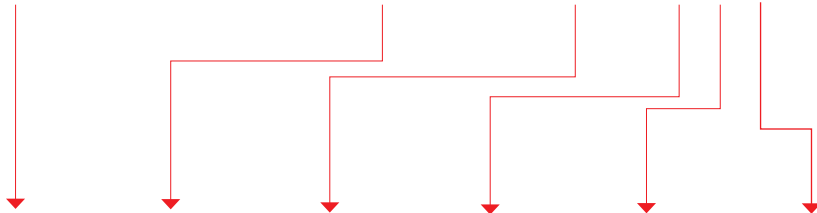


All alarms are Open Collector topology, with Active Low for Normal operations and during Alarm condition the open collector will Pull to High logic levels. Reverse polarity alarm is also available upon request, such as under normal conditions the Open collector will be High and vice versa under fault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

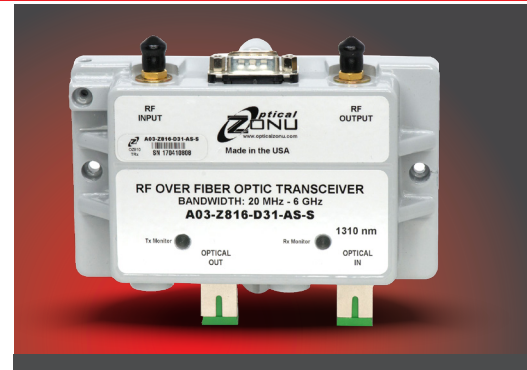
### Ordering Information

PART NO.

**AX3- Z816 – XXX – AX – XXX**



<b>1</b> – Tx only	<b>D31</b> – 1310 nm	<b>S</b> – SC / APC	<b>S</b> – Single Mode Fiber Compatible	<b>L</b> – Built-in LNA on Tx	<b>W</b> – Internal WDM
<b>2</b> – Rx only	<b>D55</b> – 1550 nm	<b>F</b> – FC / APC	<b>M</b> – Multimode Fiber Compatible	– No LNA	– No WDM
<b>0</b> – Transceiver	<b>00</b> – for Rx only				



### Contacts

#### HEADQUARTERS

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 818-616-2043  
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 818-452-5131  
 support@opticalzonu.com

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 818-579-9630  
 sales@opticalzonu.com

#### SALES - RF EAST

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 818-579-9594  
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#### SALES - SATCOM

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#### SALES - DIGITAL

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