

# Extended DiLink 18 GHz Fiber Optic Link



Rev. V2

## Features

- Analog RF Bandwidth to 18 GHz
- RF Transport up to 20 km
- High Dynamic Range
- Low Noise
- Harsh Environment Options
- 1310 nm, 1550 nm, and DWDM Options



## Description

MACOM's Directly Modulated Fiber Optic Links provide high performance transmission of wideband RF signals up to 18 GHz over optical fiber. Featuring high reliability and small size, the DiLink transmitter and receiver modules are easily integrated into communications systems for a variety of applications including antenna remoting, radio-over-fiber, network infrastructure and multicarrier/subcarrier multiplexed analog transport.

All modules are easy to use, requiring no external tuning or alignment. They feature a single RF connector, an optical connector, and a single DB-9 for power, control, and status/Built-in Test (BIT) functions. The units also support a communications interface that provides operating parameters and alarm status.

1310 nm and 1550 nm wavelength options allow for WDM bi-directional transmission over a single fiber. DWDM wavelength options can be used to increase the channel count within a single fiber.

The units come standard with an FC/APC connector.

The units can be customized based on the application. Wide temperature range operation with environmental sealing options are available. RF amplification to improve the gain and noise figure is also available.

## Extended DiLink Ordering Information

	Wavelength	Frequency	Connect	Amplifier	Temperature
DLXT = Extended DiLink Transmitter	3 = 1310 nm 5 = 1550 nm C = Custom	1 = 12 GHz 2 = 15 GHz 3 = 18 GHz	F = FC/APC	N = None A = Pre-Amp	C = 0 to 50 °C

Example: DLXT53FNC = 1550 nm, 18 GHz, FC/APC, no amplifier, 0 to 50 °C

\* Restrictions on Hazardous Substances, compliant to current RoHS EU directive.

**Electrical/Optical Characteristics  
(Measured with No Pre-Amp and XiMod Unamplified Receiver)**

Parameter	Test Conditions	Value		Unit
		1310 nm	1550 nm	
RF Input Return Loss, Min	—	10	10	dB
RF Connector, Female	—	SMA	SMA	-
Impedance	—	50	50	SMA
Link Gain	Measured @ 10 GHz	-20	-23	dB
Noise Figure	Measured @ 10 GHz	38	45	dB
Input 1 dB Compression	Measured @ 10 GHz	19	19	dBm
SFDR	Measured @ 10 GHz	109	104	dB Hz <sup>2/3</sup>
RIN	—	-150	-150	dB/Hz
Electrical Back Reflection	—	-10	-10	dB
Optical Isolation, Min	—	30	30	dB
Optical Output Reflection, Max	—	-40	-40	dB
Gain Flatness peak to peak, Max	—	4	4	dB

**Absolute Maximum Ratings<sup>1,2</sup>**

Parameter	Absolute Maximum
RF Input Level (Tx)	20 dBm
Optical output Level	10 dBm
Transmitter Power Consumption without LNA with LNA	2 W 6 W
Operating Temperature	0°C to +50°C
Storage Temperature	-40°C to +85°C

1. Exceeding any one or combination of these limits may cause permanent damage to this device.
2. MACOM does not recommend sustained operation near these survivability limits.

**Handling Procedures**

Please observe the following precautions to avoid damage:

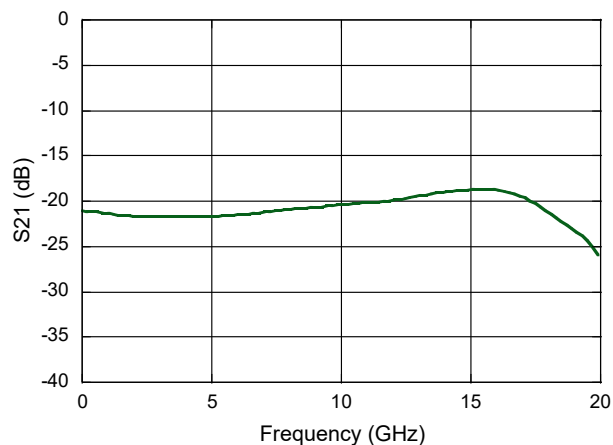
**Static Sensitivity**

These electronic devices are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

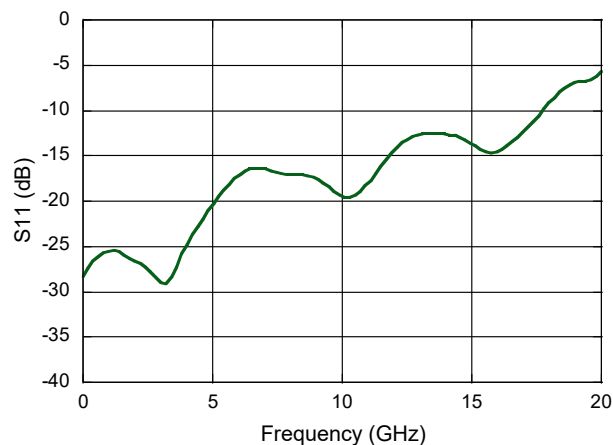
Typical Performance Curves (Measured with XiMod Unamplified Receiver):

1310 nm 15 GHz Unamplified Transmitter RF Link

Gain

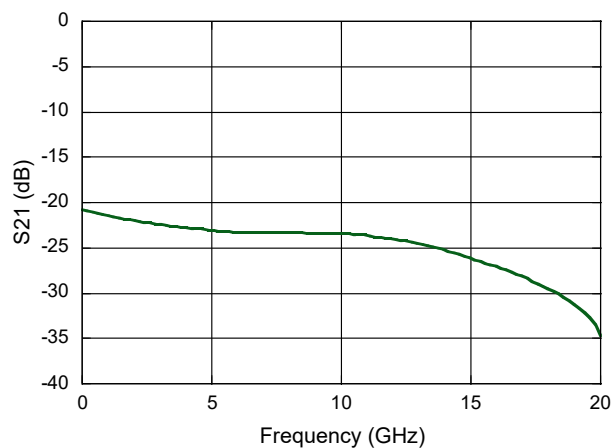


Input Return Loss

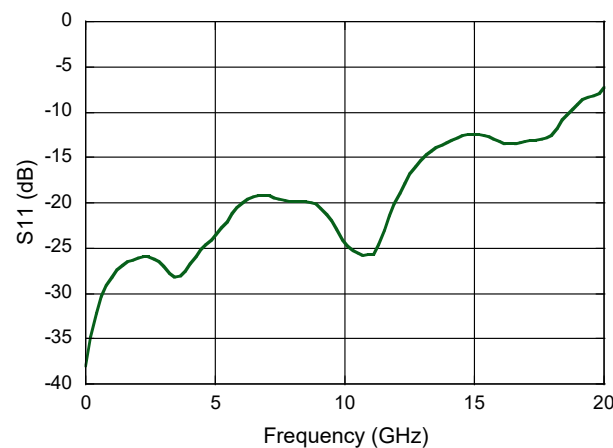


1550 nm 15 GHz Unamplified Transmitter RF Link

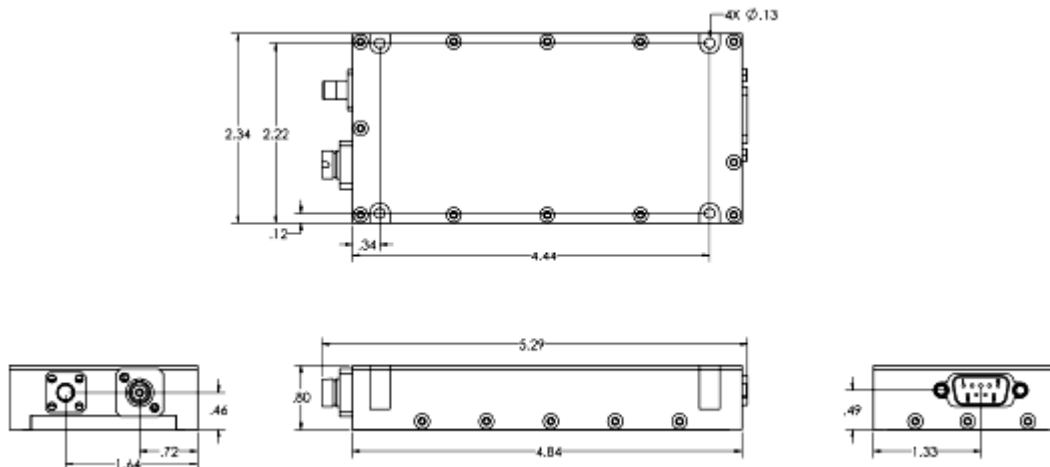
Gain



Input Return Loss



## Extended DiLink Outline



Pinout D-Sub 9 Pin Male		
Pin	Function	Description
1,3	NC	No Connection
2	Power Supply Input	Power Supply Input, +5 V $\pm$ 0.25 V
4	Alarm Out	TTL Low Output if Unit is in Alarm
5	Ground	Power Supply Ground
6	Optical Power Monitor	Analog Output, 0.125V/mW
7	Power ON (Active Low)	Must ground this pin to enable output
8	Laser Current Monitor	Analog Output, 50 mA/V
9	Temperature Out	Analog Temperature Output, $V_O = (10 \text{ mV}/^\circ\text{C} \times T^\circ\text{C}) + 500 \text{ mV}$

\*Interface includes laser status, alarm status, and laser enable

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