

## 1. Overview

This document provides the hardware features of the Pluggable XFP EDFA (APC Control) available from Axiom in both Pre-Amp and Booster applications.

The XFP EDFA device has the following general characteristics:

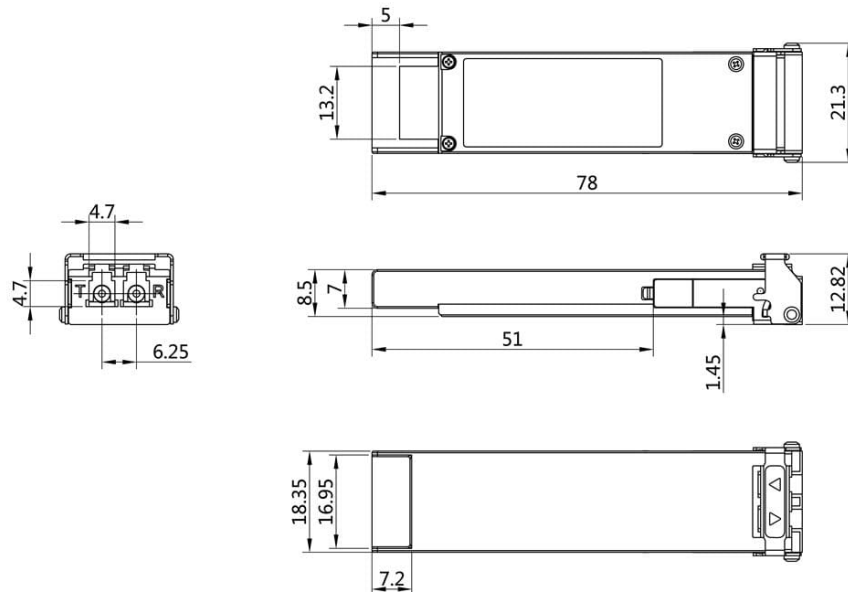
- Optimized for Single Channel ZR 1550nm applications
- I2C control interface
- XFP MSA compliant mechanical footprint and custom pin outs
- Pluggable
- APC Operation
- LOS function
- Transient control
- Power limiting function to prevent receiver overload
- Two power monitoring points (input/output)
- 1M Laser Safety Specification compliance

### 1.1. Ordering Information

Part Number	Description
AC-P-XFPED-P-2	XFP EDFA -2DBM OUTPUT 1550NM OPTIMIZED PRE-AMP APC CONTROL
AC-P-XFPED-P-10	XFP EDFA 10DBM OUTPUT 1550NM OPTIMIZED BOOSTER APC CONTROL

## 2. General Description

### 2.1 Dimensions



ALL DIMENSIONS ARE  $\pm 0.2$ mm UNLESS OTHERWISE SPECIFIED

UNIT: mm

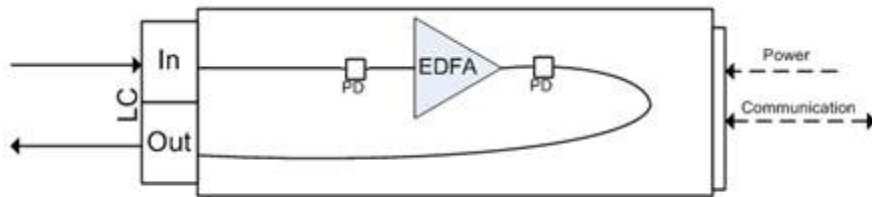
## 2.2. Environmental Specifications

- Operating Case Temperature: -5° C to 70° C
- Operating Relative Humidity: 5% to 85% non-condensing
- Storage Temperature: -40° C to +85° C
- Maximum absolute rating of input power: 17 dBm
- RoHS-6 Compliant

## 3. Optical Requirement

### 3.1. APC Control

#### 3.1.1. Optical Block Diagram



Connector: LC/UPC

#### 3.1.2. Optical Performance

Parameter	Min	Typ	Max	Units	Comments
Wavelength Range	1530		1563	nm	Input/Output, Single-Channel
Operation Mode	APC				
Input Power (Booster)	-10		3	dBm	
Input Power (Pre-Amp)	-30		-10	dBm	
Input Power Monitor Accuracy	-0.5		0.5	dB	
Output Signal Power Level (Booster)	0		10	dBm	
Output Signal Power Level (Pre-Amp)	-10		-2	dBm	
Output Power Setting Resolution	0.1			dB	
Output Power Monitor Accuracy	-0.5		0.5	dB	
Noise Figure (Booster)			10.0	dB	Input=3dBm; Out=10dBm
			7.0	dB	Input=-10dBm; Out=10dBm
Noise Figure (Pre-Amp)			7.0	dB	Input=-30dBm; Out=-2dBm
Polarization Dependent Gain			0.5	dB	
Multi-Path Interference			-35	dB	
Pump Wavelength		974		nm	
Pump Leakage Against Input and Output			-30	dBm	

## 4. Electrical Requirement

### 4.1. Pin Functionality

Pin	Logic	Symbol	Name/Description	Note
1		GND	Module Ground	1
2		NC	No Connect	2
3	LVTTTL-I	Mod_DeSel	Module De-select; When held low allows module to respond to 2-wire serial interface	
4	LVTTTL-O	Interrupt	Interrupt; Indicates presence of an important condition which can be read over the 2-wire serial interface. <b>Active Low</b>	3
5	LVTTTL-I	AMP_DIS	PUMP Disable; When High, Turns off PUMP	
6		VCC5	+5V Power Supply	
7		GND	Module Ground	
8		VCC3	+3.3V Power Supply	
9		VCC3	+3.3V Power Supply	
10	LVTTTL-I/O	SCL	2-Wire Serial Interface Clock	3
11	LVTTTL-I/O	SDA	2-Wire Serial Interface Data	3
12	LVTTTL-O	Mod_Abs	Indicates Module is not present. Grounded in the Module	3
13	LVTTTL-O	Mod_NR	Module Not Ready; It has been high when module is power on or reset.	3
14	LVTTTL-O	COMM_ALARM	Module Alarm Output, Active High	3
15		GND	Module Ground	
16		GND	Module Ground	
17		NC	No Connect	2
18		NC	No Connect	2
19		GND	Module Ground	1
20		VCC2	+1.8V Power Supply	
21	LVTTTL-I	P_Down/RST	<b>Power down;</b> When high, Turns off PUMP. <b>Reset;</b> The falling edge initiates a complete reset of the module including the 2-wire serial interface, equivalent to a power cycle.	
22		VCC2	+1.8V Power Supply	
23		GND	Module Ground	1
24		NC	No Connect	2
25		NC	No Connect	2
26		GND	Module Ground	
27		GND	Module Ground	
28		NC	No Connect	2
29		NC	No Connect	2
30		GND	Module Ground	

Notes:

1. Module ground pins GND are isolated from the module case and chassis ground within the module.
2. Not connection on XFP module.
3. Shall be pulled up with 4.7K-10K ohms to a voltage between 3.15v and 3.45v on the host board.

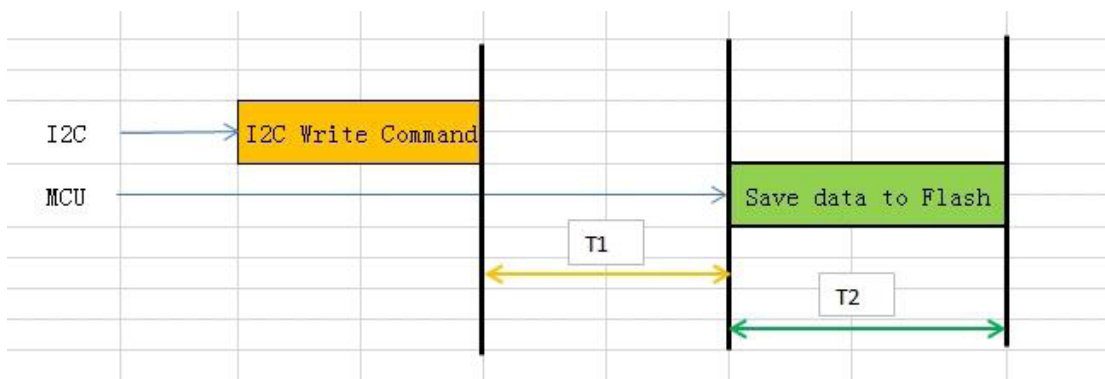
#### 4.2. Power Supply Characteristics and Operating Rating

Parameter	Min	Typ	Max	Units
3.3v Digital Supply Voltage	3.14		3.47	v
3.3v Total Supply Current			750	mA
Power Dissipation			2.5	W

#### 4.3. Turn On/Off Output Power

Parameter	Min	Typ	Max	Units	Comments
Overshoot			3.0	dB	Turn on output power
Convergence Time			1.0	s	Output power to stabilize after turn on output power
Response Time			100	ms	Turn off output power

#### 4.4. Command Write Time



T1: Max 20msec, T2: Max 42msec, T1+T2: Max 62msec

## 5. Firmware Requirement

### 5.1. Upgradeability

Can be updated

### 5.2. I2C Communication

Standard two wire communication interface

## 6. Optical Functional Diagram

