

AMP-1016B

+16 dBm Optical Booster Amplifier

Key Features

- C-Band (or optional L-Band) optical booster amplifier
- Minimum +16 dBm output power with 0 dBm input
- ACC and APC mode operation
- Uncooled laser for low power consumption
- User friendly USB GUI or browser based Ethernet GUI
- Optical power monitoring of input and output
- 10/100BaseT Ethernet interface
- Small footprint of 6" x 2.5" x 1.25"
- Optional parameter logging over time



Applications

- Booster for 10 Gb/s, 40 Gb/s, or 100 Gb/s line cards
- Signal loss compensation at Add/Drop nodes
- Military and industrial applications requiring small size, low power consumption
- Remote (Ethernet) controlled optical signal amplification

Overview

The AMP-1016B is an optical booster amplifier with a minimum output power of +16 dBm with a 0 dBm input signal. It is one of the AMP-1000 series of amplifier modules which are designed as user-friendly, compact, portable, cost-effective solutions for use in a variety of applications. There are booster and pre-amplifier configurations which operate in either the C-Band or L-Band.

The input and output optical power levels are measured using a 1% tap to minimize noise figure. An onboard temperature sensor allows the power monitoring circuitry to be calibrated during production test to provide measurement resolution of 0.01 dB and linearity (relative accuracy) of 0.1 dB over an operating temperature range of 0°C to 40°C.

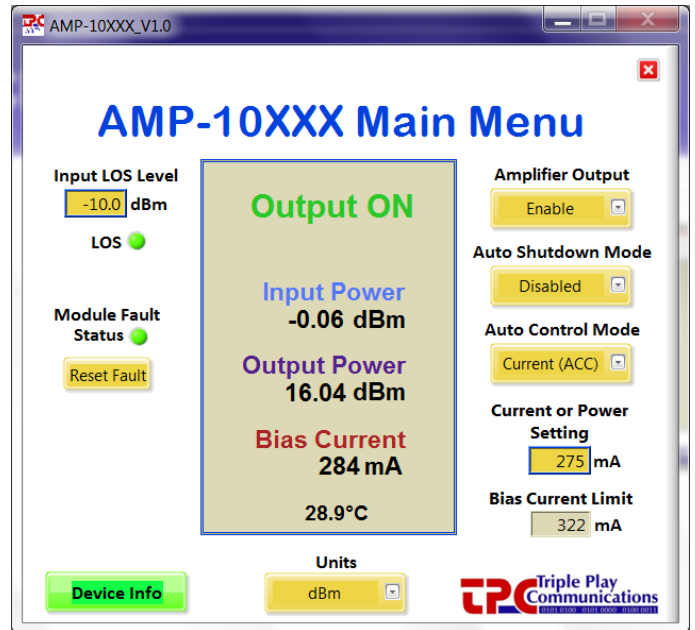
An AC/DC adapter is provided to power the AMP-1016B and its 10/100BaseT Ethernet interface is used to allow the module to be controlled via Static or Dynamic IP addressing. In this configuration a standard HTML browser (e.g. Firefox, Chrome, Internet Explorer) provides the user interface (see example window to the right) and the various control and status HTML pages are integrated into the microcontroller's firmware. Additionally, the module allows SNMP control via this Ethernet interface.

Optical Control/Status	System Status	Ethernet Setup	Revision/Update
AMP-1016B Optical Control and Status			
Status Parameter	Status		
Bias Current (mA)	298		
Bias Current Limit (mA)	322		
Input Power	-0.21 dBm		
Output Power	16.00 dBm		
Loss of Signal (LOS)	OK		
Temperature (°C)	40.0		
<input checked="" type="checkbox"/> Continuous Update			
Control Function	Setting		
Desired Bias Current (mA)	290 <input type="text"/>		
Desired Output Power (dBm)	16.0 <input type="text"/>		
Auto Control Mode	ACC <input type="button" value="v"/>		
Amplifier Output	Enabled <input type="button" value="v"/>		
Auto Shutdown Mode	Disabled <input type="button" value="v"/>		
Optical Power Display	dBm <input type="button" value="v"/>		
Loss of Signal (LOS) Level	-5.0 <input type="text"/>		
Reset Fault Alarm	<input type="button" value="Reset"/>		

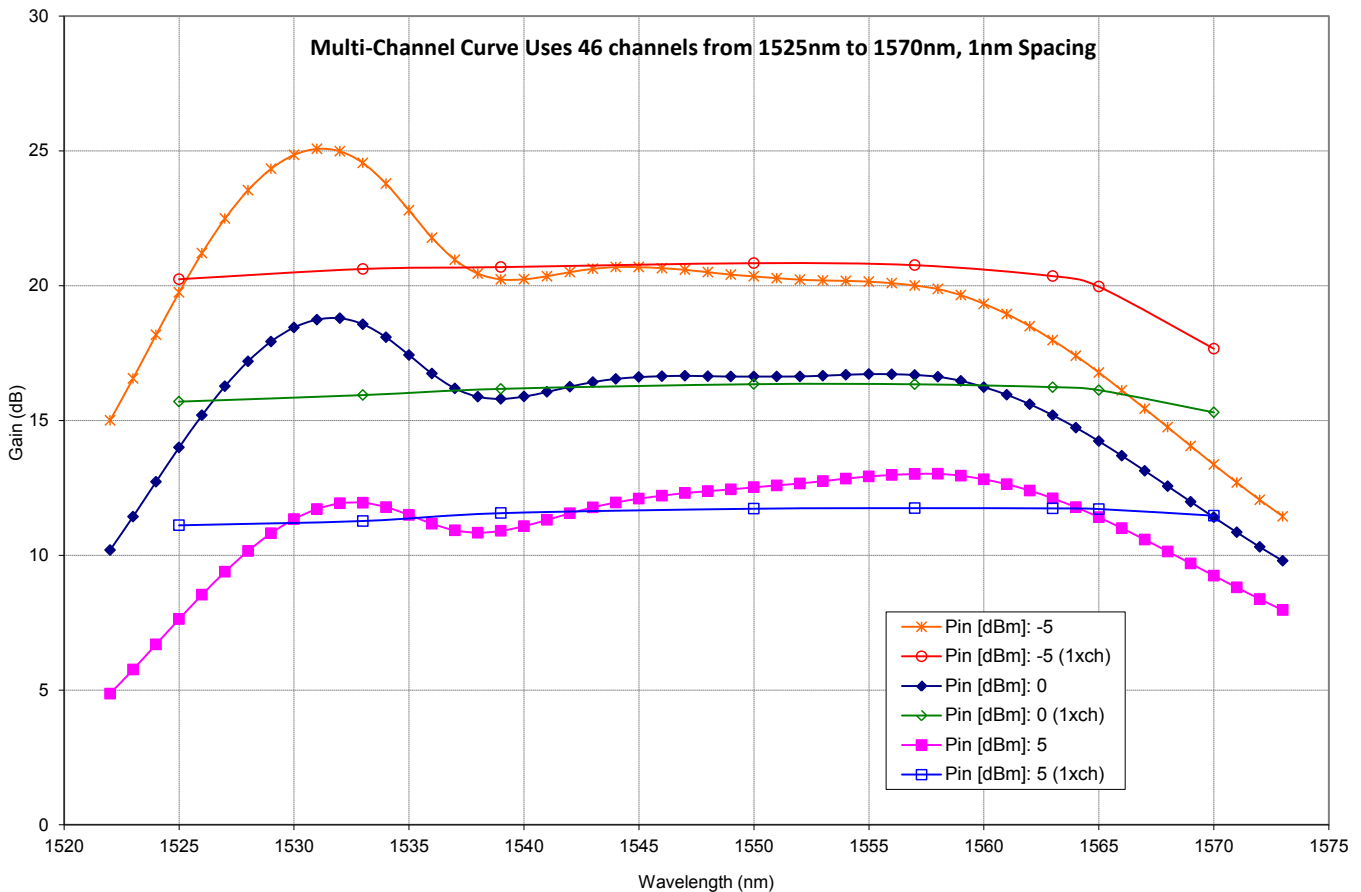
The AMP-1016B can also be connected directly to a Windows based computer running the USB graphical user interface (GUI) software. The USB GUI (see example window at right) is also able to provide the same complete control and status of the module as the browser based GUI.

The GUI application also has an optional capability which allows the user to perform time stamped data logging. This includes capturing the input and output optical power levels as well as the corresponding amplifier settings, such as bias current, and writing this information to a .csv file.

The AMP-1016B optical booster amplifier can be used for either single channel or multi-channel applications. The gain curves shown below (with no gain flattening filter) demonstrate the amplifier's gain over a variety of conditions including wavelength, input power, and single vs. multi-channel.



The multi-channel curve uses 46 channels evenly distributed across the C-band with 1 nm channel spacing. For this curve, each channel has the same power level and the total input power from all channels combined is given as Pin (-5 dBm, 0 dBm, and +5 dBm). A gain flattening filter can be added to this module so please contact TPC if gain flattening is required.



Amplifier Specifications

Parameter	Minimum	Typical	Maximum
Output Power at 0 dBm Input, 1550 nm	16.0 dBm		
Noise Figure at 0 dBm Input, 1550 nm			5.5 dB
Operating Spectral Range	1529 nm		1563 nm
Polarization Dependent Gain			0.3 dB
Polarization Mode Dispersion			0.5 dB
Optical Input/Output Return Loss	40 dB		
Input / Output Isolation	21 dB		

Optical Power Meter Specifications

Parameter	Minimum	Typical	Maximum
Optical Input Dynamic Measurement Range	-45 dBm		+10 dBm
Optical Output Dynamic Measurement Range	-35 dBm		+20 dBm
Resolution	±0.01 dB		
Relative Accuracy/Linearity	±0.1 dB		
Absolute Accuracy	±1.0 dB		

Electrical, Mechanical, and Environmental Specifications

Parameter	Minimum	Typical	Maximum
Power Supply Voltage		+5V	
Power Supply Interface		AC/DC Adapter	
Operating Current (Ethernet and USB)		550 mA	600 mA
USB Communications Interface		USB 2.0	
Ethernet Communications Interface ¹		10/100BaseT	
USB User Platform		Windows GUI	
Ethernet User Interface (ex. Chrome, Firefox, IE)		HTML Browser	
Optical Connectors (input and output)		FC/PC	
Operating Temperature Range	0 °C		40 °C
Dimensions		6" x 2.5" x 1.25"	

Note 1: The software Interface Control Document can be provided so a custom control/status interface can be developed if desired

Part Numbers for Ordering

Description	Part Number
AMP-1016B Optical Booster Amplifier	AMP-1016B-□□□□
Includes Gain Flattening Filter: G , No Gain Flattening Filter: N	_____
C band: C , L band: L	_____
USB and Ethernet control/status interface: E	_____
Data logging: D , No Data logging: N	_____
FC/UPC: U , FC/APC: A	_____