

OPTICAL FIBER AMPLIFIERS

Features:

- Up to 37 dBm (5 W) output power
- C-band, L-band and C+L-band models
- Near quantum-limited noise figure preamplifiers
- Wide selection of different type of amplifiers
- RS232 and USB interfaces standard
- GPIB & MSA Interfaces optional
- High performance-to-cost ratio
- Custom design flexibility
- Linear polarization option

Preliminary

Applications:

- Analog and digital CATV optical transmission networks
- Long-Haul transmission
- Access Networks
- Instrumentation
- Research and Development



Optical Fiber Amplifiers

Product Description:

Optical Fiber Amplifiers (OFA) are devices which provide amplification to low-level optical signals. The Rack Mount OFA series of high performance, low noise and high output power amplifiers provide the perfect opportunity to build a flexible CATV network system. These units include a wide selection of Single Channel Amplifiers, Gain Flattened DWDM Amplifiers, Variable Gain Amplifiers, and Variable Gain Units with Mid-Stage access. Amplifiers are available to cover the C-band, L-band, or both the C & L bands together. A range of output powers are available. EDFAs are available with either a flattened spectral output for

stringent applications, or a non-flattened response for less demanding or cost-sensitive applications. The user can control the optical gain to suit the application.

Fiber amplifiers are connected to the system through input and output female connector receptacles. A variety of standard connector types are offered. Custom connectors can also be accommodated. Both RS-232 and USB interfaces are provided with the option to add a GPIB or EDFA MSA interface.

Typical Specifications For C-band Single Channel Amplifiers

| Parameters | Unit | Low Power | Medium Power | High Power |
|---------------------------------------|------|------------|--------------|------------|
| Max output power ¹ | dBm | 15 | 20 | 30 |
| Operating wavelength range | nm | 1530-1563 | 1530-1563 | 1530-1563 |
| Noise Figure at Max Pout ² | dB | 5.5 | 5.5 | 5.5 |
| Nominal Gain | dB | 20 | 23 | 25 |
| Gain Ripple | dB | N/A | N/A | N/A |
| Minimum Input Power ³ | dBm | -32 | -32 | -32 |
| PDG | dB | 0.5 | | |
| PMD | ps | 0.3 | | |
| Operating temperature range | °C | 0 to +65 | 0 to +65 | 0 to +65 |
| Storage temperature range | °C | -40 to +80 | -40 to +80 | -40 to +80 |
| Humidity ⁴ | % | 5 to 95 | 5 to 95 | 5 to 95 |

¹ Multiple channels are OK but spectrum is not flat

³ Determined by input monitors

² At nominal gain

⁴ Non-condensing

Ordering Information for Standard C-band Single Channel Amplifiers

| Bar Code | Part Number | Description |
|----------|--------------------------------------|---|
| TBD | OFA-1-S-15-1527/1567-S-1-N-3A-3-0-RU | Bench top single channel Optical Fiber Amplifier providing up to 15 dBm output power for the C band (1527 - 1567 nm) with angled FC/PC receptacles. The spectral response is not flattened. Includes both RS232 and USB control interfaces. |
| TBD | OFA-1-S-20-1527/1567-S-1-N-3A-3-0-RU | Bench top single channel Optical Fiber Amplifier providing up to 20 dBm output power for the C band (1527 - 1567 nm) with angled FC/PC receptacles. The spectral response is not flattened. Includes both RS232 and USB control interfaces. |
| TBD | OFA-1-S-30-1527/1567-S-1-N-3A-3-0-RU | Bench top single channel Optical Fiber Amplifier providing up to 30 dBm output power for the C band (1527 - 1567 nm) with angled FC/PC receptacles. The spectral response is not flattened. Includes both RS232 and USB control interfaces. |

Typical Specifications For C-band DWDM Multichannel Amplifiers

| Parameters | Unit | Low Power | Medium Power | High Power | Variable Gain |
|---|------|------------|--------------|------------|---------------|
| Max output power ¹ | dBm | 15 | 17 | 21 | 17 |
| Operating wavelength range | nm | 1530-1563 | 1530-1563 | 1530-1563 | 1530-1563 |
| Noise Figure at Max Pout ^{2,1} | dB | 5.5 | 6.0 | 6.0 | 5.5 |
| Nominal Gain | dB | 20 | 20 | 23 | N/A |
| Gain Ripple ¹ | dB | 1 | 1.5 | 1 | 1 |
| Dynamic Gain Range | dB | N/A | N/A | N/A | 15 |
| Max Flat Gain | dB | N/A | N/A | N/A | 25 |
| Min. Flat Gain | dB | N/A | N/A | N/A | 5 |
| Minimum Input Power ³ | dBm | -32 | -32 | -32 | -32 |
| PDG | dB | 0.5 | | | 0.5 |
| PMD | ps | 0.3 | | | 0.3 |
| Operating temperature range | °C | 0 to +65 | 0 to +65 | 0 to +65 | 0 to +65 |
| Storage temperature range | °C | -40 to +80 | -40 to +80 | -40 to +80 | -40 to +80 |
| Humidity ⁴ | % | 5 to 95 | 5 to 95 | 5 to 95 | 5 to 95 |

¹ At nominal gain for non-variable gain amplifiers

³ Determined by input monitors

² At max gain for variable gain amplifiers

⁴ Non-condensing

Ordering Information For Standard C-band DWDM Multichannel Amplifiers

| Bar Code | Part Number | Description |
|----------|--------------------------------------|--|
| TBD | OFA-1-D-15-1531/1563-S-1-F-3A-3-0-RU | Bench top broadband Optical Fiber Amplifier providing up to 15 dBm output power for the C band (1531 - 1563 nm) with angled FC/PC receptacles. The spectral response is flattened. Includes both RS232 and USB control interfaces. |
| TBD | OFA-1-D-17-1531/1563-S-1-F-3A-3-0-RU | Bench top broadband Optical Fiber Amplifier providing up to 17 dBm output power for the C band (1531 - 1563 nm) with angled FC/PC receptacles. The spectral response is flattened. Includes both RS232 and USB control interfaces. |
| TBD | OFA-1-D-21-1531/1563-S-1-F-3A-3-0-RU | Bench top broadband Optical Fiber Amplifier providing up to 21 dBm output power for the C band (1531 - 1563 nm) with angled FC/PC receptacles. The spectral response is flattened. Includes both RS232 and USB control interfaces. |
| TBD | OFA-1-D-17-1531/1563-S-1-F-3A-3-0-RU | Bench top broadband variable gain Optical Fiber Amplifier providing up to 17 dBm output power for the C band (1531 - 1563 nm) with angled FC/PC receptacles. The spectral response is flattened. Includes both RS232 and USB control interfaces. |

Typical Specifications For C-band Variable Gain Mid Stage Access Amplifiers

| Parameters | Unit | Low Power | Medium Power | High Power |
|---|------|------------|--------------|------------|
| Max output power | dBm | 17 | 20 | 23 |
| Operating wavelength range | nm | 1530-1563 | 1530-1563 | 1530-1563 |
| Minimum Input Power ¹ | dBm | -32 | -32 | -32 |
| Noise Figure at Max Pout ^{2,3} | dB | 5.5 | 5.5 | 6.0 |
| Mid Stage Loss Range ⁴ | dB | 0-15 | 0-15 | 7-13 |
| Gain Ripple | dB | 1 | 1 | 1 |
| Dynamic Gain Range | dB | 15 | 15 | 15 |
| Max Flat Gain | dB | 25 | 25 | 25 |
| Min. Flat Gain | dB | 5 | 5 | 5 |
| PDG | dB | 0.5 | | |
| PMD | ps | 0.3 | 0.3 | 0.4 |
| Operating temperature range | °C | 0 to +65 | 0 to +65 | 0 to +65 |
| Storage temperature range | °C | -40 to +80 | -40 to +80 | -40 to +80 |
| Humidity ⁵ | % | 5 to 95 | 5 to 95 | 5 to 95 |

¹ Determined by input monitors

² At max gain

³ At Max mid stage loss

⁴ MSL can deviate from this but other parameters will be affected

⁵ Non-condensing

Ordering Information For Standard C-band Variable Gain Mid Stage Access Amplifiers

| Bar Code | Part Number | Description |
|----------|--------------------------------------|--|
| TBD | OFA-1-M-17-1531/1563-S-1-F-3A-3-0-RU | Bench top broadband variable gain Optical Fiber Amplifier providing up to 17 dBm output power for the C band (1531 - 1563 nm) with angled FC/PC receptacles. The spectral response is flattened and midstage access is provided. Includes both RS232 and USB control interfaces. |
| TBD | OFA-1-M-20-1531/1563-S-1-F-3A-3-0-RU | Bench top broadband variable gain Optical Fiber Amplifier providing up to 20 dBm output power for the C band (1531 - 1563 nm) with angled FC/PC receptacles. The spectral response is flattened and midstage access is provided. Includes both RS232 and USB control interfaces. |
| TBD | OFA-1-M-23-1531/1563-S-1-F-3A-3-0-RU | Bench top broadband variable gain Optical Fiber Amplifier providing up to 23 dBm output power for the C band (1531 - 1563 nm) with angled FC/PC receptacles. The spectral response is flattened and midstage access is provided. Includes both RS232 and USB control interfaces. |

Ordering Information For Standard Accessories

| Bar Code | Part Number | Description |
|----------|---------------------|---|
| 2737 | POWER CORD - EUROPE | Power cord for European 4mm round pin plug to IEC connection. |
| 2736 | POWER CORD - UK | Power cord for UK plug to IEC connection. |

Ordering Information For Custom Parts:

OZ Optics welcomes the opportunity to provide custom designed products to meet your application needs. As with most manufacturers, customized products do take additional effort so please expect some differences in the pricing compared to our standard parts list. In particular, we will need additional time to prepare a comprehensive quotation, and lead times will be longer than normal. In certain cases non-recurring engineering (NRE) charges, lot charges, and/or a minimum order will be necessary. These points will be carefully explained in your quotation, so your decision will be as well-informed as possible.

Description

Optical Fiber Amplifier

Part Number

OFA-N-C-P-W-F-S-T-X-J-L-I

N Number of Output Ports.
Specify 1, 2 or 4. The input signal will be amplified and split amongst the output ports.

C Configuration:
S = Single Channel
D = DWDM Broadband
M = Mid-span Access

P Maximum Output Power in dBm:
Specify a value between 12 and 37 ,
corresponding to 12 and 37 dBm

W Wavelength range:
1528/1566
1570/1605
1528/1605

F Fiber type:
S = Singlemode
P = Polarization maintaining

S Packaging style:
1 = Bench top
2 = Rack mountable
3 = OEM module

I Control interface:
RU = RS232 & USB
RUG = RS232, USB & GPIB
M = MSA

L Fiber length in meters for pigtail style units. Use 0 for receptacle style.

J Fiber jacket
3: 3 mm
3A: armored 3 mm

X Receptacle style:
3 = Standard flat, Super, or Ultra FC/PC
3A = Angled FC/PC
8 = AT&T-ST
SC = SC
SCA = Angled SC
LC = LC
MU = MU

T Flatness:
N = Non-flattened
F = Flattened