

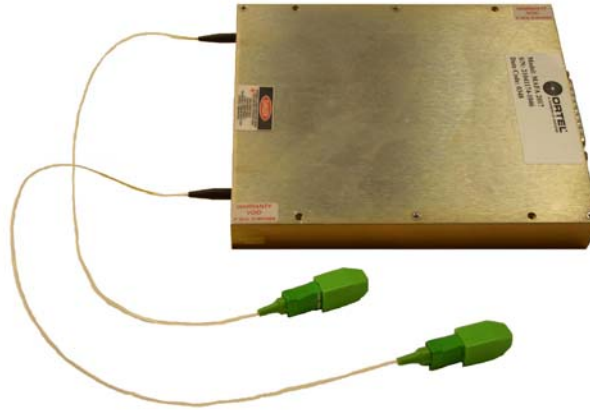
Applications

- High performance supertrunking links
- High power distribution networks
- Redundant ring architectures
- FTTx networks

Features

- Full Function Fiber Optic Amplifier Ready for Integration
- Low Noise Figure (Typ < 5dB)
- Total Input Power Range -10 dBm to +12 dBm
- +14 dBm to +27 dBm Output Power
- Standard RS-232 Communication (RS-485 or I²C is optional)
- Standard and Optional Gain Flatness (1530nm - 1562nm)
- Low Electrical Power Consumption
- Input / Output Isolation > 40/40 dB
- Polarization Dependant Gain < 0.1 dB
- Polarization Mode Dispersion < 0.5 ps

MAFA 2000 Series Erbium Doped Fiber Amplifier



The Ortel MAFA 2000 Series Erbium Doped Fiber Amplifier (EDFA) Gain Block Module is an ideal building block for OEM system integrators. The family of MAFA 2000 EDFA Gain Blocks is designed to meet the most demanding noise performance requirements of CATV applications, and performs all the functions required of an optical amplifier for system integration. MAFA 2000 series EDFA Gain Blocks provide optical isolation on the input and output of the gain block for stable, low noise operation. The input and output optical signal power levels are detected for monitoring and control. The input optical signal is amplified with active gain control for a constant output power level, or with active output power control for constant gain mode. The MAFA 2000 series EDFA Gain Blocks also provide monitors and associated alarms for all vital characteristics. The optical output of the MAFA 2000 series EDFA Gain Blocks can be split into multiple ports by an optional external splitter.

Optical / Electrical Characteristics

PROPERTY	UNIT	LIMIT	MAFA MODELS							COMMENTS
Product Code			2014	2017	2020	2022	2024	2026	2027	
PERFORMANCE										(note 1)
Operating Input Power	Pin (dBm)	Max	12	12	12	12	12	12	12	
Operating Input Power	Pin (dBm)	Min	-10	-10	-10	-10	-10	-10	-10	
Output Power	Po(dBm)		14 +/- .25	17 +/- .25	20 +/- .25	22 +/- .25	24 +/- .25	26 +/- .25	27 +/- .25	Nominal
Noise Figure (Note 2)	NF (dB)	Typ/Max	4.5/5.0	4.5/5.0	4.5/5.0	4.5/5.0	5.0/5.5	5.0/5.5	5.0/5.5	-00 and -01 versions
	NF (dB)	Typ/Max	4.0/4.5	4.0/4.5	4.0/4.5	4.0/4.5	4.5/5.0	4.5/5.0	4.5/5.0	-02 version
	NF (dB)	Typ/Max	4.0/4.5	4.0/4.5	4.0/4.5	4.0/4.5	4.5/5.0	N/A	N/A	-03 version
Static Gain Flatness	GF (dB)	Max	+/-0.5	+/-0.5	+/-0.5	+/-0.5	+/-0.5	+/-0.5	+/-0.5	(Note 3)
Dynamic Gain Flatness (Note 4)	(dB)	Max	+/-1.0	+/-1.25	+/-1.5	+/-2.0	+/-2.0	+/-2.0	+/-2.0	-00 and -02 versions
	(dB)	Max	+/-0.5	+/-0.5	+/-1.0	+/-1.0	+/-1.0	N/A	N/A	-01 version
	(dB)	Max	+/-0.5	+/-0.5	+/-1.0	+/-1.0	+/-1.0	N/A	N/A	-03 version
Output Power Stability	(dB)	Max	+/- 0.1	+/- 0.1	+/- 0.1	+/- 0.1	+/- 0.1	+/- 0.1	+/- 0.1	(Note 5)
Power Consumption (steady state regime)	Psys(W)	Max	2.5	3	6	8	12	20	25	70°C Case

Notes:

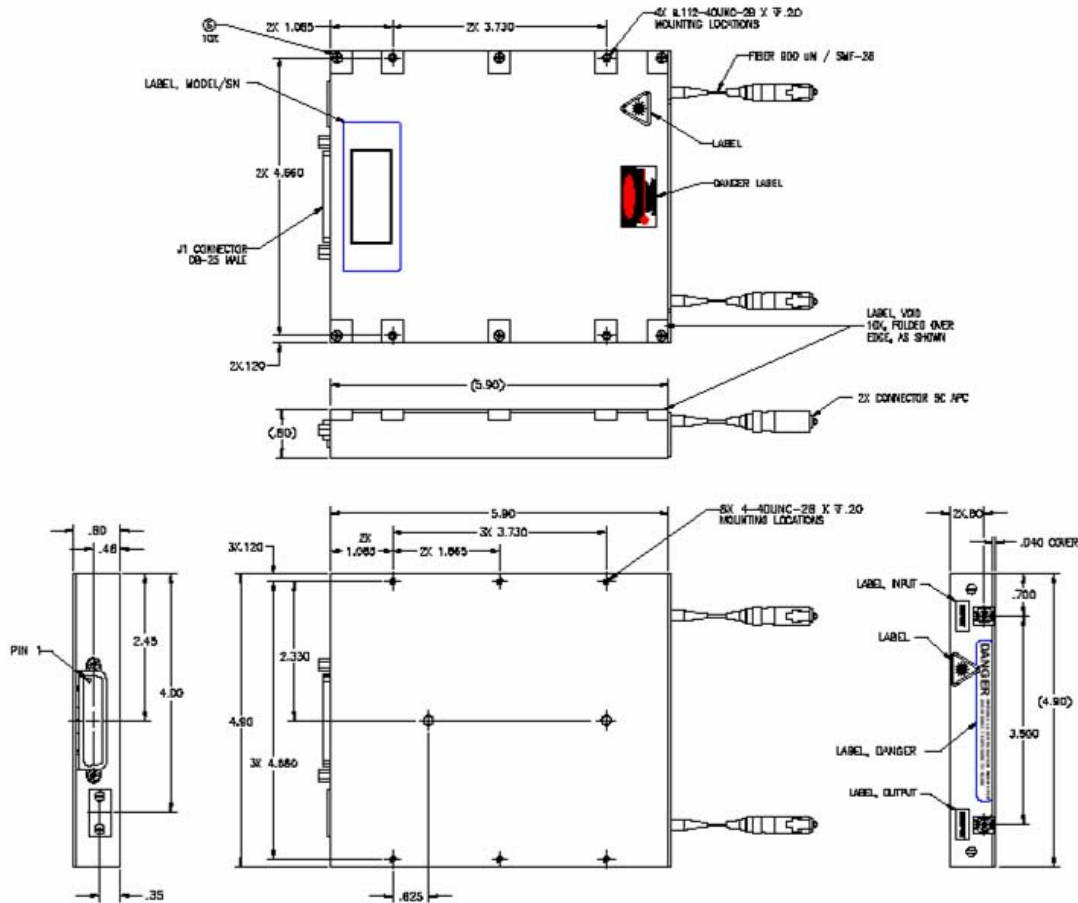
1. Unless stated otherwise all specifications apply over the full temperature range and humidity
2. Measured with 8 evenly spread signals @ 25°C, Σ Pin = 0 dBm.
3. Measured with a swept Probe Signal (Pp), where Pp = 0 dBm @ 25°C
4. Measured with a swept Probe Signal (Pp), and a fixed Tone Signal (Pt) @ 1545 nm; (Pt = Pp+20 dB; Pt + Pp = 0 dBm) @ 25°C; Gain Flattened Option with $\Delta G = \pm 0.5$ dB is available for some Models
5. Stability over polarization and temperature

General and Mechanical Specifications

PROPERTY	REQUIREMENT	COMMENTS
GENERAL		
Operating Wavelength	1530 ~ 1562nm	Standard
*Operating Case Temperature	-40°C to 70°C	
Storage Temperature	-40°C to 85°C	
Operating Humidity	20% to 85%	Non-condensing
Voltage Supply Range	+4.5V to+5.5VDC	All versions
Optical Connectors	SC/APC; SC/UPC; FC/APC; FC/UPC; E2000/APC	User Specified
Dimensions In Inches	4.9"W x 5.9"D x 0.8"H 4.9"W x 5.9"D x 1.8"H	MAFA 2014 to MAFA 2022 MAFA 2024 to MAFA 2027

* With a 1" heat sink. (MAFA 2024 to MAFA2027 require a heat sink to meet operating temperature specifications)

Outline Drawing



Standard MAFA Electrical Connector pinout

Pin	Description	Pin	Description
1	DC Power Input (+5V)	14	DC Power Input (+5V)
2	GND	15	GND
3	Reserved	16	Reserved
4	Reserved	17	Reserved
5	KEY-SWITCH	18	RS-232 Rx
6	RS-232Tx	19	Reserved
7	Reserved	20	Reserved
8	Reserved	21	Reserved
9	Reserved	22	Reserved
10	Reserved	23	Reserved B
11	Reserved	24	N/A
12	Reserved	25	Reserved
13	Reserved		

Compliance and Reliability Information

- **FCC: Subpart B. Part 15 class "A":** Unintentional Radiators
 - **EN 61000-4-3:** Electromagnetic Compatibility (EMC) Part 4: Testing and Measurement Techniques – Section 3: Radiated Immunity (1996)
 - **EN 55013:** Sound and Television Broadcast receivers and associated equipment – Radio disturbance characteristics- limits and methods of measurements – Electric Field Radiation Emissions (2001)
-
- **Fit Rate:** 60% level of confidence 670 @ 25°C (14-22dBm EDFA Units)
 - **Fit Rate:** 60% level of confidence 962 @ 40°C (14-22dBm EDFA Units)

Ordering Information

MAFA20 - -

<i>Power Level</i>	<i>Connector Option</i>	<i>GFF/ NF options</i>
14 – 14 dBm	SC - SC/APC	00 - Standard
17 – 17 dBm	FC - FC/APC	01 – Standard with Gain Flattened option
20 – 20 dBm	EC - E2000/APC Diamond	02 - Standard with Low NF option
22 – 22 dBm	TC - SC/UPC	03 - Gain Flattened and Low NF option
24 – 24 dBm	GC - FC/UPC	
27 – 27 dBm		

Example:

MAFA2017-SC-00: Standard 17 dBm gain block with SC/APC optical connectors