

Optiva OTS-20 Series EDFA

Micro Erbium Doped Fiber Amplifier



DATASHEET | FEBRUARY 2014

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The Optiva OTS-20 Series of Micro Erbium Doped Fiber Amplifier (μ EDFA) Gain Block Modules are an ideal building block for system integrators to extend the fiber link for long-haul signal transport. The OTS-20 Series is designed to meet the most demanding noise performance requirements of fiber optic communications and control systems and performs all the functions required of an optical amplifier for system integration.

The OTS-20 Series μ EDFA modules provide input and output optical isolation 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 operation.

The OTS-20 Series also provides local and remote monitors and alarms for all critical operating parameters via SNMP and EMCORE View GUI. The optical output can be split into multiple ports by optional external splitter. An optional back reflection monitoring feature enables safe output optical power management.

Applications

- CATV Systems
- Long Distance RF/Microwave Fiber Optic Communication Links
- Sensing and Control Systems
- High-Performance Supertrunking Links
- High Power Distribution Networks
- Redundant Ring Architectures
- FTTx Networks

Features

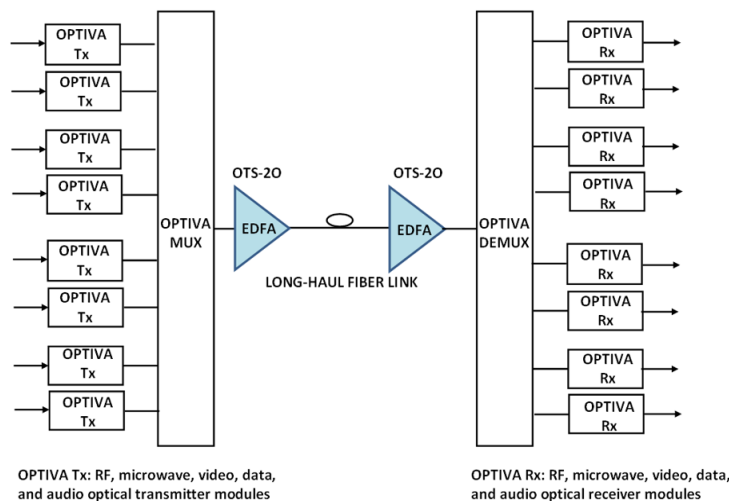
- Full Function Fiber Optic Amplifier
- Low Noise Figure (Typ < 4.5 dB)
- Pin: -6 dBm to +12 dBm
- Pout: +14 dBm to +23 dBm
- Standard and Optional Gain Flatness
- Low Electrical Power Consumption
- Input/Output Isolation > 40/40 dB
- Polarization Dependent Gain < 0.1 dB
- Polarization Mode Dispersion < 0.2 ps
- Input & Output Return Losses < -40 dB
- Output Residual Pump Power < -30 dBm
- Back Reflection Monitoring
- RS-232 and SNMP Monitor and Control
- Fits in Optiva Enclosures (16, 6, and 2 slot)
- RoHS Compliant

System Applications

The OTS-20 Series μ EDFA modules fit in the EMCORE **optiva** PLATFORM Optiva family of enclosures including the 3 RU 19" rack-mount, fan-cooled enclosure (Model OT-CC-16F) supporting up to 16 Optiva modules and the 1 RU 19" rack-mount, fan-cooled enclosure (Model OT-CC-6) supporting up to 6 Optiva modules. In addition, the OTS-20 Series modules fit the compact tabletop or wall-mountable enclosure Model OT-DTCR-2.

The EMCORE Optiva family of platforms consists of a wide range of RF, microwave, video, data and audio signal transport solutions. The integration of the OTS-20 Series μ EDFA Gain Block Modules and the Optiva family of 1550 nm optical MUX-DEMUX solutions into the platform can extend the fiber links of long-haul signal transport for a wide range of applications.

Block Diagram



Optiva OTS-2O Series EDFA

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Optical/Electrical Characteristics

Parameter	Unit	Limit	Model				Comments (Note 1)
			1400	1700	2000	2300	
Operating Input Power	Pin (dBm)	Max	12	12	12	12	-
Operating Input Power	Pin (dBm)	Min	-6	-6	-6	-6	Typical (may vary for some models)
Output Power	Po (dBm)	Nominal	14 +/- .25	17 +/- .25	20 +/- .25	23 +/- .25	(Note 2)
Noise Figure	NF (dB)	Typical	≤ 4.0 dB	≤ 4.0 dB	≤ 4.0 dB	≤ 4.0 dB	@ Pin = 0 dBm, no Pin monitoring (Notes 3, 7, 8)
Static Gain Flatness	ΔGs (dB)	Max	+/- 0.5	+/- 0.5	+/- 0.5	+/- 0.5	(Note 4)
Dynamic Gain Flatness	ΔGd (dB)	Max	+/- 1.0	+/- 1.25	+/- 1.5	+/- 2.0	(Notes 5, 7)
Output Power Stability	(dB)	Max	+/- 0.1	+/- 0.1	+/- 0.1	+/- 0.1	(Note 6)
Power Consumption (Steady State)	Psys (W)	Max	4	5	9	14	70°C Case

NOTES:

1. Unless stated otherwise, all specifications apply over the full operating temperature and humidity ranges.
2. Measurement variations.
3. Measured with 8 evenly spread input optical signals @ 25°C, ΣPin ≈ 0 dBm. Measuring with 1 input signal with Pin ≈ 0 dBm and λ ≈ 1550 nm is also possible.
4. Measured with a swept Probe Signal (Pp), where Pp ≈ 0 dBm @ 25°C.
5. Measured with a swept Probe Signal (Pp) and a fixed Tone Signal (Pt) @ ≈ 1550 nm; (Pt ≈ Pp +20 dB; Pt + Pp ≈ 0 dBm) @ 25°C; Gain Flattened Options with ΔGd ≤ +/-1.0 dB are available (for some models and for defined input optical power only).
6. Over polarization and temperature.
7. Specific ΔG can be guaranteed at a single specified Input Optical Power Level (Pin = Pt + Pp) equal or different from 0 dBm.
8. If input power monitoring and input isolation are required then typical NF (for all units @ Pin = 0 dBm) ≤ 4.5 dB.

General and Mechanical Specifications

Parameter	Min	Typ	Max	Units	Comments
Operating Wavelength	1532	-	1565	nm	Standard
Operating Case Temperature	0	-	50	°C	Standard*
Storage Temperature	-40	-	85	°C	Standard
Operating Humidity	20	-	85	%	Non-Condensing
Voltage Supply Range	-	+12/+5/+3.3	-	VDC	All Versions**
Optical Connectors	-	SC; FC; E2000	-	-	APC Only
Dimensions		70 x 90 x 15 2.75 x 3.5 x .59	-	mm in	All Versions

*Extended temperature range of - 40°C to +75°C is also possible

**Transient Pulse to +X.X VDC + 5% for < 100 msec

Note: Electrical power must be applied to the unit (with no Pin monitoring) only after launching input optical signal

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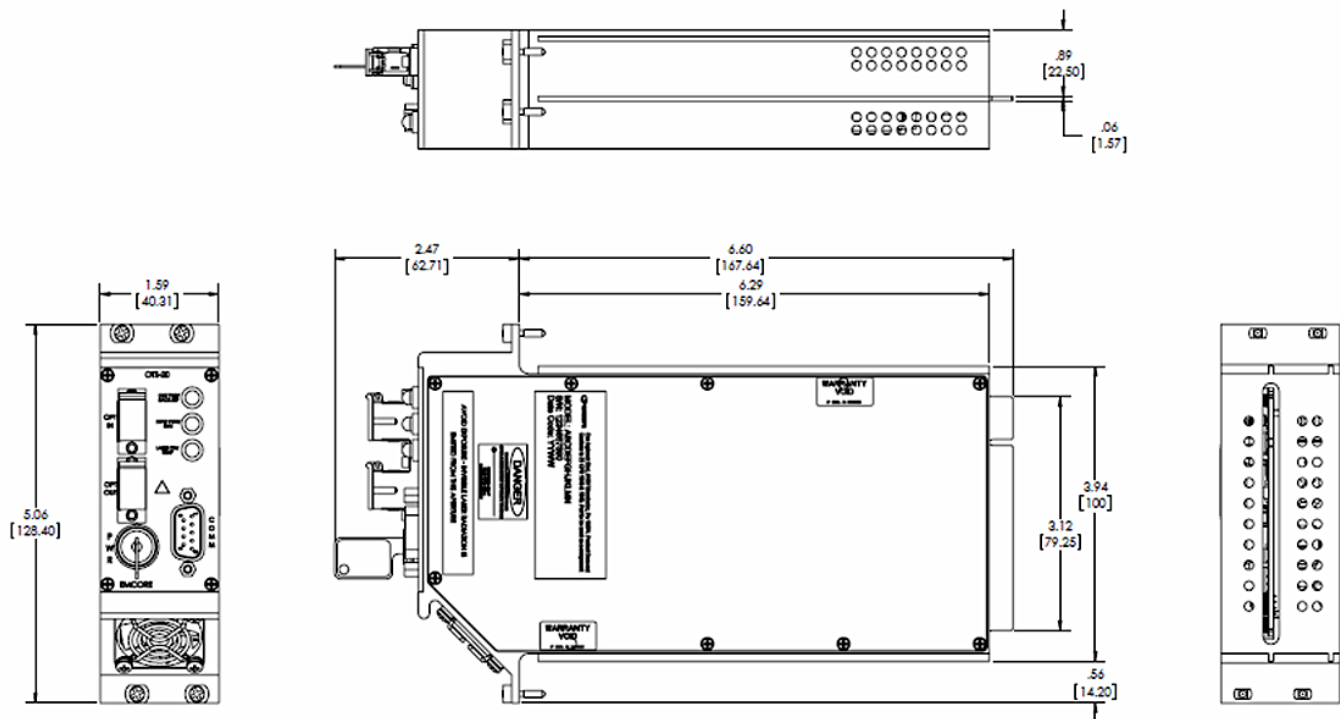
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Outline Drawing (dimensions are in inches & mm)



Compliance and Reliability Information

FCC: Subpart B, Part 15 Class "A": Unintentional Radiators

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: 90% level of confidence - 290 @ 25°C

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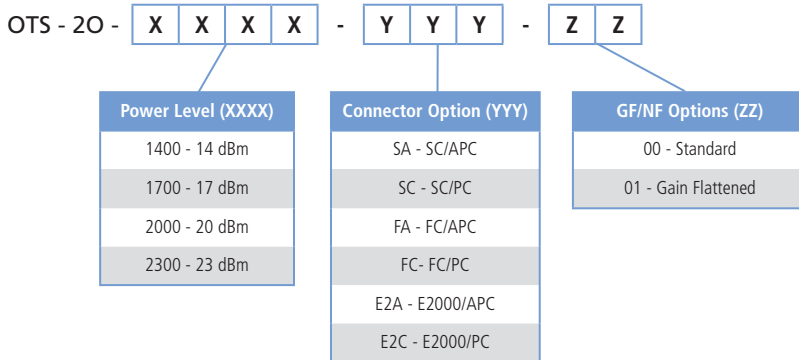
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Ordering Information



Example:

OTS-2O-1400-SC-00: 14 dBm gain block with SC/APC optical connectors, standard GF/NF

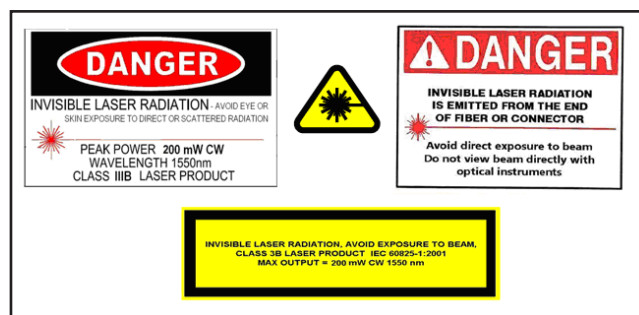
Note: Only some models can be ordered with Gain Flattened options (-01 suffixes). Please contact your Sales Representative for details.

Laser Safety

This product meets the applicable requirements of 21 CFR 1010 & 1040 and is classified as a Class IIIb laser product based on the maximum optical output power shown below. During use as intended, the laser energy is fully contained within the fiber network such that there is no accessible laser radiation and would meet the requirements for a Class 1 laser product.

Wavelength = 1532 ~ 1565 nm (dependent on input source)

Maximum Output Power = 0.2 W (single output, 23 dBm model)



MADE IN USA