

Few-Mode EDFA

This few mode fiber Erbium doped amplifier has been developed within the MODE-GAP project. The amplifier covers C-band and is available in 3-mode (LP₀₁, LP_{11a}, LP_{11b}) and 6-mode (LP₀₁, LP_{11a}, LP_{11b}, LP_{21a}, LP_{21b}, LP₀₂) options. Low noise figure and high gain is achievable across the full set of modes. The differential modal gain is low and flat across the wavelength range. Number of required pump ports can be defined by the user to provide individual mode group control.

Optical Parameters	Typical
Wavelength Range	1535 – 1560nm (C-band)
Input Power Range	-10 to 0 dBm per mode
Number of spatial modes	3 or 6
Small Signal Gain	> 20dB
Number of distinct pump ports	1-4
Maximum Output Power	17dBm
Differential Modal Gain	< 4dB
Noise Figure	< 6dB
Input/ Output Connector	Bare fiber or FC/PC or FC/APC
General	
Control Electronics Dimensions	19" Rack Unit
Operating Voltage	110-230 VAC
Line Frequency	50 to 60 Hz

Technical references:

1. Y. Jung et al., "Reconfigurable modal gain control of a few-mode EDFA supporting 6 spatial modes," *IEEE Photon. Tech. Lett.* 26, 1100-1103 (2014).
2. Y. Jung et al., "Three mode Er³⁺ ring-doped fiber amplifier for mode-division multiplexed transmission," *Opt. Express* 21, 10383-10392 (2013).
3. Y. Jung et al., "First demonstration and detailed characterization of a multimode amplifier for space division multiplexed transmission systems." *Opt. Express Vol. 19, Issue 26*, (2011)



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