

High Power EDFA Module

Yang Di, Liu Qi, Liu Xiaoguang, Zhang Xinben

Abstract: Optical Fibre Amplifier (OFA) technology solves the limitation in transmission rate and distance of optical transmission network (OTN), and realizes ultra-high speed, ultra-large capacity, ultra-long distance wavelength division, dense wavelength division, all-optical transmission, optical soliton transmission, etc. With the development of backbone network, metropolitan area network and access network, optical fibre amplifier technology develops towards high-end and low-end: high-end is towards high-performance, wide broadband, multi-function, intelligent development while low-end is towards compact, low-cost, low-power, standardized development.

Key words: Optical fibre amplifier, Ultra-high speed, Ultra-large capacity, Ultra-long distance

1 Introduction

In recent years, with the rapid development of optical fibre communication technology with ultra-high speed, ultra-large capacity, ultra-long distance and ultra-wide direction as well as large-gain bandwidth, DWDM (dense wavelength division multiplexing) system has become the mainstream technology in optical fibre transmission system. As one of the core devices of DWDM system, optical fibre amplifier will be developed rapidly in the application of the system. The main reason thereof is that fibre amplifier has enough gain bandwidth, and the combination of that and WDM technology can rapidly and simply expand the communication capacity of the existing optical cable system and extend the relay distance.

At present, there are three kinds of optical fibre amplifier technologies: rare-earth-doped fibre amplifier (e.g. EDFA, PDFA, TDFa, etc.), semiconductor fibre amplifier (e.g. SOA, etc.), non-linear effect fibre amplifier (e.g. Raman fibre amplifier, Brillouin fibre amplifier, etc.).

Erbium-doped fibre amplifier (EDFA) is the mainstream of optical fibre amplifier, which uses erbium-doped fibre as gain medium, use 980nm or 1480nm pump as pumping light source to make erbium

ion Er^{3+} population inverted. The incident signal laser leads to stimulated radiation of Er^{3+} particles in semi-stable state that produces signal amplification and has a wide emission peak at 1525nm-1565nm. EDFA is applicable to C-band and L-band, which can amplify multiple wavelengths (e.g. channels) at the same time. EDFA is an ideal optical fibre amplifier with low loss window for optical communication because of its transparent rate, large gain, wide bandwidth, low noise and high power. From the aspect of application, EDFA can be divided into EDFA for single wavelength and multiple wavelengths. In recent years, the development of EDFA tends to be miniaturized and arrayed.

2 YOFC EDFA Module Products

The YOFC erbium-doped fibre and erbium-ytterbium-codoped fibre have been serving the market of EDFA for radio and television, telecommunication and scientific research in China for many years. Among them, YOFC occupies the main market share in the market of EDFA for radio and television. Based on the whole series of specialty optical fibre platform of YOFC, the coupled single-mode optical fibre for WDM, the single-mode device pigtail for optical fibre device and the single and multi-mode optical fibre for combiner developed

by YOFC have entered the market in batches. On this basis, YOFC has provided a complete set of solutions such as WDM, optical fibre combiner, isolator in the radio and television market.

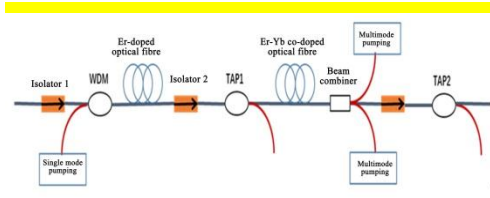


Figure 1 Schematic Diagram of High Power EDFA Module

In the high power EDFA market that is gaining momentum in the recent years, YOFC has established a long-term strategic partnership with Fibercore, a famous British specialty optical fibre company. YOFC acts as agent for Fibercore in China market for all series of erbium-doped fibre and erbium-ytterbium-codoped fibre products to promote them in Chinese market. With the advantages of high cladding absorption, high power conversion efficiency, long-term reliability and excellent cost, Fibercore Er-Yb-codoped optical fibre has become the mainstream supplier of high power EDFA market with the help of the national sales network of YOFC.

Next, YOFC will provide more comprehensive optical fibre amplification solutions for EDFA manufacturers at home and abroad, and service for EDFA manufacturers to have more choices in performance improvement, cost control and production standardization, and will also provide customized services in aspects including high-power gainblock module, high-power EDFA module and miniaturized EDFA (such as Half-mini). Through the better cost advantages, more stable material and machine performance, YOFC provides one-stop solutions for domestic and foreign customers, and customers can obtain high-power products with good quality and low price to be promoted in the terminal only by simple packaging.

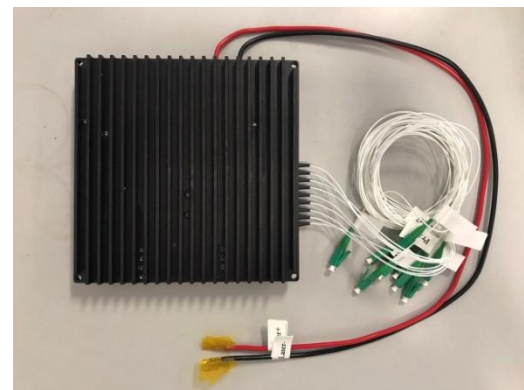


Figure 2 (a) High Power EDFA Module for Radio and Television Market (b) High Power EDFA Gain Block for Radio and Television Market

Table 1 YOFC Medium and High Power EDFA Module Indicators

| Parameter | Unit | Value |
|--|------|---------|
| Product Code | - | |
| Number of output ports | - | 8/16/32 |
| Each Port Output Power (at 0dBm 1550nm input signal) | dBm | 15-22 |



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| | | |
|--|-----|-----------|
| Total Output Power (at 0dBm 1550nm input signal) | dBm | 30-37 |
| Input Signal Level | dBm | -6 to +10 |

长飞光纤光缆股份有限公司

Yangtze Optical Fibre and Cable Joint Stock Limited Company

地址: 武汉市光谷大道9号 (430073)

ADD: No.9 Optics Valley Avenue, Wuhan, Hubei, China(P.C.: 430073)

电话(Tel): +86 400-991-6698

邮箱(Email): marketing@yofc.com

www.yofc.com