

Comparison of Low Temperature Resistance and Performance of Optical Wave Multiplexers



Overview

Abstract: In this paper, four-channel cascaded Mach-Zehnder interferometer-based wavelength (de)multiplexers in the O-band are demonstrated experimentally by utilizing silicon nitride (SiN) optical waveguides. By reference to the commonly used 100 Gigabit Ethernet standards, two types of. Russian People's Friendship University, Department of Radiophysics, Ul. Miklukho-Maklaya 6, Moscow 117198, Russia The possibility of creating spectral multiplexers/demultiplexers with temperature-independent parameters is considered. The reasons for the temperature shift of the central wavelength. The proliferation of computation-intensive technologies has led to a significant rise in the number of datacenters, posing challenges for high-speed and power-efficient datacenter interconnects (DCIs). They are key equipment in WDM systems, allowing for the transmission of multiple signals simultaneously.

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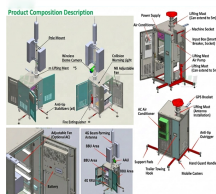
This paper discusses in detail the wavelength division multiplexing (WDM) technology, which effectively increases the communication capacity and transmission speed by simultaneously transmitting ...



This has led to ongoing research and development efforts aimed at improving the performance and scalability of optical multiplexers, ensuring they can meet the evolving needs of the ...



To evaluate the performance of our fi proposed system, we conducted experiments demonstrating parallel signal transmission using up to 15 wavelength channels within the C-band.



Here, we develop a novel design approach that co-optimizes inverse-designed wavelength division multiplexers and distributed Bragg gratings to achieve ultra-low crosstalk without compromising ...



After the temperature changes from low temperature to high temperature, the transmission loss of optical fiber decreases. This paper provides a basis for the application of optical fiber in ...



The fabricated (de)multiplexers show a temperature-dependent wavelength shift of about $18.5 \text{ pm}/^{\circ}\text{C}$, which is reduced by 75% compared to the standard silicon-based devices.



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Temperature-Insensitive Reflective Arrayed-Waveguide Grating Multiplexers L. Grave de Peralta, A. A. Bernussi, V. Gorbounov, and H. Temkin temperature-induced change of the refractive index channels, ...



A WDM mux and demux, also known as a WDM multiplexer and demultiplexer, is a device that combines multiple optical signals of different wavelengths onto a single optical fiber for ...



The results of studies of various techniques of wavelength stabilization of integrated-optical spectral devices and the evaluation of the efficiency of each of them are presented. The prospects of using ...

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