Title (en)

MULTIPLEXER, DEMULTIPLEXER AND ADD/DROP MULTIPLEXER FOR SINGLE MODE OPTICAL FIBER COMMUNICATION LINKS

Title (de)

MULTIPLEXER, DEMULTIPLEXER UND ADD-DROP MULTIPLEXER FÜR MONOMODE FASER-OPTISCHE KOMMUNIKATIONSVERBINDUNGEN

Title (fr)

MULTIPLEXEUR, DEMULTIPLEXEUR ET MULTIPLEXEUR A INSERTION-EXTRACTION POUR LIAISONS DE TELECOMMUNICATIONS PAR FIBRES OPTIQUES MONOMODALES

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Application

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Priority

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Abstract (en)

[origin: WO0211339A2] An optical multiplexer and demultiplexer for dense wavelength division multiplexed ("DWDM") fiber optic communication systems is disclosed. As a multiplexer, the device functions to spatially combine the optical signals from several laser sources (each of which is a different wavelength) and launch the spatially combined laser beams into a single optical fiber. As a demultiplexer, the device functions to spatially separate the different wavelengths of a wavelength division multiplexed optical link and launch each of the different wavelengths into a different optical fiber. In either embodiment, the device includes both bulk optic and integrated optic components. The spatial separation or spatial combination of laser beams of different wavelength is achieved with the use of bulk diffraction gratings. Also, bulk optical components are used to collimate and shape (or steer) the free space propagating laser beams to enable efficient coupling of light into single mode optical fibers, or integrated optic waveguides, and to reduce optical cross talk. Polarizing beamsplitters orient the polarization direction of the light to enable maximum diffraction efficiency by the gratings and to reduce the polarization dependent loss. Further, the end faces of optical fibers and integrated optic waveguides are angle polished to reduce back reflection and thereby reduce noise caused by feedback to the laser source. Preferably, the diffraction grating and focusing optics are specified to permit multiplexing and demultiplexing of laser wavelengths separated by 0.4 nanometers (nm) in the 1550 nm wavelength band. The preferred field of view of the optics permit multiplexing and demultiplexing of up to 32-48 wavelength channels separated by 0.4 nanometers in the 1550 nm wavelength band. Although examples of performance are provided for the 1550 nm optical wavelength band, the device components can be designed for use at other wavelengths bands, e.g., the optical fiber low absorption loss band at lambda SIMILAR 1310 nm.

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