Single-mode dual-core fiber optic models

Article Overview

A dual-core single-mode fiber optic model uses two separate single-mode cores to transmit and receive light signals, enabling long-distance, high-speed communication with minimal signal loss.

Core Structure and Function

A dual-core fiber contains two light-transmitting channels, often referred to as cores. Each core can carry a separate optical signal, effectively doubling the data capacity compared to a single-core fiber. In practice, one core is typically used for transmitting (TX) and the other for receiving (RX), which simplifies duplex communication and reduces interference . This setup is commonly used in standard dual-fiber optical modules and media converters .

Single-Mode Characteristics

Single-mode fibers (SMF) have a narrow core, approximately 9 micrometers in diameter, allowing light to travel in a single transverse mode. This design minimizes modal dispersion, enabling signals to travel over long distances—tens of kilometers—without significant degradation . Single-mode fibers typically operate at wavelengths of 1310 nm or 1550 nm, using laser-based light sources for high-speed transmission .

Applications and Advantages

Dual-core single-mode fibers are widely used in telecommunications, data centers,...

© 2026 G.Mark Power Grid Optical Communications - All rights reserved

Article Content

Difference Between Single vs Dual Fiber Optical Transceivers

Single Fiber: Typically shorter reach compared to dual fiber, ranging from 2km to 120km, depending on the specific module. Dual

Single Fiber vs Dual Fiber: How to Choose the Right WDM Architecture

This article compares single-fiber and dual-fiber solutions and provides practical guidance for selecting the appropriate

What Is A Single-Fiber BiDi Transceiver?--ETU-LINK

When planning a fiber optic network,one key decision is choosing between single-fiber (BiDi) and dual-fiber optical transceivers. This

Multi-core Fibers – dual core, twisted, space division multiplexing ...

There are optical fibers containing multiple fiber course. They can be used, for example, for optical fiber communications with space

fiber optic cable multimode versus singlemode duplex vs simplex

Workstations, fiber switches and servers, fiber modems, and similar hardware require duplex cable. Duplex fiber is available in

Optical Fiber: Single-Mode Multimode Single-Fiber Dual-Fiber

If you''re just starting to learn about fiber optics, you might come across four common terms: single fiber vs dual fiber,

© 2026 G-Mark Power Grid Optical Communications - All rights reserved

Contact Us

For more information, pricing, or custom solutions, please contact us:

Website: https://gmarkconstruction.co.za
Email: sales@gmarkconstruction.co.za
Phone: +31-6-15-38-72-94
Address: Herengracht 456, 1017 BS Amsterdam, Netherlands

This document is for informational purposes only. Specifications subject to change without notice.

© 2026 G-Mark Power Grid Optical Communications - All rights reserved