

Features of Gigabit 4-core Single-mode Fiber Optic Cable

Article Overview

A Gigabit 4-core single-mode fiber optic cable provides high-speed, long-distance data transmission with low signal loss, featuring four independent optical fibers within a durable protective jacket.

Core Construction and Materials

A 4-core single-mode fiber optic cable contains four individual glass fiber cores, each capable of transmitting data independently via light pulses . The core is typically 8-10 micrometers in diameter, optimized for single-mode operation to minimize signal dispersion and maintain high fidelity over long distances . Surrounding the core is the cladding, which has a lower refractive index to reflect light back into the core, ensuring efficient signal propagation . The fibers are housed in a PBT loose tube with jelly compound, providing protection against moisture and mechanical stress .

Strength and Protection

The cable includes multi-strand aramid yarn (Kevlar) as strength members to prevent breakage during installation and handling . The outer jacket, usually made of PE or PVC, protects the fibers from environmental factors such as abrasion, moisture, and UV exposure . For outdoor or underground applications, armored versions with steel tape or wire layers are available to resist crushing, rodents, and harsh conditions .

Performance Characteristics

Single-mode fibers in these cables support long-distance transmission with minimal attenuation and low dispersion, typically operating at wavelengths of 1310 nm and 1550 nm . They are suitable for Gigabit Ethernet, FTTH, GPON, and backbone networks, providing stable, high-speed connectivity over tens of kilometers without repeaters . The cable is tested using OTDR (Optical Time Domain Reflectometer) to verify splice loss, measure length, and detect faults, ensuring reliable performance .

Advantages of 4 Cores

- o Redundancy: If one fiber is damaged, three others remain functional .
- o Service Separation: Different cores can carry internet, IPTV, VoIP, or security signals independently .
- o Cost-Efficiency: More durable than single-core cables but easier to manage than high-density 12 or 24-core cables .

Applications

Features of Gigabit 4-core Single-mode Fiber Optic Cable

- o Telecommunications: Connecting central offices to local exchanges and long-distance links .
 - o Data Centers: High-bandwidth connections between servers, storage, and networking equipment .
 - o FTTH/GPON Networks: Delivering fiber directly to homes with scalable bandwidth .
 - o LANs and Campus Networks: High-speed interconnections within buildings or campuses .
- In summary, a Gigabit 4-core single-mode fiber optic cable combines high-speed, long-distance performance with robust construction and redundancy, making it ideal for modern telecommunications, data centers, and FTTH deployments.

What are the characteristics of single mode fiber optic cable? I often meet project managers who ask about single

Although single-mode fiber (SM) and multimode fiber (MM) cable types are widely used in

Single-mode fiber optic cable is the best choice for long-distance networking. It features a

Specifications are correct at time of printing and subject to change or alteration without notice.

Description: Features single mode fibers with a core diameter of 8.3 μ m. Benefits: Suitable for long-distance data transmission with

This comprehensive guide explores Single-Mode Fiber Optic Cable, covering technical specifications, deployment

In summary, choosing the right fiber optic cable, particularly the 4 core single mode type, can significantly impact your

Discover how to choose the right fiber optic cables for your network. Learn about fiber types, cable constructions,

Complex manufactures fiber optic solutions that improve and extend the performance of broadcast operations. Because the Complex

In our Single Mode vs Multimode fiber text we take a look at different fiber optic cable types

Chart Credit: Optical Components and Optics Singlemode describes a fiber with a small core that only allows one mode of light to

FTTH indoor drop cable is constructed with two single mode fiber. The cable is protected by a dielectric

Features of Gigabit 4-core Single-mode Fiber Optic Cable

strength member made of

Read Whitepaper: Discover the fiber optic cable and connector types, specifications, benefits, typical

With a core diameter of just 9 microns, single-mode fiber enables long-distance connections with minimal attenuation

GYXTW is an outdoor use optical fiber cable suitable for duct and aerial applications. We supply GYXTW fiber optic cable from 2

Discover fiber optic cable types, including single-mode (OS1, OS2) and multimode (OM1, OM2, OM3, OM4, OM5),

Web: <https://morwarreconst.co.za>

