What type of optical fiber does multimode fiber use

Overview

Identified by ISO 11801 standard, multimode fiber optic cables can be classified into OM1 fiber, OM2 fiber, OM3 fiber, OM4 fiber and newly released OM5 fiber.

Key Takeaways

Multimode optical fibers are classified into five main types: OM1, OM2, OM3, OM4, and OM5, each differing in core size, bandwidth, transmission distance, optical source, and typical applications.

Overview of Multimode Fiber

Multimode fiber (MMF) has a larger core diameter (50–62. 5 μm) than single-mode fiber, allowing multiple light modes to propagate simultaneously. This makes MMF ideal for short- to medium-distance communication, such as within buildings, campuses, or data centers.

MM

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F is cost-effective because it pairs with LED or VCSEL transceivers, which are cheaper and consume less power than single-mode laser modules. Multimode Fiber TypesTypeCore SizeJacket ColorOptical SourceMax Distance (10G Ethernet)Typical UseOM162. 5 µmOrangeLED33 mLegacy networks, 100M–1G EthernetOM250 µmOrangeLED82 m1G Ethernet, limited 10G applicationsOM350 µmAquaVCSEL (laser-optimized)300 m10G Ethernet, 40G/100G up to 100 m, modern enterprise networksOM450 µmAquaVCSEL550 mHigh-speed 10G–100G links, data centers, backward compatible with OM3OM550 µmLime GreenSWDM (shortwave wavelength division multiplexing)Similar to OM4 for 10G, supports multiple wavelengthsFuture-proof high-speed networks, supports wideband applicationsKey CharacteristicsOM1 and OM2: Older standards, use LED light sources, suitable for lower-speed networks.

OM1 has a larger core (62. 5 µm) than OM2 (50 µm), limiting bandwidth and distance. OM3 and OM4: Laser-optimized for VCSELs, supporting higher bandwidth and longer distances.

OM4 extends 10G Ethernet reach to 550 m and supports 40G/100G links up to 150 m with proper equipment. OM5: Introduced for wideband multimode fiber (WBMMF), enabling multiple wavelengths over a single fiber for higher aggregate bandwidth, ideal for future-proofing data centers.

Applications

Enterprise networks and data centers: OM3, OM4, and OM5 are preferred for high-speed 10G–100G Ethernet links. Campus and building backbones: OM1 and OM2 may still exist in legacy installations but are largely replaced by OM3/OM4. Specialized uses: OM5 supports shortwave wavelength division multiplexing (SWDM), allowing multiple wavelengths to transmit simultaneously, increasing capacity without adding fibers.

Summary

Choosing the right multimode fiber depends on required data rates, distance, and future scalability. OM1 and OM2 are suitable for legacy or low-speed networks, while OM3 and OM4 dominate modern high-speed deployments. OM5 is emerging as a future-proof solution for wideband, high-capacity networks.

Proper selection ensures optimal performance, cost efficiency, and compatibility with existing or planned network infrastructure.

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Article Content

Single Mode vs. Multimode Fiber Optic Cables

Identified by ISO 11801 standard, multimode fiber optic cables can be classified into OM1 fiber, OM2 fiber, OM3 fiber, OM4 fiber and newly released OM5 fiber. The next part will compare

OM1 vs OM2 vs OM3 vs OM4 vs OM5 Multimode Fiber Guide | EDGE

ISO/IEC 11801 defines the OM1, OM2, OM3, OM4, and OM5 types of multimode fiber. It also lists the key technical requirements for each type. In the two tables above, we''ve summarized

Everything You Need to Know About Multimode Fiber Cable

Q: What types of multimode fiber are available? Multimode fibers are categorized into OM1, OM2, OM3, OM4, and OM5, each with varying bandwidth and distance capabilities to suit

Multimode Fibers – optical glass fiber, large-core fibers,

Multimode fibers are optical fibers which support multiple transverse guided modes for a given optical frequency and polarization. In most cases, that number of

Types of Optical Fibers: Single-Mode vs. Multimode, Applications and ...

In contrast, multimode fiber uses a much larger core, commonly 50 or 62.5 micrometers, allowing many spatial modes to propagate simultaneously. This simplifies optical coupling and

What Is Multimode Fiber for Networking? | Equal Optics

Multimode fiber optics provides many benefits for organizations that require high-speed networking and data transfer capabilities. Multimode can transmit Ethernet and internet protocols in

Multimode Fiber Cable Types: OM1/OM2/OM3/OM4/OM5 Compared

Compare all five multimode fiber grades — OM1 through OM5 — with full specs, bandwidth, distance limits, and real-world data center use cases. Learn which grade fits your

A Guide to Multimode Fiber Types (OM1-OM5) – trueCABLE

Multimode fiber is a kind of optical fiber mostly used in communication over shorter distances, for example inside a building or for the campus. Multimode fiber is also very commonly

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Bend-Insensitive Fiber: Types, Benefits & Applications

This guide explores the science behind bend-insensitive fiber, its key types (single-mode and multimode), performance advantages, and real-world applications. Whether you''re designing a

Cost of Fiber Optic Cable: Pricing Guide (2026)

Key Takeaways Fiber-optic cable materials typically cost $1 to $6 per linear foot, depending on fiber count and cable type. Commercial building

Understanding Wavelengths In Fiber Optics

Plastic optical fiber (POF) is made from materials that have lower absorption at shorter wavelengths, so red light at 650 nm is commonly used with POF, but at 850 nm attenuation is still acceptable so short

Copper vs Fiber Cabling Explained | ComputingForGeeks

Compare copper vs fiber cabling: UTP categories and the 100 m limit, multimode vs single-mode fiber, straight-through vs crossover, and connectors.

Single-mode optical fiber

In fiber optics, a quadruply clad fiber is a single-mode optical fiber that has four claddings. Each cladding has a refractive index lower than that of the core.

Small Form-factor Pluggable

Small Form-factor Pluggable Small Form-factor Pluggable connected to a pair of fiber-optic cables Small Form-factor Pluggable (SFP) is a compact, hot-pluggable network interface module format used for

The FOA Reference For Fiber Optics

Some of these connectors use contacting ferrules but some use expanded-beam optical contacts that do not require physical contact and are less sensitive to dirt

The FOA Reference For Fiber Optics

In multimode systems, reflections are less of a problem but can add to background noise in the fiber. Since this is more a problem with singlemode systems,

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Fusion Splicing Fusion splicing is the process of fusing or welding two fibers together usually by an electric arc. Fusion splicing is the most widely used

Optical fiber connector

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LC (top) and ST (bottom) optical fiber connectors, both with protective caps in place
An optical fiber connector is a device used to link optical fibers, facilitating the efficient transmission of light signals.

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

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