

Article Overview

Multimode fiber is classified into five main categories--OM1, OM2, OM3, OM4, and OM5--each with distinct core sizes, bandwidths, and distance capabilities for short-range network applications.

Overview of Multimode Fiber

Multimode fiber (MMF) has a larger core diameter, typically 50 μm or 62.5 μm , allowing multiple light modes to propagate simultaneously. This makes it ideal for short-distance communication, such as within buildings, campuses, or data centers. MMF uses lower-cost light sources like LEDs or VCSELs and operates mainly at 850 nm and 1300 nm wavelengths. It is generally used for distances up to 550 meters, depending on the fiber type and data rate, whereas single-mode fiber is used for longer distances due to its smaller core and lower attenuation .

Multimode Fiber Categories

Fiber Type	Core Size	Jacket Color	Bandwidth / Modal Bandwidth	Max Distance (10G Ethernet)	Typical Applications
OM1	62.5 μm	Orange	200 MHz.km at 850 nm	33 m	Legacy 100 Mb/s networks, older buildings
OM2	50 μm	Orange	500 MHz.km at 850 nm	82 m	1G Ethernet, limited 10G
OM3	50 μm	Aqua	2000 MHz.km at 850 nm	300 m	10G Ethernet, 40G/100G short links
OM4	50 μm	Aqua	4700 MHz.km at 850 nm	550 m	10G/25G/40G/100G Ethernet, data centers
OM5	50 μm	Lime Green	4700 MHz.km at 850 nm, supports SWDM	550 m	High-speed, wideband applications, future-proofing

Key Points

- o OM1 and OM2 are older standards, primarily used in legacy networks and are LED-optimized, making them less suitable for modern high-speed applications .
- o OM3 and OM4 are laser-optimized multimode fibers (LOMMF), designed for VCSEL-based transceivers, supporting higher data rates and longer distances, making them the mainstream choice for modern data centers .
- o OM5 extends OM4 capabilities by supporting shortwave wavelength division multiplexing (SWDM), allowing multiple wavelengths over a single fiber pair, which increases capacity without adding more fibers .
- o All multimode fibers are backwards compatible with lower-speed applications, but high-speed standards like 40G and 100G Ethernet are not supported by OM1 and OM2 .

Applications

Multimode fiber is widely used in:

Multimode fiber optic model categories

- o Enterprise networks for building backbone and horizontal cabling
 - o Data centers for high-speed server interconnects
 - o Campus networks for short-range connectivity
 - o Specialized equipment like fiber optic spectroscopy or laser welding where high optical power is needed .
- Understanding these categories helps in selecting the right fiber type for cost-effective, high-performance network design, ensuring compatibility with current and future data rates.

In this article, we dive into the world of multimode fibers, comparing the five major types: OM1, OM2, OM3, OM4, and

Understand the difference between fibers: single mode offers long-distance, high bandwidth, while multimode suits

Fiber optic technology has transformed how data moves inside enterprise LANs, campus

Multimode fiber optic cable types OM1, OM2, OM3, OM4 and OM5 compared for core size, bandwidth, speed, distance

AEN 75, Revision: 11 This Applications Engineering Note (AE Note) discusses the criteria for properly selecting the optimal

Conclusion Understanding fiber optic cable types, fiber core sizes, and proper installation methods is

Multi-Mode Optical Fiber Cable : Multimode fiber cables are the type of fiber cables that transmit data via their core of

Multimode fiber optic cables are essential in modern data communication systems since

Multi-mode optical fiber is a type of optical fiber mostly used for communication over short distances, such as within a building or on a

Compare OM1, OM2, OM3, OM4, and OM5 multimode fiber specs, distances, bandwidth, and applications. Essential

There are two main types of fiber optic cables: single mode and multimode. Although they can do the same job in

Multimode fiber remains a popular choice for high-speed networking within enterprises and data centers. It enables

Multimode fiber optic model categories

Learn about the differences between multimode fiber types OM1, OM2, OM3, OM4, and OM5. Discover

A complete guide to multimode fiber types OM1, OM2, OM3, OM4, and OM5. Compare

Learn the key differences between single mode vs multimode fiber cables and choose the right one for your fiber optic

This fiber is a laser-optimized, bend-insensitive, graded-index multimode fiber designed for transmission speeds of 10 Gb/s and

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

