

Comparison of Multimode Fibers



Article Overview

Multimode fibers differ in core size, bandwidth, supported data rates, maximum distances, optical sources, and applications, with OM1/OM2 suited for legacy networks and OM3/OM4/OM5 optimized for high-speed data centers.

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 enables short-range, high-bandwidth communication using lower-cost optical sources like LEDs or VCSELs, making MMF ideal for data centers, enterprise LANs, and campus networks. ISO/IEC 11801 defines five main types: OM1, OM2, OM3, OM4, and OM5.

Key Comparisons

Fiber Type	Core Size	Jacket Color	Optical Source	Bandwidth (MHz·km)	Max Distance (10G Ethernet)	Typical Use
OM1	62.5 μm	Orange	LED	200 @ 850 nm	33 m	Legacy 100Mb/s–1Gb/s networks
OM2	50 μm	Orange	LED	500 @ 850 nm	82 m	1G Ethernet, limited 10G
OM3	50 μm	Aqua	VCSEL	2000 @ 850 nm	300 m	10G Ethernet, 40G/100G short links
OM4	50 μm	Aqua	VCSEL	4700 @ 850 nm	550 m	10G/25G/40G/100G, longer distances than OM3
OM5	50 μm	Aqua/Erin Violet	VCSEL, SWDM	4700 @ 850 nm, 2470 @ 953 nm	Similar to OM4 for 10G/25G	Supports SWDM for 40G/100G/400G using fewer fibers

Detailed Insights

- OM1 and OM2: Early-generation fibers with LED sources, suitable for short distanc...

Article Content

Single Mode and Multimode Fiber: What's the Difference?

Learn more about Single Mode and Multimode Optical Fibers - their design, key differences, and intended fiber optic systems

Fiber Optic Cable Types Explained

Our comprehensive guide to types of fiber optic cables. Learn all about the differences between single mode and multimode cables,

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

Single Mode vs Multimode Fiber: The Ultimate Comparison Guide (2025)

Confused about single mode vs multimode fiber? We compare core size, bandwidth, distance, and system costs to help you choose

Single Mode vs Multimode Fiber Explained | TRG Datacenters

Understand the difference between single mode and multimode fiber, including performance, cost, and use cases, to choose the right

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