

Article Overview

Multimode optical fibers (OM1-OM5) support data rates from 100 Mb/s up to 400 Gb/s over short distances, with standards defined by ISO/IEC 11801 and IEEE 802.3.

Overview of Multimode Fiber Types and Data Rates

Multimode fiber (MMF) is designed for short-distance communication, typically within buildings or campuses, and has a larger core (50-62.5 μm) that allows multiple light modes to propagate. The main types of multimode fiber, standardized under ISO/IEC 11801, are:

- o OM1: 62.5 μm core, orange jacket, LED source; supports 100 Mb/s up to 2 km and 10 Gb/s up to 33 m.
- o OM2: 50 μm core, orange jacket, LED source; supports 1 Gb/s up to 600 m and 10 Gb/s up to 82 m.
- o OM3: 50 μm core, laser-optimized, aqua jacket, VCSEL source; supports 10 Gb/s up to 300 m, 40/100 Gb/s up to 100 m.
- o OM4: 50 μm core, laser-optimized, aqua jacket, VCSEL source; supports 10 Gb/s up to 550 m, 40/100 Gb/s up to 150 m.
- o OM5: 50 μm core, wideband multimode fiber (WB-MMF), lime green jacket; supports short-wavelength division multiplexing (SWDM) for 40/100/400 Gb/s over 150 m, with modal bandwidth of 4700 MHz.km at 850 nm and 2470 MHz.km at 953 nm.

Key Standards

- o ISO/IEC 11801: Defines OM1-OM5 classifications, core size, modal bandwidth, and optical source requirements.
- o IEEE 802.3: Specifies Ethernet data rates (10G, 40G, 100G, 400G) and corresponding maximum distances for multimode fiber.
- o ITU-T G.651.1: Defines the most widely used forms of multimode optical fiber.

Practical Considerations

- o Distance vs. Data Rate: Higher data rates reduce maximum transmission distance due to modal dispersion. For example, OM3 supports 10 Gb/s up to 300 m, but 100 Gb/s only up to 100 m.
- o Cost and Deployment: Multimode fiber is less expensive than single-mode fiber for short distances and is widely used in enterprise LANs and data centers.
- o Future-Proofing: OM4 and OM5 are recommended for new installations to support high-speed Ethernet and emerging SWDM technologies. In summary, multimode fiber standards define the maximum data rates and distances for each fiber type, with OM3-OM5 being the preferred choice for modern high-speed networks, while OM1 and OM2 remain in legacy installations.

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

This comprehensive guide explores Multimode Fiber Cable Types, covering technical specifications, deployment

Industry standard MMF specification includes dimensional (or geometry) requirements, mechanical requirements, optical

What are OM and OS type fiber optic cables? Fiber optic cables used in telecommunication are broadly categorized in two types -

Compare Single Mode vs Multimode fiber optic cables. Expert analysis on distance, bandwidth, 800G compatibility, and TCO for

Fiber optic technology enables the transfer of large volumes of data at exceptional rates across the world and is at the

The difference between multimode fiber optic cables is important when choosing the right cabling for your network.

Fiber Optic Cable Types - Multimode and Single Mode Application Fiber Optic connectors

It means that for a communication channel with a bandwidth of only 3000Hz, when signal-to

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

This fiber is a bend-insensitive, graded-index multimode fiber designed for transmission speeds of 1 Gbps but also appropriate for

Introduction In modern networking, multimode fiber optic cables are important in ensuring efficient and high-speed

Multimode fiber is a staple of fiber-optic cable infrastructure in data centers and campus networks. The ISO/IEC 11801

We breakdown the differences between single mode and multimode fiber optic cable,

Multimode Optical Cable Rate Standard

GENERAL DESCRIPTION R&M offers the full range of multimode fibers for all its cables, whether for installations or assemblies.

Over the years, different generations of multimode fiber cables, such as OM1, OM2, OM3, OM4, and OM5,

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