

## Comparison of Multimode Fiber Optic Parameters

Rear of the optical fiber distribution box



### AI Overview

Multimode fibers OM1 through OM5 differ in core size, bandwidth, transmission distance, light source compatibility, and applications, with newer types optimized for higher-speed, short-range data center networks.

**Core Size and Jacket Color**

- OM1: 62.5/125  $\mu\text{m}$  core-cladding, orange jacket
- OM2: 50/125  $\mu\text{m}$  core-cladding, orange jacket
- OM3: 50/125  $\mu\text{m}$ , laser-optimized, aqua jacket
- OM4: 50/125  $\mu\text{m}$ , enhanced laser-optimized, aqua jacket
- OM5: 50/125  $\mu\text{m}$ , wideband multimode, lime green jacket, supports multiple wavelengths for SWDM

**Bandwidth and Modal Dispersion**

- OM1: 200 MHz·km at 850 nm, 500 MHz·km at 1300 nm
- OM2: 500 MHz·km at 850 nm, 500 MHz·km at 1300 nm
- OM3: 2000 MHz·km at 850 nm (laser-optimized)
- OM4: 4700 MHz·km at 850 nm
- OM5: 4700 MHz·km at 850 nm, 2470 MHz·km at 953 nm, optimized for short-wavelength division multiplexing (SWDM)

**Maximum Transmission Distance (Typical Ethernet Applications)**

- OM1: 10 Gb/s up to 33 m, 1 Gb/s up to 300 m
- OM2: 10 Gb/s up to 82 m, 1 Gb/s up to 600 m
- OM3: 10 Gb/s up to 300 m, 40/100 Gb/s up to 100 m
- OM4: 10 Gb/s up to 550 m, 40/100 Gb/s up to 150 m
- OM5: Similar to OM4 for standard 1G–100G, but supports multi-wavelength SWDM for 40/100/400 Gb/s over short distances

**Light Source Compatibility**

- OM1 & OM2: LED light sources
- OM3, OM4, OM5: VCSEL (Vertical-Cavity Surface-Emitting Laser) optimized, supporting higher-speed Ethernet and data center applications

**Applications**

- OM1 & OM2: Legacy enterprise LANs, short-distance building connections
- OM3 & OM4: Modern data centers, high-speed Ethernet, Fibre Channel
- OM5: Advanced data centers requiring SWDM, supporting multiple wavelengths on a single fiber for 40G, 100G, and 400G Ethernet

**Summary**

Multimode fibers are ideal for short-range, high-speed networking due to their larger core diameters, which allow multiple light mod...

## Article Content

Multimode fiber: OM1 vs OM2 vs OM3 vs OM4

“OM” stands for optical multi-mode, a standard for multimode fiber to indicate the level of fiber. The bandwidth and maximum distance of different

Multimode Fiber: OM1 vs OM2 vs OM3 vs OM4 vs OM5 Comparison

This comprehensive guide elaborates on the definition, classification, core differences, and practical application scenarios of various multimode fiber types, helping you select the most

What Is an MPO Cable?

Learn what an MPO cable is, how MPO/MTP fiber patch cords work, key specifications (12F/24F/48F, insertion loss  $\leq 0.35\text{dB}$ ), and how to select the right one for data center or 5G

The Ultimate Guide to SFP Modules (2026): Types, Speeds

Confused by SFP vs SFP+? Read the definitive 2026 guide on SFP modules. We explain Single Mode vs Multimode, DDM diagnostics, and how to choose the right transceiver for Cisco, Juniper, and more.

Fiber Bragg Grating Sensors: Design, Applications, and Comparison

Fiber Bragg grating (FBG) sensors have emerged as advanced tools for monitoring a wide range of physical parameters in various fields, including structural health, aerospace, biochemical,

Multi-tapered polarization-maintaining fiber-optic sensor for ...

Abstract In this paper, a fiber-optic refractive index and temperature sensor based on Mach-Zehnder interferometer (MZI) is designed and fabricated. The sensor structure consists of a

Specialty Optical Fibers | Coherent

Optical Fibers for Most Applications Coherent offers a complete range of specialty optical fibers, with a broad selection of standard products,

Fiber Optic Cable Types: A Complete Guide

The plethora of fiber optic cable types can seem overwhelming, but choosing the right cable for the job is important. Read on to learn what fiber optic cables are and which cables you need.

Small Form-factor Pluggable

Small Form-factor Pluggable (SFP) is a compact, hot-pluggable network interface module format used for both telecommunication and data communications applications. An SFP interface on networking

Multimode Fiber Differences: OM1 vs OM2 vs OM3 vs OM4 vs OM5

This article aims to elucidate the differences among OM1, OM2, OM3, OM4, and OM5 multimode fibers, guiding you in making informed decisions for their networking solutions.

Multi-mode optical fiber

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 campus. Multi-mode links can be used for data rates up to 800 Gbit/s.

Multimode Fiber Guide: OM1 to OM5 | PHILISUN

This guide compares multimode fiber types by core size, bandwidth, distance, jacket color, optics and upgrade path. It also links to PHILISUN OM3, OM4 and OM5 cabling options for real

5 Best Fiber Optic Cable For Internet | Stop Losing Your Signal

You've paid for gigabit internet speeds, but your connection still stutters during video calls or game updates. The bottleneck is often the last physical link: a cheap, unshielded fiber optic cable that

Distributed Fiber Optic Sensing for in-well hydraulic fracture ...

Abstract This study presents the results from in-well hydraulic fracture monitoring within a horizontal well in an unconventional reservoir utilizing Distributed Fiber Optic Sensing (DFOS).

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

Compare OM1, OM2, OM3, OM4, and OM5 multimode fiber specs, distances, bandwidth, and applications. Essential guide for data center fiber selection.

OPTICAL FIBER COMMUNICATION

Yasin OUTLINE Introduction about Optical Fibers. Main Characteristics of Fiber Optics Communication System. Light propagation in an Optical Fiber. Mode Analysis for Single Mode Fiber. Mode Analysis

Fiber Optic Cable Distance: A Comprehensive Guide

Learn all about fiber optic cable distance and the key factors that affect it. Find out how to select the appropriate cables for your network and

Fiber Optic Sensor Cables for Advanced Monitoring | AP Sensing

Fiber optic sensor cables are the key enabler for real-time monitoring of temperature, strain, and acoustic signals across diverse and challenging environments. Depending on the application and the

An Ultimate Guide for Selection of Fiber Optic Cables and Connectors

There is a vast range of fiber optic connectors available, therefore, the selection itself is a complex procedure. Similar to fiber optic cables, the selection of fiber optics connectors takes consideration of

What is Optical Transceiver: A Beginner Guide (2024)

What is an Optical Transceiver? An optical transceiver, also known as a fiber optic transceiver or optical module, is a small packaged device that uses fiber optic technology to transmit

Multimode optical fiber OM1 OM2 OM3 OM4 OM5 parameter

Yingda explain the differences and similarities between multimode fibers from their basic specifications, internal structure, light sources, and application scenarios.

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.

Multimode vs Single Mode Fiber Optic Cables: A Complete Guide to

Learn the differences between multimode (OM1-OM5) and single mode (OS1-OS2) fiber optic cables—speed, distance, applications, and how to choose the right one for data centers and

How Far Can a Fiber Optic Cable Be Run? Distance Guide

Fiber optic cables can run up to 80 km without a repeater. Learn exact limits by cable type, application, and how to extend your network.

Multimode Fiber Types: OM1 vs OM2 vs OM3 vs OM4 vs OM5

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

Comparison of Multimode fiber OM1/2/3/4/5 parameters!

Let's begin our exploration by focusing on Multimode fiber OM1/2/3/4/5, which are one of the two main types of fiber optics, the other being single-mode fiber.

Multimode fiber enables the

The FOA Reference For Fiber Optics

The core of an optical fiber is quite small; so small that airborne dust is often as large as the core of singlemode fiber and even large compared to multimode fiber.

### Single Mode vs. Multimode Fiber Optic Cables

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

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