

# Technical parameters of ordinary multimode optical cables



## AI Overview

Multimode optical fibers (MMF) are characterized by core size, modal bandwidth, attenuation, maximum transmission distance, and optical source type, with OM1 through OM5 standards defining their performance for different data rates and applications.

**Core Size and Fiber Types** Multimode fibers have larger cores than single-mode fibers, typically 50  $\mu\text{m}$  or 62.5  $\mu\text{m}$ , allowing multiple light modes to propagate simultaneously. The ISO/IEC 11801 standard classifies MMF into five generations:

- OM1: 62.5  $\mu\text{m}$  core, LED source, legacy applications, supports 10G Ethernet up to 33 m.
- OM2: 50  $\mu\text{m}$  core, LED source, supports 1G Ethernet and limited 10G up to 82 m.
- OM3: 50  $\mu\text{m}$  core, laser-optimized for VCSELs, supports 10G/25G Ethernet up to 300 m, 40G/100G up to 100 m.
- OM4: Enhanced 50  $\mu\text{m}$  core, higher bandwidth, supports 10G/25G Ethernet up to 550 m, 40G/100G up to 150 m.
- OM5: Wideband 50  $\mu\text{m}$  core, supports short-wavelength division multiplexing (SWDM), modal bandwidth 4700 MHz·km at 850 nm and 2470 MHz·km at 953 nm, optimized for multi-wavelength 40G/100G/400G links.

**Bandwidth and Attenuation** The effective modal bandwidth (EMB) is a key parameter determining data rate and distance.

Typical values:

- OM1: ~200 MHz·km at 850 nm
- OM2: ~500 MHz·km at 850 nm
- OM3: ~2000 MHz·km at 850 nm
- OM4: ~4700 MHz·km at 850 nm
- OM5: 4700 MHz·km at 850 nm, 2470 MHz·km at 953 nm

Attenuation is usually measured in dB/km and varies with wavelength:

- 850 nm: 2.5–3.5 dB/km
- 1300 nm: 0.8–1.5 dB/km

These parameters directly affect the maximum transmission distance for a given data rate.

**Optical Sources**

- LEDs: Used in OM1 and OM2, suitable for lower-speed, short-distance links.
- VCSELs: Used in OM3 and OM4, optimized for high-speed data center applications.
- SWDM lasers: Used in OM5 for multi-wavelength high-speed links.

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## Article Content

Optical Fiber OM3 (50/125µm Multimode Fiber

Datasheet: GD101699v5 850 nm LASER-OPTIMIZED 50/125 MULTIMODE OPTICAL FIBER IEC 60793-2-10 Type A1a.2 and ISO/IEC 11801 (OM3 cabled optical fiber)

Single Mode vs Multimode Fiber Cable

Multi-Mode Optical Fiber Cable : Multimode fiber cables are the type of fiber cables that transmit data via their core of larger diameters enable an average, single-mode transceiver multiple

OM2 Opti OM3 OM4 Multimode TR2 042214

Panduit OM2 and laser-optimized OM3, OM4 and Signature Core™ multimode fibers exceed domestic and international standards for optical fiber, including TIA-492AAAB, TIA-492AAAC, TIA-492AAD

Understanding the Differences Between OM4 and OM5

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

OM1 vs OM2 vs OM3 vs OM4 vs OM5 Multimode Fiber

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

Multimode Fiber Types: OM1 vs OM2 vs OM3 vs OM4

One such vital component is the optical fiber, specifically, the multimode fiber. In this article, we dive into the world of multimode fibers,

A Technical Comparison of OM1, OM2, OM3, OM4, and OM5 Fibers

Understanding the differences between OM1, OM2, OM3, OM4, and OM5 is critical for network engineers, procurement managers, and system designers planning for both current bandwidth needs

Single Mode vs. Multimode Fiber: Core Differences and

How do you choose between single mode and multimode fiber? Compare their differences in core size, light source, bandwidth, transmission

TR33 OM4

When using low cost 850 nm Vertical Cavity Surface Emitting Laser (VCSEL) transceivers, these fibers support a wide variety of current application including 10 Gigabit Ethernet, 8 Gigabit Fibre Channel,

OS1, OS2 vs OM1-OM5 Fiber Cables: Differences, Speeds, and

Explore the differences between OS1, OS2 (single-mode) and OM1, OM2, OM3, OM4, OM5 (multimode) fibers. Learn their speeds, distances, and ideal uses for data centers and telecom

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

This comprehensive guide explores Multimode Fiber Cable Types, covering technical specifications, deployment scenarios, and best practices to help you optimize your fiber infrastructure

Optical Fiber Product Information Sheets

An all inclusive list of the various optical fiber specification sheets.

Optical Fiber OM2 050 (50/125µm Multimode Fiber

Datasheet: GD046916v8 SPECIFICATION FOR 50/125 MULTIMODE OPTICAL FIBER: ISO/IEC 11801, IEC 60793-2-10 Type A1a.1 and ITU-T RECOMMENDATION G.651.1 SPECIFICATION

2 Types of Fiber Optic Cable: Single Mode vs. Multimode Fiber

Single mode fiber (SMF) and multimode fiber (MMF) optic cables are now widely used in diverse applications, but when it

Sierra Leone Fibre Optic Cables Market (2025-2031) | Value & Forecast

6Wresearch actively monitors the Sierra Leone Fibre Optic Cables Market and publishes its comprehensive annual report, highlighting emerging trends, growth drivers, revenue analysis, and

Multimode Fiber Optic Cable Types: OM1 vs OM2 vs

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

Single-Mode vs Multimode Fiber Optic Cables: A

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

Fiber Optic Cable Types – Multimode and Single Mode

Fiber Optic Cable Types – Multimode and Single Mode Application Fiber Optic connectors and cables are present in nearly every communications

The Optical Fiber Reference Guide

The 2024 Optical Fiber Reference Guide is a helpful resource that provides quick access to the data sheets of many types of popular single-mode and multimode optical fibers deployed globally in high

Optical Cables

The following section refers to both optical cables that constitute a part of AOC cables as well as standalone optical cables that connect two optical transceivers. Optical cables come in a

### Multimode Optical Fiber Selection & Specification

Industry standard MMF specification includes dimensional (or geometry) requirements, mechanical requirements, optical transmission requirements, and even environmental requirements. Table 2

### Multimode Fibre Optics (MMF) | Comms InfoZone

Multimode fibre optic patch leads and bulk cable are both available. Shop Fibre Optics Cables Understanding Fibre Optic Cable In all the standards the OM/OS

### 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

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

The characteristics of this multimode transmission are significantly different from those of single-mode fiber with a single path, and it also brings corresponding

### Multimode Fiber Differences: OM1 vs OM2 vs OM3 vs

Multimode fibers OM1 through OM5 offer varying levels of performance, bandwidth, and transmission capabilities. From the basic OM1

### What Are The Multimode Fiber Cable Types?

We can divide optical communication fibers into single-mode optical and multimode optical fibers according to the number of transmission modes at

## Contact Us

For more information, pricing, or custom solutions, please contact us:

Website: <https://www.tomor.eu>

Email: [info@tomor.eu](mailto:info@tomor.eu)

Phone: +49 69 2381 5497

Address: Am Hauptbahnhof 10, 60329 Frankfurt am Main, Germany

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