Multimode Optical Cable Standards



Overview

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 applicati.

Key Takeaways

Multimode optical fibers are standardized under ISO/IEC 11801, EN 50173, and IEC 60793-2-10, with OM1 through OM5 defining core size, bandwidth, and performance for short-distance communications.

Overview of Multimode Fiber Standards

Multimode optical fibers (MMF) are primarily used for short-distance communication, such as within buildings or campuses, due to their larger core diameters (50–62. 5 µm) that allow multiple light modes to propagate. The standards governing MMF ensure consistent performance, interoperability, and reliability across different manufacturers and applications.

Key StandardsISO/IEC 11801: Defines multimode fiber categories OM1 to OM5, specifying core size, modal bandwidth, and typical applications.

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N 50173-1: Provides fiber categories and performance values for structured cabling systems, including OM1–OM5.

IE

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C 60793-2-10: Specifies the technical characteristics of individual multimode fibers, including standard and bend-insensitive fibers.

Multimode Fiber Categories

Fiber Type

Core SizeTypical Jacket ColorBandwidth (MHz·km)Max Distance (10 GbE)Light SourceNotesOM162. 5 µmOrange200 @ 850 nm33 mLEDFirst standardized MMF (1989), used for 100 MbEOM250 µmOrange500 @ 850 nm82 mLEDCommon for 1 GbEOM350 µmAqua2000 @ 850 nm300 mVCSELLaser-optimized, supports 10 GbE, 40/100 GbE over short distancesOM450 µmAqua4700 @ 850 nm550 mVCSELEnhanced bandwidth for high-speed data centersOM550 µmLime Green4700 @ 850 nm, 2470 @ 953 nmSimilar to OM4VCSELSupports short-wavelength division multiplexing (SWDM) for 40–400 GbE Applications and ConsiderationsOM1 and OM2: Mostly found in older infrastructures; suitable for lower-speed Ethernet and legacy systems.

OM3 and OM4: Widely used in modern data centers and enterprise networks for 10, 40, and 100 GbE applications. OM5: Designed for multi-wavelength SWDM, enabling higher data rates over a single fiber pair without increasing fiber count. When selecting multimode fiber, consider distance, data rate, light source compatibility (LED vs VCSEL), and future scalability.

Laser-optimized fibers (OM3–OM5) are preferred for high-speed networks due to lower modal dispersion and higher effective modal bandwidth.

Summary

Multimode optical cable standards provide a structured framework for fiber selection, ensuring reliable short-distance communication. OM1–OM5 fibers differ in core size, bandwidth, and application suitability, with OM3–OM5 being the most relevant for modern high-speed networks. Compliance with ISO/IEC 11801, EN 50173, and IEC 60793-2-10 ensures interoperability and performance consistency across installations.

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Article Content

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.

Multimode Fiber Types: OM1 vs OM2 vs OM3 vs OM4

Identified by ISO 11801 standard, multimode fiber optic cables can be classified into OM1 fiber, OM2 fiber, OM3 fiber, OM4 fiber and newly released

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

Compare all five multimode fiber grades — OM1 through OM5 — with full specs, bandwidth, distance limits, and real-world data center use cases. Learn which grade fits your

Multimode Optical Fiber Selection & Specification

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

Multimode Fiber Standards: OM1 vs OM2 vs OM3 vs

This guide will walk through the differences between OM1–OM5 multimode fibers, their physical specifications, Ethernet support, connectors, and

IEEE 802.3 Multimode Optical Fiber Ethernet Standards

The key considerations when planning a multimode optical fiber infrastructure capable of supporting multiple generations of Ethernet applications are: 1) desired data rate, 2) number of transmit fibers

Multimode Fiber Types: OM1 vs OM2 vs OM3 vs OM4

A complete guide to multimode fiber types OM1, OM2, OM3, OM4, and OM5. Compare speed, distance, bandwidth, and applications, and learn how

Fiber Optic Cable Types Explained

Learn all about the differences between single mode and multimode cables, as well as the various fiber wavelengths and standard core sizes used in fiber optics.

Single-mode optical fiber

In fiber-optic communication, a single-mode optical fiber, also known as fundamental- or mono-mode, is an optical fiber designed to carry only a single

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Small Form-factor Pluggable

Small Form-factor Pluggable Small Form-factor Pluggable connected to a pair of fiber-optic cables Small Form-factor Pluggable (SFP) is a compact, hot-pluggable network interface module format used for

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, as well as the various fiber wavelengths and standard core sizes used

Optical Fibre | Prysmian

Prysmian Group''s multimode optical fibres for the Datacom, enterprises and premises cable industries are based on our Plasma-Activated

Everything You Need to Know About Multimode Fiber Cable

Explore multimode fiber optic cables for enterprise, campus, and data center networks. Learn about OM1–OM5 types, transmission ranges, installation tips, and cost-effective high-speed

Quality Bulk Multimode & Single Mode Fiber Optic Cables

Bulk Fiber Optic Cable - Multimode & Singlemode Shop our diverse range of bulk fiber optic cables, tailored for various networking needs. We provide both single-mode and multimode options, catering

How Far Can Multimode Fiber Optic Cables Transmit?

Fiber optic technology is the backbone of modern high-speed communication networks, enabling the transmission of data over vast distances

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Choosing the Right Fiber Optic Cable: Singlemode vs

Although single-mode fiber (SM) and multimode fiber (MM) cable types are widely used in various applications, their differences can still be

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

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