General Models of Multimode Fiber Optic Modules

Overview

Discover the differences between OM1, OM2, OM3, OM4, and OM5 multimode fiber types for high-speed network applications.

Key Takeaways

Multimode fiber optic modules are designed to support high-speed data transmission over short to medium distances using OM1, OM2, OM3, OM4, or OM5 fibers, with common models including SFP, SFP+, and QSFP modules.

Multimode Fiber Types and Compatibility

Multimode fibers (MMF) are classified into OM1, OM2, OM3, OM4, and OM5, each with distinct core sizes, bandwidths, and maximum link distances: OM1: 62. 5 µm core, LED source, supports 10 GbE up to 33 meters, typically orange jacket. OM2: 50 µm core, LED source, supports 10 GbE up to 82 meters, orange jacket.

OM3: 50 µm core, laser-optimized for VCSELs, supports 10 GbE up to 300 meters, 40/100 GbE up to 100 meters, aqua jacket. OM4: 50 µm core, enhanced laser-optimized, supports 10 GbE up to 550 meters, 40/100 GbE up to 150 meters, aqua jacket. OM5: 50 µm core, wideband multimode fiber supporting multiple wavelengths for shortwave WDM, suitable for high-speed data centers, lime green jacket.

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Common Multimode Fiber Optic Modules

Multimode modules are typically available in SFP, SFP+, and QSFP form factors, designed for different data rates and distances: SFP (Small Form-factor Pluggable): Supports 1–10 GbE over multimode fiber, commonly used for short-range connections in enterprise networks. SFP+: Supports 10–25 GbE, optimized for OM3/OM4 fibers, with link distances up to 300–400 meters for 10 GbE and shorter for higher speeds.

QSF

P (Quad Small Form-factor Pluggable): Supports 40–100 GbE, often using parallel multimode fiber (MPO connectors). For example, Cisco QSFP-100G modules support 100GBase-SR4 over OM3 up to 70 meters and OM4 up to 100 meters, and 100GBase-SL4 for shorter links (20–30 meters),.

Key Considerations for Module Selection

Fiber Type: Ensure the module matches the multimode fiber type (OM3/OM4/OM5) for optimal performance. Data Rate: Choose modules that support the required Ethernet speed (10G, 40G, 100G). Link Distance: Verify the module's maximum supported distance over the selected fiber type.

Connector Type: Modules may use LC or MPO connectors depending on single or parallel fiber applications. Laser Source: VCSELs are commonly used for OM3/OM4/OM5 fibers, while LEDs are used for OM1/OM2.

Summary

For modern enterprise and data center networks, OM3, OM4, and OM5 fibers paired with SFP+, QSFP, or QSFP28 modules are the most common choices, providing high-speed, cost-effective, and reliable multimode optical links. Older infrastructures may still use OM1 or OM2 fibers with LED-based SFP modules for lower-speed applications. Proper selection ensures compatibility, optimal link performance, and future-proofing for network upgrades.

Article Content

Multimode Optical Fiber in Telecommunications

Figure 2: Schematic comparison of multimode fiber classes OM1–OM5, showing nominal core size, typical jacket color identification, and their general evolution from legacy multimode fiber to laser

Multimode Fiber: OM1 to OM5 – MapYourTech

This comprehensive guide explores the five primary categories of multimode fiber—designated as OM1, OM2, OM3, OM4, and OM5—each representing progressive

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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

Multimode Fiber: OM1 to OM5 Explained

Discover the differences between OM1, OM2, OM3, OM4, and OM5 multimode fiber types for high-speed network applications.

Tutorial Passive Fiber Optics, Part 4: Multimode Fibers

Figure 1: A single-mode fiber (left) has a core which is very small compared with the cladding, whereas a multimode fiber (right) can have a large core. Multimode fibers are fibers having multiple guided

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

A complete guide to multimode fiber types: from OM1 to OM5, covering modal dispersion, bandwidth limits, cabling design, and future trends.

Multimode Fiber Guide: Differences Between OM1,

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

Multimode Fibers – optical glass fiber, large-core fibers,

We discuss various aspects of multimode fibers: their main parameters, launching light into multimode fibers, output beam profiles, graded-index designs and others.

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

One such vital component is the optical fiber, specifically, the multimode fiber. In this article, we dive into the world of multimode fibers, comparing the five major types: OM1, OM2, OM3,

Datasheet Archive: FIBER OPTIC CABLE MODEL DG datasheets

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Cisco 890 Series Integrated Services Routers Data Sheet

Cisco 890 Series Integrated Services Routers (ISRs) combine Internet access, comprehensive security, and wireless services in a single high

The FOA Reference For Fiber Optics

All fiber optic applications are not the same. At the FOA, we''re mainly concerned with communications fiber optics - telco, CATV, LAN, industrial, etc., but fiber

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Fiber Optic Patch Cords & Pigtails Selection Guide

Learn how to pick the right fiber optic patch cord or pigtail. Avoid installation errors. Based on 12+ years of field experience. Step-by-step guide

Multimode Fiber Cable, 100gb, OM4, Aqua, 1M, TAA | Eaton

One-meter 50/125 multimode fiber optic cable for use with economical VCSEL light sources is OM4 rated and supports 40/100 Gb speeds up to 300 meters at 850 nm.

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.

Singlemode vs Multimode Fiber Optic Cable

We breakdown the differences between single mode and multimode fiber optic cable, covering aspects like physical structure, bandwidth over

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Fiber Optic Cable Types – Multimode and Single Mode

Application Fiber Optic connectors and cables are present in nearly every communications project that we might sell into, be it a DAS installation or a Base Station with wireless backhaul, you can be

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