

Extending the range of single-mode optical modules



Overview

Long-distance variants, typically referred to as LX, EX, ZX, or ER/LR SFPs, are engineered with higher optical power budgets and longer wavelength lasers (e., 1310nm, 1550nm), enabling transmission distances from 10 km up to 80 km or more over single-mode fiber (SMF). An SFP (Small Form-factor. In reality, SFP transmission distance is defined by optical design—not data rate. An SFP (Small Form-factor Pluggable) module transmits data over fiber using specific wavelengths and power levels, which directly influence how far the signal can travel before degradation occurs. The operating wavelength of multi-mode optical modules is usually 850nm, and 1310nm is also used in some cases. Single-mode optical modules use LD (Laser Diode) or LEDs with a narrow spectral line as the light. The OREI FM1GD-SM is a high-performance 1G SFP optical transceiver module designed for stable Gigabit Ethernet transmission over single-mode fiber. Built on the 1000BASE-EX optical standard, it supports long-distance fiber networking applications with reliable performance across enterprise, AV, and. This document outlines the specifications for a single-mode optical fiber and cable designed for use around the 1310 nm zero-dispersion wavelength, suitable for both the 1310 nm and 1550 nm regions, and compatible with analogue and digital transmission.



Article Content

Jun 13, 2026

The difference between single-mode and multi-mode in optical modules

The optical module (optical module) is composed of optoelectronic devices, functional circuits and optical interfaces.

Nov 15, 2025

SFP Distance Explained: Real-World Range, Limits, and Optics

Understand SFP distance, fiber optic range, and real-world limits of SR/LR modules. Learn how wavelength, fiber

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Single-mode systems and components for longer wavelengths (Invited ...

Abstract: Single-mode optical fiber transmission technology in the 1.0-1.8- μ m wavelength region is reviewed. Owing to low fiber

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Comparing 100G Single Lambda and 4 Channel Optical Modules Key

Explore our full range of 100G single lambda and 4 channel optical transceivers, including duplex single fiber

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Differences in Application Scenarios between Single-Mode and

Single-mode and multi-mode optical modules have different applications in the field of optical fiber communication.

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Understanding Single-mode and Multi-mode SFP Optical Modules

As SFP single-mode optical modules and SFP multi-mode optical modules are incompatible. If you mix SFP single-mode optical

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Extending the range of single-mode optical modules

Opt for single-mode 1G SFP modules to ensure reliable video data transmission over extended distances. Wireless Access Points

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Single Mode Fibers for Visible Through Near IR

Our range of specialty Single Mode (SM) fibers are designed to offer customers the best choice of fiber for their application without

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Single Mode Optical Modules Market 2026

Global Single Mode Optical Modules Market is witnessing significant growth driven by increasing demand for high-bandwidth

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Selecting the Right SFP Module for Single-Mode and Multimode Fiber

Learn how to select the right SFP module for single-mode and multimode fiber by understanding wavelength,

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Reach Further, Faster: Your Ultimate Guide to Long-Range 10G Optical ...

Long-range 10G optical modules enable high-speed data over distances up to 80km. Learn about types, specs,

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Single Mode Fiber Wiki: Concerning Types and Applications

This post will illustrate everything important about single mode fibers, including its definition, fiber types, advantages

May 02, 2026

Recommendation ITU-T G.652 (08/2024)

This document outlines the specifications for a single-mode optical fiber and cable designed for use around the 1310 nm zero

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

Read the definitive 2026 guide on SFP modules. We explain Single Mode vs Multimode, DDM diagnostics, and how to choose the

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Key Differences Between Single-Mode and Multimode Optical Modules

Compare single-mode and multimode optical modules by core size, distance, speed, and cost. Choose the right

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Extending the range of single-mode optical modules

Demonstrate the principles of a separable single-mode (SM) expanded-beam optical connector to chip interface by assembling a

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Multi-mode optical fiber

The equipment used for communications over multi-mode optical fiber is less expensive than that for single-mode optical fiber.

Jan 27, 2026

Cisco 10GBASE SFP+ Modules Data Sheet

Product overview The Cisco® 10GBASE SFP+ modules (Figure 1) give you a wide variety of 10 Gigabit Ethernet connectivity options

May 07, 2026

Cisco SFP Modules for Gigabit Ethernet Applications Data Sheet

This data sheet describes the benefits, specifications, and ordering information for the Cisco SFP Modules for Gigabit

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Single Mode Fibers

8.11.2.3.1 Single-mode fiber The information-carrying capacity of an optical fiber is determined by its impulse response. The impulse

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The Difference Between Single-mode and Multi-mode Optical Modules

When using single-mode optical modules, you need to pay attention to the cleanliness of the optical fiber interface to avoid dust and

Dec 13, 2025

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

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Single-Mode Vs Multimode Optical Modules: Detailed Differences

Is your data center or campus network best served by Single Mode or Multimode Optical Modules? Choosing between Single Mode

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Single Mode Optical Modules Market

Illuminating the Evolution of Single Mode Optical Modules as the Cornerstone of High-Speed Data Transmission Infrastructure

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Singlemode vs Multimode Fiber Optic Cable

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

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Single Mode Fiber: Technological Innovations and Future Outlook

Explore the development trends of single-mode fiber and its promising future. Gain insights into the advancements

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Single Mode vs Multimode Fiber Cable: Difference & How to Choose

Learn the complete differences between single mode and multimode fiber optic cables, including distance, core size, wavelength,

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OREI 1G SFP Single-Mode Optical Module (1000BASE-EX, 1310nm,

This optical module provides a dependable solution for extending network links between buildings, connecting equipment across

Oct 05, 2025

Single-mode vs Multimode SFP 2026: Fiber Types and distances

A guide to single-mode vs multimode SFP modules. Covers fiber types, wavelengths, distances, BiDi, CWDM/DWDM,

Mar 08, 2026

The Difference Between Single/Dual Fiber and Single/Multi-Mode Optical ...

As fiber optic networks continue to evolve, selecting the right optical transceiver becomes increasingly important.

Jun 08, 2026

Optic Modules Datasheet

datasheet is intended to guide the user through the various options available when choosing an optic module for a given platform

Contact Us

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