

10G Single-Mode Fiber Transmission Distance



Overview

10G SFP+ LR is a standardized 10G optical transceiver designed for single-mode fiber transmission up to 10km using a 1310nm wavelength. It follows the SFP+ Multi-Source Agreement (MSA) and is widely used to build stable medium-distance 10G links between switches, routers, and servers. In practical. SR (Short-Range) modules typically operate at an 850nm wavelength and use multimode fiber (MMF) as the transmission medium. They are designed for stable connections ranging from a few meters up to several hundred meters, making them ideal for use inside data centers. For example, a 10G SFP+ SR. A 10G transceiver is a small pluggable module (commonly SFP+) or an integrated cable assembly that converts electrical signals on a switch/server port to optical or copper signals on the network medium. When used with fiber it's a fiber optic transceiver; when used with copper it may be a. The maximum distance for a 10G SFP (small form-factor pluggable) transceiver can vary depending on the type of fiber optic cable being used.



Article Content

May 01, 2026

Huawei OSX010000 SFP+ 10G Single Mode Optical

Huawei OSX010000 SFP+ 10G transceiver for single-mode fiber, 1310nm wavelength, 10km range. Compliant with 10Gbase-LR standard.

Sep 05, 2025

SFP-10G-LR-1310nm 20km LC DDM Optical Transceiver

Multimode fiber has the defect of mode dispersion, its transmission performance is poorer than single-mode fiber. However, with better cost performance, they are

Jun 01, 2026

The Key Differences Between 1-core, 2-core, Single

The secret lies in fiber optic technology, and understanding the basics—1-core, 2-core, Single Mode (SM), and Multi-mode (MM)—is key to

Apr 25, 2026

SFP+ Single Mode LC Module (20km)

Fiber Distance Single mode 10G SFP+ transceiver spans distances up to 20km (12.42 mi.) at 10G speeds.

Feb 06, 2026

10G SFP+ Modules: Powering High-Speed Fiber Connectivity

Single-mode fiber (SMF) for long-distance transmission Multi-mode fiber (MMF) for shorter-distance high-speed links Different wavelengths and transmission ranges

Dec 23, 2025

OM3 Multimode Fiber Cable: The Ultimate Guide for 10G Networks

Wider Transmission Distance: For 10G services, single-mode fiber tends to have a reach of over 10 kilometers with no significant loss in performance. Reduced Loss: Losses in transmission

Apr 12, 2026

Huawei XFP-10G-1550NM-80KM-SM Optical Module Sample Report

Huawei has model XFP-10G-1550NM-80KM-SM optical module products, which can support 10G Ethernet transmission of 80KM in single-mode fiber, Moduletek Laboratory has tested

Nov 01, 2025

10G Optical Modules: Short-Range vs. Long-Range Comparison Guide

Operating at a 1310nm wavelength with single-mode fiber, it supports up to 10km of stable transmission, meeting the demands of high-bandwidth and low-latency network architectures

Mar 01, 2026

MikroTik S+31DLC10D 10G SFP+ Single-Mode LC Optical

10G SFP+ single-mode optical transceiver with duplex LC connector, 1310nm wavelength, and up to 10km transmission distance for enterprise and ISP fiber networks.

Mar 23, 2026

Single Mode Optical Modules Market 2026

Telecommunication operators are extensively deploying Single Mode Optical Modules in fronthaul and backhaul applications to support 5G network rollouts. The modules enable high-speed, low-latency

Jan 01, 2026

PIXELHUE EP4 Singlemode (T) – Fiber Extender

Professional 4K fiber extender for long-distance, lossless AV transmission with 8/10-bit compression and plug-and-play design.

May 22, 2026

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

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

Aug 11, 2025

What is the maximum distance for 10G SFP?

However, in general, the maximum distance for a 10G SFP transceiver on single-mode fiber is typically up to 40 kilometers, while on multi-mode fiber it is typically up to 300 meters.

Oct 15, 2025

10G Single-Mode Optical Module: The Reliable Choice for High

Long Transmission Distance: Relying on the transmission characteristics of single-mode optical fiber, the optical signal attenuates slowly and can be stably transmitted for tens of kilometers,

Jan 05, 2026

10G SFP+ LR Explained: Specs, Distance, and Use Cases

In 10G SFP+ modules, “LR” stands for Long Reach and specifically refers to a standardized transmission distance of up to 10km over single-mode fiber. It is not a marketing label, but a distance

May 11, 2026

Arista SFP-10G-LR-Arista | 10G SFP+ Transceiver, Single-Mode,

Description The Arista SFP-10G-LR is a 10GBASE-LR SFP+ optical transceiver module designed for high-speed data transmission over single-mode fiber. Operating at 1310nm wavelength, it supports

Dec 27, 2025

SFP-10G-SR Multimode Fiber MMF 10G SFP+ Transceiver 850nm

SFP-10G-SR Multimode fiber MMF 10G 850nm 300m SR SFP+ Transceiver Product Description SFP+ SR is specifically designed for the high performance integrated duplex data transmission over multi

Jul 01, 2025

What Is an SFP Module? — Complete Guide to SFP, SFP+ & SFP28

Common fiber SFP categories include: SR (Short Reach) — multimode fiber modules for short-distance links, typically within racks or buildings LR / ER — single-mode fiber modules for long

Dec 05, 2025

Fiber Optic Cable Types: Transmission Distance by Data Rate (1GB to ...

Singlemode fiber (SMF) uses a narrower core to transmit data over much longer distances, making it essential for telecom networks, long-haul connections, and campus-wide

Mar 06, 2026

What Is 10GBASE-LR? SMF 1310nm 10km SFP+ Explained

10GBASE-LR is a long-reach 10-gigabit Ethernet physical layer standard defined under IEEE 802.3ae. The “LR” designation stands for Long Reach, meaning it is engineered to reliably transmit 10 Gbit/s

Aug 01, 2025

Best Fiber Patch Cables for 10G, 40G, and 100G

Explore how to choose the best fiber patch cords for 10G, 40G, and 100G networks. This guide compares singlemode vs multimode fibers (OM3,

Jan 16, 2026

What is the maximum distance for 10g sfp?

The maximum distance for 10G SFP modules largely depends on the type of fiber optic cable used, the specific module in question, and the network environment.

Jan 11, 2026

Arista SFP-10G-ER-Arista | 10G SFP+ Transceiver, Single-Mode,

FAQs Q: What is the maximum transmission distance for the SFP-10G-ER? A: The SFP-10G-ER supports transmission distances up to 40 kilometers over OS1 or OS2 single-mode fiber using

Jul 04, 2025

What Are SFP Transceiver Modules? | 1G & 10G Networking

Learn how 1G & 10G SFP Transceiver Modules, single-mode, multimode, BiDi optical solutions for enterprise, telecom, and data center networks.

Nov 04, 2025

SFP-10G-ER40 Single Mode 10G 40km SFP Transceiver Module 10G

Product Summary SFP-10G-ER40 Single Mode 10G 40km SFP Transceiver Module 10G SFP+ 1550nm 40km Product Description SFP+ ER 40KM fiber optic transceiver is designed for use in 10-Gigabit

Apr 13, 2026

Fiber Optic Cable Distance: A Comprehensive Guide

Single-mode fiber optic cables are more suitable for long-distance, high-speed transmission than multimode fiber optics. For most applications, the

Jun 06, 2026

10G Transceivers: Types, Distances & Buying Guide

This guide summarizes the common 10G transceiver types, clarifies practical distance and cabling expectations, and gives actionable buying and deployment

Dec 30, 2025

Single Mode vs Multimode Fiber, What is The

What is single mode fiber? Single mode fiber, short as SMF, is a fiber cable that only allows one mode of light to transmit. Typically, this fiber includes a

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