

Does the optical module support a range of over 10km



Article Overview

Yes, certain optical modules, particularly long-range SFP, SFP+, and QSFP variants, can support distances exceeding 10 km over single-mode fiber.

Short-Range vs. Long-Range Modules

Optical modules are designed for different transmission distances based on wavelength and fiber type. Short-range (SR) modules operate at 850 nm over multimode fiber and typically support distances up to a few hundred meters, making them suitable for intra-data center connections . In contrast, long-range (LR, LX, EX, ZX, ER) modules operate at longer wavelengths (1310 nm or 1550 nm) over single-mode fiber (SMF) and can achieve distances from 10 km up to 80 km or more depending on the module type and optical power budget .

Examples of Long-Range Modules

- 10G SFP+ LR modules: Operate at 1310 nm over SMF and support up to 10 km of stable transmission, commonly used for inter-building or campus networks .
- 100G QSFP-LR modules: Support link lengths up to 10 km over G.652 single-mode fiber, compliant with IEEE 100GBASE-LR4 standards .
- Extended reach modules (ER, ZX): Can support distances of 25 km to 80 km using higher output power and longer wavelengths, suitable for metropolitan or long-haul networks

Article Content

Cisco 10GBASE SFP+ Modules Data Sheet

The Cisco 10GBASE-ZR module supports link lengths of up to about 80 kilometers on standard SMF (G.652). This

SFP+10G 1310nm 10Km LC Optical Module Guide

Advantages of SFP+10G 1310nm 10Km LC Optical Modules The SFP+10G 1310nm 10Km LC optical module offers several

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

SFP distance refers to the maximum effective range over which an SFP optical module can transmit data while

What is Optical Transceiver: A Beginner Guide (2024)

What is an Optical Transceiver? An optical transceiver, also known as a fiber optic transceiver or optical module, is a

Fiber Optic Cable Distance: A Comprehensive Guide

If you need a fiber optic cable that transmits over a distance more significant than the fiber

SFP Optical Module Transmission Distance Range | Yingda

SFP optical modules transmission distance vary from the type of fiber, wavelength, and data rate, and can be

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

What is Optical Module? A Simple Guide for Beginners

What Exactly Is an Optical Module? An optical module is a compact networking component that converts electrical

All You Need to Know About the 1310nm 10km DOM SFP-10GLR-31

The most important feature of these long range optic devices like SFP-10GLR-31 or its equivalents available at major

How to Choose a 10G SFP+ Optical Module

Walsun's 10G SFP+ optical modules are designed for 10 Gbps data transmission, catering to diverse network needs.

Maximizing FPV Drone Range with the 10KM Optical Fiber Relay Module

Can an FPV drone optical fiber relay module extend signal transmission beyond 10km? Yes, it reliably achieves up to 20km with

Fiber-optic communication

An optical fiber patching cabinet. The yellow cables are single-mode fibers; the orange and blue cables are

Exploring the Correlation Between Optical Module Wavelength and ...

This article delves into the correlation between optical module wavelength and transmission distance, shedding light

100G Optical Module: How to Choose Between SR4, DR4, FR4, LR4,

Technology: Utilizes four optical lanes, each transmitting at 25Gbps using PAM4 modulation, achieving a total of

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

In contrast, LR (Long-Range) modules operate at a 1310nm wavelength and use single

Wavelength and Transmission Distance of Optical Transceiver Modules

The price of the optical sources and signal converters that are paired with 850nm optical transceiver modules is far lower than the

What Are the Key Parameters of Optical Modules

Understand the key parameters of optical modules, including transmission rate, distance,

Understanding Transmission Distance: Short-Range vs Long-Range ...

☐☐ Understanding Transmission Distance: Short-Range vs Long-Range Optical Modules☐☐ !? Do you really need a 10km

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

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

A practical, engineer-grade guide to 10GBASE-LR: what it is, 1310nm single-mode SFP+ specs, optical budget examples,

Solved: SFP-10G-LR minimum distance

Solved: Hi, is there any minimum distance required when using cisco's SFP-10G-LR (smf) to prevent any damage on

SFP Optical Transceiver Modules for Long Distance: A Complete

Long-distance variants, typically referred to as LX, EX, ZX, or ER/LR SFPs, are engineered with higher optical power

What is the maximum distance for SFP 10G LR?

The SFP 10G LR (Small Form-factor Pluggable 10 Gigabit Long Range) optical transceiver is designed for long-range

Everything You Need to Know About Optical Modules

Optical modules are electronic devices that convert electrical signals into optical signals for transmitting data over an

10 Gbit/s SFP+ Optical Module

10 Gbit/s SFP+ Optical Module You can use different levels of 10 Gbit/s SFP+ optical modules only with 10 GE

100GBASE QSFP-100G Modules Data Sheet

The Cisco QSFP100 LR4 Module supports link lengths of up to 10km over a standard pair of G.652 single-mode fiber

100GBASE LR4 QSFP28 1310nm 10km Transceiver Module

This QSFP28 100G LR4 optical module is compatible with a wide range of infrastructure because it meets the QSFP28 MSA and

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

10GBASE-LR is a 10-gigabit Ethernet optical standard that operates at 1310 nm over single-mode fiber (SMF), supporting link

The Ultimate Guide to FS SFP-10GLR-31 Transceiver

With its ability to deliver 10Gbps connectivity over a distance of up to 10 kilometers, it is an indispensable component

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