Gigabit optical module 10 kilometers

Overview

SFP-10G-ER Explained: Powering 40km 10Gbps This comprehensive guide dives deep into the SFP-10G-ER optical transceiver module. Learn its technical specific.

Key Takeaways

Gigabit SFP transceivers for single-mode fiber can reliably transmit data over distances up to 10 kilometers.

Overview

For 10 km optical links, single-mode fiber (SMF) SFP modules are the standard choice. These modules operate at a 1310 nm wavelength and use LC connectors, providing stable, high-speed Gigabit Ethernet connectivity over long distances. They are suitable for applications such as interconnecting buildings, campus networks, industrial automation, and metropolitan area networks.

Key Features

Data Rate: 1 Gbps (Gigabit Ethernet)Fiber Type: Single-mode fiber (SMF, typically G. 652 compliant)Wavelength: 1310 nmConnector Type: LC duplexMaximum Reach: Up to 10 kmHot-Pluggable: Allows easy installation and replacement without powering down equipmentDigital Diagnostics Monitoring (DDM): Some modules support real-time monitoring of optical power, temperature, and voltage for network reliability Deployment ConsiderationsCompatibility: Ensure the SFP module is compatible with your switch or router. Many modules are tested for interoperability with major brands like Cisco, Juniper, and Huawei.

© 2026 ALFA PRO COMMUNICATION SYSTEMS (Pty) Ltd - All rights reserved

Fiber Quality: Use low-loss single-mode fiber and clean connectors to maintain signal integrity over 10 km. Environmental Conditions: Check the operating temperature range, especially for industrial or outdoor deployments. Some modules support extended temperature ranges for harsh environments.

Future Expansion: If you anticipate longer distances in the future, consider 10G SFP+ modules (e.g., 10GBASE-LR) that can also support 10 km links but at higher data rates. Example ModulesGSFIBER-SFP-10K: Gigabit Ethernet SFP, 1310 nm, LC connector, 10 km reach. Cisco SFP-1G-LR: Supports 10 km over standard SMF, compatible with Cisco switches.

Fibrecross 10G SFP+ LR: While designed for 10G, it also supports 10 km links over single-mode fiber with DDM support. These modules provide a cost-effective and reliable solution for long-reach Gigabit Ethernet connections, ensuring stable network performance across extended distances.

Article Content

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 distances of up to 10 km.

SFP Transceiver

Utilizing LC connectors and operating at a 1310nm wavelength, it enables high-speed data transmission over single-mode fiber for distances up to 10 kilometers. This module provides a reliable long-reach

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 interface is not specified as part of the

10G SFP+ Single-Mode Optical Module: The Reliable Choice For

In this context, 10 Gigabit single-mode optical modules, capable of handling both high speeds and long distances, become a reliable choice. Today, we''ll discuss in simple terms why they

10G Single-Mode/10KM Fiber SFP+ Module

The 2A-142G 10G Single-Mode/10KM Fiber SFP+ Module is designed for use in 10GbE Ethernet environment that allows you to connect a single-mode Gigabit Ethernet network cable to a network

Industrial Gigabit Fiber SFP Optical Transceiver

© 2026 ALFA PRO COMMUNICATION SYSTEMS (Pty) Ltd - All rights reserved

Compatibility in your network is everything, and this industrial SFP Transceiver Module delivers. Use it with any Intellinet SFP equipped network switch or any

10G BiDi SFP+ 10km | Tx1330/Rx1270 | Single Fiber Compatible

Paired with 10A variant for bidirectional operation, this 10G BiDi module delivers 6.2 dB link budget over 10km single-mode fiber. Supporting multi-rate transmission from 1.25 to 11.32 Gbps with LC/UPC

10 Gigabit Singlemode SFP+ Fiber Optic Transceivers

These 10 Gigabit Singlemode SFP+ Transceivers support distances ranging from 10 km to 100 km, depending on the model. The 10 km version is suitable for shorter

10GBASE-LR SFP+ | From €12 | EDGE Optical Solutions

Over standard G.652 single-mode fiber (SMF), the transceiver can reach up to 10 kilometers. Distance is an indicative parameter based on the minimum optical

Ubiquiti 10G Single-Mode Optical Module UACC-OM-SM-10G-D-2

Supports single-mode fiber connections up to 10 km With 10GBase-X technology, enjoy up to 10Gbps data transfer rate over supported network cable Optimize the network''s performance with 10 Gigabit

10G BiDi SFP+ 20km Tx1270/Rx1330

The BIDI-10G-SFP-20A (Tx1270/Rx1330) will pair with any SFP+ MSA-compliant Tx1330/Rx1270 BiDi module that meets the 9 dB budget and 20km reach class, which is common when one end of the

Optical Modules Market Research Report 2034

Optical Modules Market Outlook 2025-2034 The global optical modules market was valued at $14.8 billion in 2025 and is projected to reach $39.6 billion by 2034, advancing at a compound annual

Gigabit Ethernet

Gigabit Ethernet was the next iteration, increasing the speed to 1000 Mbit/s. The initial standard for Gigabit Ethernet was produced by the IEEE in June 1998 as

Cisco 40GBASE QSFP Modules Data Sheet

Each 10-gigabit lane of this module is compliant to IEEE 10GBASE-SR specifications. This module can be used for native 40G optical links over 12-fiber parallel cables with MPO/MTP

Cisco 40G QSFP+ Transceiver Modules – Network Warehouse

© 2026 ALFA PRO COMMUNICATION SYSTEMS (Pty) Ltd - All rights reserved

The Cisco 40G QSFP+ transceiver modules portfolio offers customers a wide variety of high-density and low-power 40 Gigabit Ethernet connectivity options.

Cisco SFP and SFP+ Transceiver Module Installation Notes

This installation note provides the installation instructions for the Cisco small form-factor pluggable (SFP) and SFP+ transceiver modules. These transceiver modules are hot-swappable

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

The Ultimate Guide to ZTE SFP Module Distance and Wavelength

As bandwidth demands grow, 10 Gigabit Ethernet SFP+ modules become critical for aggregation and server connectivity. For long-reach applications, the 10GBASE-LR standard is used, with an SFP+

Contact Us

Continue your research online:

Website: https://alfa-pro.co.za
Technical inquiry: https://alfa-pro.co.za/contact.html

This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

© 2026 ALFA PRO COMMUNICATION SYSTEMS (Pty) Ltd - All rights reserved