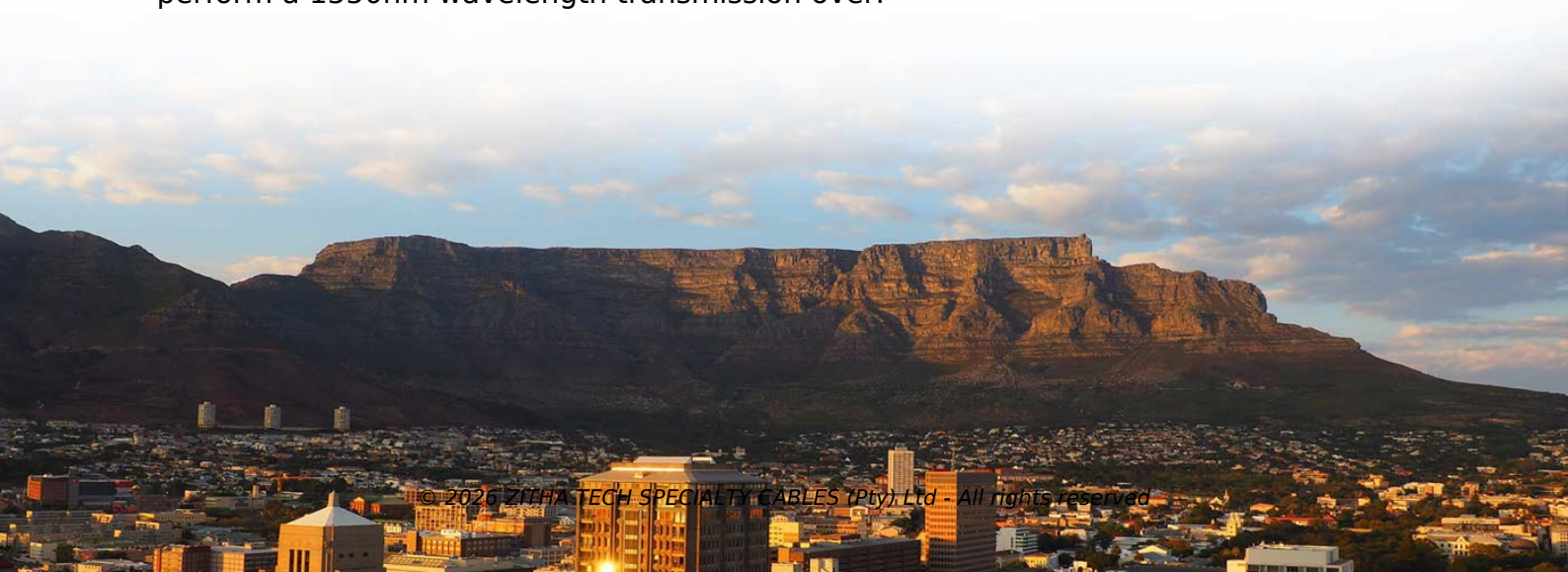
ZITHA TECH SPECIALTY CABLES (Pty) Ltd

How many kilometers should the optical module be selected for

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). SFP (Small Form-factor Pluggable) modules are standardized network transceivers that support a range of data rates (1G, 10G, 25G) and fiber types. Common distance ranges include short-reach (up to 100m), medium-reach (up to 10km), long-reach (up to 40km), and extended-reach (80km+). The fiber type and wavelength. At a wavelength of 850nm, a 100M optical module can transmit up to 2km, a 1G can transmit up to 550m, a 10G can transmit up to 300m, a 40G can transmit up to 400m, and 100G and 400G can transmit up to 100m. 1310nm: The attenuation of optical fiber at 1310nm is approximately 0. When. If the optical module works at a wavelength near 850nm (880nm) or 910nm (940nm), then the module is a multi-mode fiber (MMF) optical transceiver, and if the working wavelength is 1310nm or 1550nm, it is a single-mode fiber (SMF)optical module. This is adequate to cover campus backbones or metropolitan network traverses. ER (Extended Reach) modules perform a 1550nm wavelength transmission over.



© 2026 ZITHA TECH SPECIALTY CABLES (Pty) Ltd - All rights reserved

Article Content

The relationship between wavelength and transmission

The transmission distance of optical modules is divided into short distance, medium distance, and long distance. Short distance transmission usually refers to

SFP+ SR, LR, and ER Modules: Your Definitive Guide

By properly selecting your module to fit your specific distance and fiber type, you will get better performance, fewer errors, and hopefully just more

Exploring the Correlation Between Optical Module Wavelength and ...

Generally, distances of 2 km and below are considered short, 10 to 20 km are medium, and 30 km, 40 km, and above are long distances. Different wavelengths of optical modules paired

Optical module transmission distance and related classification

In the actual use of long-distance optical modules, in many cases, the maximum transmission distance of the module cannot be achieved. This is because the optical signal will have

Explanation of Optical Module Parameters

In summary, we should select the appropriate optical module based on the actual usage scenario, including the operating environment, power consumption, parameters of the opposite-end

How to choose an optical fiber link and an SFP module?

When we come across with a notion of «fiber optics» or «optical fiber links», we picture kilometers of optical fiber networks connecting highly remote

100G QSFP28 Optical Module Selection Guide: Medium to Long

This article tells you how to choose 100G QSFP28 modules for medium and long transmission distances, as well as the advantages of QSFP28 modules and why you should choose

Ultimate Guide to 1G SFP Module Selection

Learn how to choose the right 1G SFP module for your network. Our guide covers compatibility, distance, fiber type, cost, and vendor selection for optimal performance.

What are the detailed parameters of the optical module

© 2026 ZITHA TECH SPECIALTY CABLES (Pty) Ltd - All rights reserved

Transmission distance: Transmission distance refers to the distance that optical signals can be directly transmitted without relay amplification, and the unit is kilometers (also called

Understanding Long Distance Fiber Optic Runs for New

This guide will break down the essentials, from selecting the right hardware to troubleshooting common issues that can arise in long-distance fiber runs.

How To Choose The Right Optical Module

Where there is fiber, the optical module is needed, and the selection and purchase of the optical module has become the focus of the front-line engineering

What is the maximum distance for SFP□

The maximum distance for an SFP (Small Form-Factor Pluggable) transceiver depends on the type of SFP module, the optical fiber used, and the specific application. SFP modules support a

Everything You Should Know About 100GBASE-LR4 Optical Module

This article introduces the 100GBASE-LR4 optical module, and also describes the benefits and applications of this type of module, and how it plays an important role in 100G long-haul transmission.

Basics of Fiber Optics

I. Advantages Fiber optics has many advantages over copper wire (see Table 1) including: Increased bandwidth: The high signal bandwidth of optical fibers provides significantly greater information

100G QSFP ZR4 S Optical Module Overview

In practice, many operators rely on proven 100G technology, however, optical signal loss limits coverage to a maximum of around 40 kilometers. The new QSFP-100G-ZR4-S can now

Related Video Reference

This video was associated with the source search result. Verify technical details against current product documentation and project requirements.

© 2026 ZITHA TECH SPECIALTY CABLES (Pty) Ltd - All rights reserved

Contact Us

Continue your research online:

Website: https://zithatech.co.za
Technical inquiry: https://zithatech.co.za/contact.html

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

© 2026 ZITHA TECH SPECIALTY CABLES (Pty) Ltd - All rights reserved