

What does 15km mean on the optical module

Article Overview

"15km" on an optical module indicates the maximum distance the module can reliably transmit optical signals without significant degradation.

In fiber optic communication, the 15km specification refers to the maximum transmission distance over which the optical module can maintain a stable signal with minimal loss, interference, or latency (as seen in FPV and long-range video transmission systems) . This distance is determined by factors such as the fiber core diameter, signal attenuation, and the quality of the optical components.

Key Technical Details

- o Fiber Core Diameter: The "mm" part often refers to the fiber's core size, for example, 0.27mm. A smaller core allows higher bandwidth and lower signal dispersion but requires precise alignment during installation .
- o Signal Attenuation: Optical signals weaken as they travel through the fiber, measured in decibels per kilometer (dB/km). A low attenuation rate ensures the signal can reach the full 15km without noticeable degradation .
- o Bandwidth and Latency: Modules designed for 15km transmission can support high-definition video (1080p or higher) with low latency, often under 15ms, making them suitable for real-time applications like drone FPV .

Practical Implications

Using a 15km optical module means you can reliably transmit data or video over long distances, such as between a drone and a ground station, without relying on traditional RF links that are limited by interference or terrain. The module's design ensures signal integrity, even in challenging environments, by leveraging single-mode fiber and precise optical engineering . In summary, 15km indicates the optical module's effective range, while the associated fiber specifications (core diameter, attenuation, and optical power) define how well the signal maintains quality over that distance .

That value determines whether the module is designed for multimode fiber (MMF) or single-mode fiber (SMF), how

It refers to a fiber optic system that transmits high-definition video up to 15km with a 0.27mm core diameter, ensuring minimal signal

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Choosing the right optical module is vital for network efficiency. From SR for local connections to ZR for long-haul

Considering that some newcomers to optical modules may not understand the letters on the optical module or the

So if dB is negative, that means ratio of measured power to reference power is less than 1 - the measured power is less than the

EDGEOPTIC OC-3/STM-1 SFP 20km transceiver: 20km single-mode fiber, 1310nm wavelength, 19dB link budget, 155Mbps. Carrier

table, th, td { border: 1px solid black; border-collapse: collapse; } Often when we hear the term "bandwidth" we think of

? What Is SFP Distance in Fiber Optic Networks? SFP distance refers to the maximum effective range over which an

The unit is kilometers (also called kilometers, km). Optical modules generally have the following specifications: multi-mode 550m,

Discover everything you need to know about SFP optical transceiver modules for long-distance fiber transmission.

Q: What does it mean for an optical module to be hot-pluggable? A: Hot-pluggable means an optical module can be

The phrase "15km transceiver" refers to an optical module optimized for intermediate-to-long reach (Intermediate Reach / LR),

The transmission distance of optical modules is divided into short distance, medium distance, and long distance.

This blog details real-world experience deploying a 15KM FPV optical fiber image data module for reliable, ultra-low-latency aerial

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

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