

Article Overview

Huawei optical modules are pluggable photoelectric transceivers that convert electrical signals into optical signals and vice versa, supporting high-speed fiber-optic communication across various network environments.

Overview

Huawei optical modules are essential components in fiber-optic communication systems, functioning at the physical layer of the OSI model. They primarily consist of optical transmitters and receivers, functional circuits, and optical bores, enabling the conversion of electrical signals to optical signals for transmission over fiber and back to electrical signals at the receiving end. These modules are widely used in data centers, enterprise networks, and telecommunication infrastructures.

Common Types and Form Factors

Huawei offers a variety of optical modules to meet different bandwidth and interface requirements :

- o SFP (Small Form-factor Pluggable): Standard modules for gigabit Ethernet, supporting monitoring of voltage, temperature, bias current, and optical power.
- o SFP+: Enhanced SFP modules for 10 Gbit/s transmission.
- o SFP28: Supports 25 Gbit/s transmission with the same interface size as SFP+.
- o XFP: 10 Gbit/s modules with LC fiber connectors, larger than SFP+.
- o QSFP+ (Quad SFP): Supports 40 Gbit/s transmission with MPO fiber connectors.
- o QSFP28: Supports 100 Gbit/s or 40 Gbit/s transmission, compatible with QSFP+ interfaces.
- o CFP (Centum Form-factor Pluggable): Larger modules (144.75 mm x 82 mm x 13.6 mm) for high-speed data communication.
- o QSFP-DD (Double Density): High-density modules for ultra-high-speed applications, typically consuming 12-14 watts per module.

Fiber Compatibility

Huawei optical modules support both single-mode and multimode fibers. Single-mode fibers have a small core (9 μm) and low dispersion, suitable for long-distance transmission, while multimode fibers have larger cores (50-62.5 μm) and are used for shorter distances. Fiber classes such as G.651, G.652, G.653, and G.655 define wavelength windows and dispersion characteristics, with G.651 and G.652 being the most commonly used.

Key Features and Performance



Huawei Optical Module Description

Huawei optical modules are designed for high reliability, long-distance transmission, and secure operation . Key capabilities include:

- o High bandwidth for data center interconnectivity, supporting speeds from GE to 800GE.
- o Stable operation with strict performance specifications to ensure long-term reliability.
- o Secure and resilient design, including channel loss resistance and contamination detection, improving module reliability by up to 10x.
- o Plug-and-play flexibility, allowing easy deployment across various network interfaces.

Applications

These modules are widely deployed in data centers, enterprise networks, and AI-driven computing environments, providing ultra-long transmission, high-speed connectivity, and secure data transfer. They are compatible with Huawei switches and routers, including the CloudEngine series, ensuring seamless integration and network performance optimization . In summary, Huawei optical modules are versatile, high-performance transceivers that support a wide range of data rates, fiber types, and network applications, making them a core component of modern fiber-optic communication systems.

As an important part of fiber-optic communication, an optical module is a photoelectric converter which converts

Huawei offers a comprehensive portfolio of pluggable StarryLink optical modules for data center networks, with various models

An optical module is a device for converting electrical signals to optical signals and vice versa, widely used in telecommunications

What Is an Optical Module and Its FAQs (V200) Describes what an optical module is and FAQs, including the fundamentals,

This document describes all the configuration commands of the device, including the command function, format, parameters, views,

Description: Huawei switches must use Huawei-certified optical modules. Non-Huawei-certified optical modules cannot ensure

This document provides an overall description of the CE16800 series switches hardware, helping you obtain detailed information

Huawei Optical Module Description

100GE QSFP28 Optical Modules Understanding Optical Modules What Is an Optical Module Types of Optical Modules Parameter

Cables Pluggable Modules for Interfaces Important Notes About Using Optical Modules Certified for Huawei Switches Understanding

If you know the model or type of an optical module, you can view the section "Pluggable Modules for Interfaces" in the Hardware

This document explains optical modules, their types, and applications, providing a comprehensive understanding of their functionality

Optical Modules in Intelligent Computing Scenarios In the AI era, Huawei provides a full range of GE to 800GE optical modules,

Huawei S series devices support optical modules of the following encapsulation types: CFP, QSFP+, QSFP28, XFP, SFP, eSFP,

The StarryLink optical module is a core component developed by Huawei for data center networks. It delivers ultra

Important Notes About Using Optical Modules Certified for Huawei Switches Understanding Optical Modules What Is

The transmit power of a long-distance optical module is often larger than its overload power. Therefore, when using such optical

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