

Main Structure of Huawei Optical Modules



Overview

What Is an Optical Module and Its FAQs (V300) As an important part of fiber-optic communication, an optical module is a photoelectric converter which conveys.

Key Takeaways

Huawei optical modules primarily consist of a transmitter optical sub-assembly (TOSA), receiver optical sub-assembly (ROSA), functional circuits, and protective components, enabling conversion between electrical and optical signals. Core Components



1. **Transmitter Optical Sub-Assembly (TOSA)** The TOSA is responsible for converting electrical signals into optical signals. It includes a light source such as a laser diode (LD) or light-emitting diode (LED), an optical interface, a monitoring photodiode, a housing (metal or plastic), and an electrical interface. The input electrical signal is processed by an internal driver chip, which modulates the light source to emit optical signals at the required bit rate. An automatic optical power control (APC) circuit ensures stable output power during transmission .

2. **Receiver Optical Sub-Assembly (ROSA)** The ROSA converts incoming optical signals back into electrical signals. It contains a photodetector diode that detects the optical signal, followed by a preamplifier that outputs the electrical signal at the corresponding bit rate. This assembly ensures accurate signal recovery for further processing .

3. **Functional Circuits** These circuits manage signal processing, modulation, and monitoring. They include driver chips for the transmitter, amplification circuits for the receiver, and digital diagnostic monitoring (DDM) components that track parameters such as voltage, temperature, transmitted and received optical power, and laser bias current .

4. **Protective Components** Optical modules include dust plugs and protective housings to prevent contamination and damage to optical fiber connectors, adapters, and bores. These components maintain signal integrity and module longevity .

Types and Interfaces

Huawei produces various optical module types to support different transmission rates and fiber types:

- SFP, SFP+, SFP28: Small form-factor modules for 1G, 10G, and 25G transmission .
- XFP: 10G modules with LC fiber connectors .
- QSFP+, QSFP28: Quad small form-factor modules for 40G and 100G transmission, supporting MPO fiber connectors .
- CFP: Centum form-factor modules for high-speed data communication . Modules are classified as single-mode for long-distance, high-capacity transmission, or multimode for short-distance, cost-effective applications. Wavelength division multiplexing (CWDM and DWDM) modules allow multiple wavelengths to transmit over a single fiber without interference .

Summary

In essence, Huawei optical modules integrate TOSA, ROSA, functional circuits, and protective components to perform efficient electro-optical conversion. They are designed in various form factors and support multiple fiber types and transmission rates, making them versatile for data center and telecommunication applications .

Article Content

WHAT IS AN OPTICAL MODULE AND ITS FAQs (V200)

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

Appearance and Structure of an Optical Module

There are various types of optical modules, and their appearances and structures are different. However, the basic structure of an

01-10 OPTICAL MODULES

Optical modules are available in various types to meet diversified requirements. Depending on transmission rates, optical modules

Optical Modules in General-Purpose Computing Scenarios

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

Optical Modules in Intelligent Computing Scenarios

In the AI era, Huawei provides a full range of GE to 800GE optical modules, featuring three major capabilities: Spanning (ultra-long

What Is StarryLink Optical Module? Why Do We Need It?

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

Huawei Optical Module Common Models

Optical modules are important devices in fiber optic communication systems. Huawei Optical Module is manufactured by Huawei

Huawei Optical Module

Huawei offers a wide range of optical modules, including SFP, SFP+, QSFP, and QSFP28, catering to different transmission rates

The Most Comprehensive Guide Of Optical Modules

Explore the ultimate guide to optical modules. Learn types, functions, performance metrics & how to choose the right

What Is an Optical Module

On an optical network, a sender needs to convert electrical signals into optical signals before sending them to a receiver, and the

Understanding Pluggable Optical Modules

A QSFP-DD optical module is a high-speed pluggable optical module defined by QSFP-DD MSA. CXP: hot-pluggable high-density

Optical Module Appearance and Structure

Figure 12-6 QSFP-DD optical module Translation Favorite Download Update
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Understanding Pluggable Optical Modules

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

Understanding Optical Modules

Understanding Optical Modules Optical Module Appearance and Structure Types of Optical Modules Optical Module Terms Rules for

Optical Module Appearance and Structure

This document provides an overall description of the CE5800&6800&7800&8800 series switches hardware that versions earlier than

Types of Optical Modules

Optical modules are encapsulated in different modes to provide different structures. Huawei routers support optical modules of the

Understanding Pluggable Optical Modules

Optical modules are available in various types to meet diversified requirements. Classified by transmission rate Currently, the

Future All-optical Network Architecture and Key Technologies

Evolving towards the 2030 optical communications network system and architecture is a key issue facing the optical communications

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