Optical module used on RRU



Overview

The base station can be divided into two modules: the RRU for transmitting signals and the BBU for processing signals.

Key Takeaways

An optical module on an RRU converts electrical signals to optical signals (and vice versa) to transmit data between the RRU and BBU over fiber.

Function and Role

The optical module in a Remote Radio Unit (RRU) is responsible for optical-to-electrical and electrical-to-optical signal conversion, enabling high-speed data transmission over fiber optic cables between the RRU and the Baseband Unit (BBU) in a base station network. This is essential for 2G/3G/4G/5G networks, where the RRU is mounted on towers or antennas, and the BBU is located in a machine room or cabinet.

Interfaces and Standards

Optical modules typically connect via CPRI (Common Public Radio Interface) or eCPRI interfaces. These interfaces carry baseband I/Q signals from the BBU to the RRU and back, supporting high data rates and low latency. For example, 10G SFP+ CPRI optical modules are commonly used in modern base stations, providing transmission distances up to 40 km.

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Connection and Cabling

The optical module is connected to fiber optic cables, which can be single-core or multi-core depending on the deployment. Field optical cables are designed for outdoor use, offering flexibility, durability, and resistance to environmental factors such as tension, pressure, and temperature variations. The optical module plugs into the RRU's optical port, while the other end connects to the BBU or an optical distribution frame (ODF) in CRAN deployments.

Monitoring and Information

Operators can display optical module information on the RRU, including module type, transmit power, and receive power, which helps in monitoring link quality and troubleshooting. This ensures reliable communication between the RRU and BBU, maintaining network performance.

Summary

In essence, the optical module is a critical component of the RRU, enabling high-speed, long-distance communication over fiber, supporting modern wireless standards, and ensuring efficient signal transmission between the antenna and the baseband processing unit. Proper selection, installation, and monitoring of optical modules are key for network reliability and performance.

Article Content

Which Optical Modules Are Commonly Used In 4G Base Stations?

The base station can be divided into two modules: the RRU for transmitting signals and the BBU for processing signals. The BBU is small and exquisite, with low power consumption, while the RRU is

How many optical modules are in one RRU

Optical modules used in Remote Radio Units (RRUs) for CPRI applications are required to support industrial temperature ranges, primarily because RRUs operate in diverse outdoor environments with

RRU5517t Hardware Description

It converges and deconverges CPRI data to reduce the required CPRI optical fibers between a BBU and RRUs. The RMU3900A is supported in V100R012C00 and later versions. For details about the

RRU5508 (700M+900M) &RRU5508 (700M+850M) &RRU5508

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This document provides a hardware description for the RRU5508 models (700M+900M, 700M+850M, and 800M+900M) including details on their exterior, functions, technical specifications, and cable

Understanding BBU, RRU, and AAU in telecom networks

Below is a breakdown of the BBU (Baseband Unit), RRU (Remote Radio Unit), and AAU (Active Antenna Unit)—their roles, placement, connectivity, and relevance in evolving technologies.

Radio Unit (RU) Hardware Architecture Explained: Components

As 5G Networks scale quickly, understanding the radio unit (RU) hardware architecture is important knowledge for engineers working in telecommunications and tech-savvy enthusiasts.

The Role of Optical Modules in RRU Equipment

Optical modules used in Remote Radio Units (RRUs) for CPRI applications are required to support industrial temperature ranges, primarily because RRUs operate in diverse outdoor environments with

Do you know how optical modules are used in base stations?-ETU

Currently, 5G of the bearer network mainly uses 25Gbps optical modules. Next, ETU-LINK will introduce the types of optical modules used by 10G SFP+ and 25G SFP28 optical modules to connect BBU

2.6 Optical Modules. Huawei RRU3632, RRU3832, QISRRU3832

This document provides reference for planning and deploying DC blade RRU3832 and RRU3632 (referred to as RRU in this document). It presents the exterior and describes the ports, functions,

Optical Module Working Principle | SFP Transceiver Technical Guide ...

Understanding the working principle of optical modules—especially SFP transceivers—is critical for network engineers, data center operators, and telecom professionals tasked with building

Server 10G/25G NIC Buying Guide

Complete guide to server NIC selection. Compare SFP+ 10G and SFP28 25G NICs, optical module pairing, brand recommendations (Intel, Mellanox, Broadcom), and buying tips.

Optical Fibre SFP Module for 5G Networks An SFP (Small Form-factor ...

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Optical Fibre SFP Module for 5G Networks An SFP (Small Form-factor Pluggable) is a hot-swappable optical transceiver module that converts electrical signals into optical signals (and vice versa ...

SFP Module Transceivers, Manufacturer & Supplier

Optical modules undergo rigorous testing and quality inspection procedures before shipment, including incoming material inspection, parameter testing, aging testing, actual device testing, and end-face

Analysis of the application of optical modules in ...

In 5G network, the optical module used to connect BBU and RRU is mainly 25G rate. Here I will talk about the 1.25G SFP optical module and 10G SFP+ optical module used to connect BBU

The optical module on bbu

The transmission carriers connecting BBU and RRU devices are optical modules and optical fibers. In 2/3/4G networks, optical modules of 10Gbps are generally used for CPRI interfaces.

Fiber optical module and common knowledge of optical interfaces

Fiber optic technology has revolutionized the way we transmit and receive data. With its ability to transmit large amounts of data over long distances with minimal signal loss, fiber optics has

Optical Components and Modules

Everything you need to build an optical network from end-to-end. Thin-film filter and PLC based AWG for multiplexing, a full suite of components for optical amplification use, optomechanical or MEMS-based

Huawei RRU SFP

Huawei RRU SFP module, optical transmission device, low price around $7, minimum order of 1 unit. Suitable for wholesale, available in bulk, wireless infrastructure equipment.

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

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