Optical modules required for an RRU



Overview

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

Key Takeaways

RRUs require optical modules that support high-speed data transmission, industrial temperature ranges, and multiple fiber cores, typically ranging from 1. 25G to 10G for 4G and 5G networks.

Key Requirements for RR

U Optical Modules1. Data Rate and Type: Optical modules for RRUs must match the data rate of the fronthaul interface. In 4G networks, common modules include 1.

25G, 2. 5G, 6G, and 10G optical modules, with 10G modules being the mainstream for high-capacity links and 5G pilot deployments. These modules connect the BBU (Baseband Unit) to the RRU, enabling high-speed transmission of baseband data and control signals.

2. Industrial Temperature Support: RRUs are typically mounted outdoors on towers and are exposed to extreme temperatures. Optical modules must therefore support industrial temperature ranges, often from -40℃ to +85℃, to ensure reliable operation in harsh environments.

3. Fiber Core Requirements: Depending on the network design, an RRU may require 2–6 optical fiber cores for transmission. To optimize fiber usage, CWDM (Coarse Wavelength Division Multiplexing) solutions are often employed, allowing multiple wavelengths to share a single fiber and reducing the need for additional fiber infrastructure.

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4. Compatibility and Deployment Considerations: Optical modules must be compatible with the RRU's high-speed interface unit and signal processing unit, ensuring seamless transmission of downlink and uplink baseband data. They also support serial networking between multiple RRUs and BBUs, which is critical for distributed base station architectures.

5.

Future-

Proofing for 5G: While 4G networks commonly use 10G optical modules, 5G RRUs may require higher-capacity modules to support massive MIMO and millimeter-wave frequencies. Optical modules should therefore be selected with scalability in mind to accommodate future upgrades.

Summary

To summarize, the optical modules required for an RRU should: Support high-speed data rates (1. 25G–10G for 4G, higher for 5G)Operate reliably in industrial temperature rangesConnect via 2–6 fiber cores, often using CWDM for efficiencyBe compatible with the RRU's internal modules and fronthaul interfaceAllow for scalable deployment to support future network upgrades These specifications ensure that RRUs can efficiently transmit baseband signals to and from BBUs, maintain signal quality, and operate reliably in outdoor environments.

Article Content

How many optical modules should be installed on one RRU

The base station can be divided into two modules: the RRU for transmitting signals and the BBU for processing signals. User Guide About This Document About This Document Purpose This document

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

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Which Optical Modules Are Commonly Used In 4G Base The base station can be divided into two modules: the RRU for transmitting signals and the BBU for processing signals.

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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.

RRU5527t Hardware Overview | PDF | Fiber Optic Communication

The document provides a hardware description for the RRU5527t, a remote radio unit used in distributed base stations, detailing its features, technical specifications, and cable connections. It outlines the

RRU3168 Hardware Description (04) (PDF)

It describes the exterior, ports, indicators, optical modules, cables, and auxiliary devices of the RRU. Changes across issues are also summarized, with the latest issue focusing on technical

Why Optical Modules For CPRI Applications Need To Support

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

RRU5517t Hardware Description

Optical modules can be classified into single-mode and multimode optical modules, which can be distinguished as follows: The puller of a single-mode optical module is blue and the puller of a

HUAWEI RRU USER MANUAL Pdf Download | ManualsLib

The SRXU is an extended RF interface module that provides two RX channels for RF signals. 2.3 RRU Cables The RRU cables include the PGND cable, power cable, AISG multi-wire cable, AISG

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You must disconnect optical fibers from an optical module before replacing the optical module. Disconnecting the optical fibers interrupts the transmission of CPRI signals.

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A complete engineering guide to Ethernet switch port types: RJ45, SFP, SFP+, SFP28, QSFP+, QSFP28, Combo, Stack, PoE, access/trunk/hybrid

Small Form-factor Pluggable

Small Form-factor Pluggable Small Form-factor Pluggable connected to a pair of fiber-optic cables Small Form-factor Pluggable (SFP) is a compact, hot-pluggable network interface module format used for

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Lower the puller of the optical module, insert an optical module into the CPRI0/IR0 port on the RRU, and raise the puller. CAUTION • The optical modules to be installed must match CPRI rates.

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Understanding High-Speed Transceiver Tests in Fiber Networks Why Comprehensive Testing Is Essential for Reliable 100G, 200G, 400G, and 800G Optical Networks As network speeds

SFP Module Transceivers, Manufacturer & Supplier

YXFiber is China manufacturer & supplier who mainly produces SFP Module, SFP Transceivers, with years of experience. Hope to build business relationship with you.

Optical module design resources | TI

Design requirements Modern optical module designs often require: Reduced power consumption to control and limit module temperature rise. Dynamic and precise control of laser diodes to regulate

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

In this blog,ETU-LINK will talk about 4G base stations and common types of optical modules. The base station can be divided into two modules: the RRU for transmitting signals and the BBU for processing

What is RRU and BBU

RRU and BBU are crucial components in base station construction, enabling a distributed architecture that improves efficiency.

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