Energy-efficient enterprise-grade optical routers for railway communications



Overview

Huawei has designed an all-optical network uniquely tailored to the needs of smart railways. It ensures security, reliability, and stability across railway services.

Key Takeaways

Huawei, NetModule, Parametric, and Moxa offer energy-efficient, enterprise-grade optical and hybrid routers optimized for high-speed, low-latency railway communications.

Huawei Railway Optical Solutions

Huawei provides the Smart Railway Optical Communication Network, featuring the OptiXtrans E6600 and SmartAX EA5800 series. These platforms support TDM, packet, OTN, and fgOTN services, enabling high-bandwidth, low-latency transmission for railway applications. The architecture integrates optical and electrical convergence, allowing multi-service access (PCM, PDH, SDH, PKT, OTN) while maintaining energy efficiency through highly integrated hardware and intelligent network management.

These solutions are suitable for trackside, station, and control center deployments.

Net



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Module Railway RoutersNetModule offers railway-grade routers such as the NB3800 and modular LTE/5G/Wi-Fi 6 platforms. These routers provide secure, reliable, and redundant connectivity for passenger information systems, video surveillance, and train-to-ground communications. They are CE-compliant, EN 50155 and EN 45545 certified, and support intelligent link management to optimize energy use while maintaining high availability.

The AP3400 access point ensures future-proof Wi-Fi 6 connectivity for onboard applications. Parametric RAR4000The RAR4000 is a rugged, compact router designed for rail and automotive environments. It supports LTE, optional 5G, Wi-Fi 6, GPS, and managed Gigabit Ethernet, with optional redundant power and communication interfaces.

Its functionally focused architecture avoids unnecessary software overhead, improving energy efficiency while ensuring high reliability in harsh conditions. Secure remote access and VPN tunneling are available for protected communications. Moxa Ethernet Train Backbone (ETB) SolutionsMoxa provides IEC 61375-compliant routers and switches for onboard ETB networks.

The TN-5916 series and AWK-RCC wireless devices enable high-speed, low-latency communication for passenger Wi-Fi, CCTV, and train control systems. These devices are designed for space-limited environments and optimized for energy efficiency while supporting high-density Ethernet connections and seamless integration with train-wide networks.

Key Features for Energy-

Efficient Railway Optical RoutersMulti-service support: TDM, packet, OTN, fgOTN, LTE/5G, Wi-Fi 6Ruggedized design: EN 50155, EN 45545, ITxPT complianceLow-latency, high-bandwidth transmission for real-time train control and passenger servicesRedundant power and communication interfaces for high availabilityIntelligent network management to optimize energy consumption and reduce operational costsModular and scalable architecture for future-proof deployment These solutions collectively enable green, intelligent, and reliable railway communication networks, supporting both operational efficiency and passenger services while minimizing energy consumption.

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Article Content

Railway Routers

Our range of routers for mobile network data and voice communication in the railway sector includes modular products that can be used for a variety of applications, such as passenger information or

Railway Optical Communication Solution | Huawei Enterprise

Huawei has designed an all-optical network uniquely tailored to the needs of smart railways. It ensures security, reliability, and stability across railway services.

Huawei Launches Industry''s First Railway Optical Communication

During the event, Huawei released the industry''s first railway optical communication network solution that supports the fine-grain OTN (fgOTN) standard. The goal is to ensure secure

RailBox Series: WiFi 6/WiFi 6E and LTE 4G/5G Router

RailBox V2 is a ruggedized device designed for railway applications. It can be mounted on trains, metros, trams or any other equipment requiring robustness and high bandwidth for innovative

IRG5000 LTE Routers for Railway Deployments| News

Compliant with international railway regulations, IRG5000 LTE Routers have the operating temperature, vibration, and emission certifications

RAILWAY-CERTIFIED ROUTER

The wireless railway router from Mission Embedded is a versati-le onboard routing platform specifically designed for rail environ-ments. Its high modularity in terms of performance, functionality, extensions

Railway Data Communication│EN50155 / EN50121 Compliant

Meeting all the requirements of the Railway market, WoMaster provides cost-saving and efficient data communication solutions on trains, train stations and along railroad tracks which allow increasing the

Digi TX64 5G Rail Cellular Router

Regardless of issues with traditional GNSS in certain weather conditions or tunnels, UDR allows you to monitor the train''s exact positioning and speed, optimize each

Building Partnerships for Smart Rail Success | Moxa

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Moxa provides a wide variety of 10GbE, Gigabit, Ethernet, PoE/PoE+, fiber optic, and twisted DSL solutions to facilitate high-speed data communication, simplifying field wiring and reducing installation

Coherent Market Insights: Market Research and B2B Consulting

Coherent Market Insights provides Market Research, Customized Research, Business Intelligence, B2B Consulting, and Advisory Services to clients worldwide.

Huawei Launches Industry''s First Railway Optical Communication

InnoTrans 2024, themed "The future of mobility", kicked off in Berlin. During the event, Huawei released the industry''s first railway optical communication network solution that supports the

Key Technologies for a Beyond-100G Next-Generation Passive Optical

The explosive development of emerging telecommunication services has stimulated a huge growth in bandwidth demand as people seek universal access to telecommunication networks.

Railway Optical Communication Solution | Huawei

Huawei Smart Railway Optical Communication Network enables high-speed, high-bandwidth, and low-latency transmission for railway applications. Discover it.

Advanced 6 G wireless communication technologies for intelligent high ...

In conclusion, for future super high-speed rail, there should exist ISAC-based Doppler extension compensation to reduce wireless communication signaling overhead; beam management

WaveRouter

Ciena''s WaveRouter® family redefines metro routing by unifying IP and optical layers for scalable, high-performance, and energy-efficient networks. Designed to handle growing edge-to-metro traffic

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A Compacted Railway Energy Router and Its Control Strategy

To achieve comprehensive energy management for electrified railways, this paper proposes a compacted railway energy router (CRER) and its control method. By employing dual-phase shift

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On the Design, Implementation, Analysis, and Prototyping of a 1

The integration of layer-2 carrier-class packet technologies with optical transport network is termed as packet-optical integration and is being deployed by service providers for migration from

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