H2-Rail: Communications Gateway for Railway

Multi-service Communication Platform for Train-to-Ground communications

Introduction
The H2-Rail router is a multi-service communications platform for railway environments. It provides reliable 4G/LTE broadband and Wi-Fi communications with redundancy options, bandwidth aggregation and advanced network security mechanisms.

The hardware design is compliant with railway regulations for installations on lightweight and high-speed trains or trams, is EN 50155 certified to meet vibration and emission requirements, and offers and extended operating temperature range.

The router also provides extremely reliable communications using dynamic configurations (based on location/communications quality data).

Product Highlights
- Multi-service communications platform
- Multiple WWAN (bandwidth aggregation and load balancing)
- Compliant with railway regulations
- Geo-fencing: GPS-based dynamic configuration
- Standard-based service isolation
- Built-in switch for connection to other systems
- Complete Wi-Fi solution (management, hotspot and APs)

Product Description
H2-Rail is the perfect communications platform for all types of services on railways. Its multiple LTE module with advanced monitoring and bandwidth aggregation, redundancy options and cutting-edge communications security, make it ideal for critical, high availability services.

Specifically designed for use in the harsh railway environment (with up to 110 VDC power supply and extreme environmental conditions), the device supports a wide range of temperatures (-25 to 70°C), incorporates anti-vibration technology, and offers guaranteed interoperability with other onboard devices.

For onboard services, the wireless connection can be used as AP or client depending on the device’s location. This, together with the delayed power off feature, allows content to be automatically updated at depots.

It also features standards-based management and Teldat’s management tools (Colibri NetManager and Hotspot) for easy management of large-scale deployments.

Competitive Advantage
- Concurrent multiple WWAN interfaces: Up to 4 simultaneous LTE and/or Wi-Fi radio links, with bandwidth aggregation and load-balancing to ensure maximum availability and application continuity.
- Ruggedized hardware: Designed to withstand vibrations and extreme temp (-25 to 70°C). Certified according to railway standards (EN 50155, EN 50121-3-2, EN 45545-2, EN 301 908-1)
- Service and GPS-based automation: Communication monitoring (availability/quality) and location tracking for dynamic routing policies per-service/link/position.
- Corporate networking software: Uses the latest IP networking technologies for vehicles, bringing security, quality and ease of use to large-scale, multi-service deployments.
HARDWARE TECHNICAL FEATURES

Up to 4 concurrent WWAN Interfaces (LTE/HSPA+/HSPA/EDGE)

Gigabit Ethernet interfaces

Up to 4 built-in hardware modules with LTE/HSPA+

4 x 10/100/ 1000 BaseT Giga-Ethernet switch (X-coded M-12 connector) LEDs on each port for installation troubleshooting

2 external antennas with 1 x Type-N connector per module LTE/DC-

Support duplex, IEEE 802.3u link-speed auto-negotiation, VLAN and 802.1x

HSPA+/HSPA/UMTS/EDGE/GPRS/LTE/EVDO/1xRTT (inquire about others)

802.11a/b/g/n Wi-Fi interface

GPS interface

802.11a/b/g/n selectable band (2.4/5 GHz) with AP and client

Active GPS antenna with FME and NMEA

mode 2x2 MIMO external antennas (type-N connector) per

protocol 48 channels, high sensitivity and WAAS

module WEP, WPA, WPA2 security. WMM QoS. Multi SSID.

support Provision of local and remote information

File Assignment of user/group licenses

Environmental specifications

Management

Priority Queuing (PQ), Low latency (LLQ), by weight/type (WFQ, CBWFQ)

Quality of Service (QoS)

limitation Up to 32 classes 16 queues per interface

Static and dynamic access lists and session

Quality of Service (QoS)

Certificates: CSR, SCEP, X.509v3, PKIX, LDAP revocation

DoS/DDoS attack detection

Dynamic and static access lists and session-based firewall

Classification, marking, BW management, BW prioritization and limitation Up to 32 classes 16 queues per interface

Priority Queuing (PQ), Low latency (LLQ), by weight/type (WFQ, CBWFQ)

Management

CLI configuration and storage in a plain text file Assignment of user/group licenses

Additional information of user/group licenses

RADIUS and TACACS+ compatible AAA support

SOFTWARE TECHNICAL FEATURES

Specific Wi-Fi functions

Hotspot Gateway function for hotspot service support

IP protocol (2)

WLAN controller function for Teldat's built-in APs

Multicast: IGMP (v1, v2, v3), PIM-SM, MSDP, MLDP, MLDMv2 PSLA service probes (delay, packet loss, jitter)

High availability: VRRP, TVRP (HSRP compatible)

Security (2)

Certificates: CSR, SCEP, X.509v3, PKIX, LDAP revocation

Static and dynamic access lists and session-based firewall

Quality of Service (QoS)

DoS/DDoS attack detection

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ADDITIONAL TECHNICAL FEATURES

Console interface and asynchronous serial port

Load balancing and bandwidth aggregation (OLA)

DB-9 connector with proprietary pinouts (including adapter)

Open Link Aggregation Protocol

Type RS232, N81

Intelligent IPSec-based load balancing aggregation mechanism

Default speed 9600 bps. Maximum speed: 115200

Application continuity and per-session load balancing

bps Advanced GPS functions

GPS geo-fencing for location-based dynamic behavior Location-based link/route activation

Onboard environment ruggedness and power supply protection

GPS geo-fencing for location-based dynamic behavior Location-based link/route activation

Location-based interface management (such as Wi-Fi as client/AP)

72-110 VDC or 24 VDC power supply

Certifications: EN 50155, EN 50121-3-2, EN 301 511, EN 301 908-1, EN 45545 20 W consumption, screw-on connectors (M-12, type-N and FME)