

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 an 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 & 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 & 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

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|-------------------------------------|--|
| 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)

Up to 4 built-in hardware modules with LTE/HSPA+
2 external antennas with 1 x Type-N connector per module
LTE/DC-HSPA+/HSPA+/HSPA/UMTS/EDGE/GPRS;LTE/EVDO/1xRTT(inquire about others)

802.11ac Wi-Fi interface

802.11ac selectable band (2.4/5 GHz) with AP and client mode
2x2 MIMO external antennas (type-N connector) per module
WEP, WPA, WPA2 security. WMM QoS. Multi SSID.

Dimensions and Weight

Length x Width x Height: 186 x 483 x 43,6 mm (1U on a rack)
Approximate weight: 3.3 Kg
Flexible installation: rack and horizontal

Gigabit Ethernet interfaces

4 x 10/100/ 1000 BaseT Giga-Ethernet switch (X-coded M-12 connector)
LEDs on each port for installation troubleshooting
Support duplex, IEEE 802.3u link-speed auto-negotiation, VLAN and 802.1x

GPS interface

Active GPS antenna with FME and NMEA protocol
48 channels, high sensitivity and WAAS support
Provision of local and remote information

Environmental specifications

Temperature: -25 to 70 °C
Relative humidity: 5 to 95%
Shock and vibration resistance (EN 61373)

SOFTWARE TECHNICAL FEATURES

Specific Wi-Fi functions

Hotspot Gateway function for hotspot service support
WLAN controller function for Teldat's built-in APs
Location-based dynamic function (AP or client)

IP protocol (2)

Multicast: IGMP (v1, v2, v3), PIM-SM, MSDP, MLD, MLDv2
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
DoS/DDoS attack detection

Quality of Service (QoS)

Classification, marking, BW management, BW prioritisation 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
RADIUS and TACACS+ compatible AAA support

IP protocol

ARP, ARP Proxy, MTU discovery, NAT, ECMP, BFD
RIP, OSPF, BGP, policy-based static and dynamic routing
Virtual Router Forwarding (Multi-VRF)

Security

IPSec support in transport and tunnel mode (including DMVPNs)
Pre-shared authentication, RSA, Certificates, MD5, SHA-1
DES (56 bits), 3DES (168 bits), AES (128, 192 and 256 bits), IKEv1, IKEv2

IP Services

Telnet, DHCP, DNS, FTP, SFTP, and SSH server and client
NTP, LDAP, Syslog, SCP client. TFTP server
DHCP, dynDNS relay

Specific WWAN functions

Automatic hand-over (passive and active probe-based detection)
Advanced link monitoring (packet error, latency, jitter)
Quadruple SIM and module associated with the hand-over mechanism

Management (2)

Netflow, RMON V5 and V9, SNMPv1, v2c y v3, Syslog support
Manageable via SMS
Wireshark-compatible remote traffic capture

ADDITIONAL TECHNICAL FEATURES

Console interface and asynchronous serial port

DB-9 connector with proprietary pinouts (including adapter)
Type RS232, N81
Default speed 9600 bps. Maximum speed: 115200 bps

Advanced GPS functions

GPS geo-fencing for location-based dynamic behavior
Location-based link/route activation
Location-based interface management (such as Wi-Fi as client/AP)

Load balancing and bandwidth aggregation (OLA)

Open Link Aggregation Protocol
Intelligent IPSec-based load balancing aggregation mechanism
Application continuity and per-session load balancing

Onboard environment ruggedness and power supply protection

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)

Spain

Teldat S.A.
Parque Tecnológico de Madrid
Tres Cantos - 28760
Madrid (Spain)
Phone: +34 91 807 6565
info@teldat.com

Germany

bintec elmeg GmbH
Suedwestpark 94. 90449
Nuremberg (Germany)
Phone: +49 911 9673 0
info@bintec-elmeg.com