

## Introduction

The H2-Automotive+ is Teldat's new multiservice communications platform for vehicles. It provides 4G/LTE/LTE-A broadband and Wi-Fi with redundancy and aggregation options, advanced network security mechanisms, and an extended operating temperature range.

Based on a ruggedized hardware design, the router is both vibration and dust resistant and features power surge protection, specific mobile software, dynamic configurations (based on location and communications quality data), and has a delayed power off feature. Furthermore, it provides seamless integration with any third party management tool or hotspot platform.

## Product Highlights

- ▶ Multi-service communications platform
- ▶ Concurrent multiple WANs (aggregation&balancing)
- ▶ Power supply protection (enhanced MTBF)
- ▶ Geo-fencing: GPS-based dynamic configuration
- ▶ Standards-based service isolation
- ▶ Battery-saving feature: remote/managed power off
- ▶ Passengers Wi-Fi, CCTV, Management, ...

## Interfaces

## H2-Automotive+

Up to 4 x 4G/LTE Module	Yes (depending on the model)
Four SIM card slot for Dual-SIM	Yes
Up to 2 x 802.11ac Wi-Fi (client & AP)	Yes (depending on the model)
4x 10/100/1000 Mbps Gigabit-Ethernet	Yes
Asynchronous serial port (RS-232)	Yes
Built-in GPS (NMEA)	Yes
2 x SMA connectors per LTE module (MIMO)	Yes
2 x SMA-RP connectors for Wi-Fi (MIMO)	Yes

## Competitive Advantage

Concurrent multiple WWAN interfaces	Up to four simultaneous LTE and/or Wi-Fi access links with bandwidth aggregation and load balancing for maximum availability and application continuity.
Ruggedized hardware	Designed and exhaustively tested to withstand vibrations and power surges. Minimal maintenance costs and service outages. Extended operating temperature range.
Service and GPS-based automation	Communication monitoring (availability and quality) and GPS location tracking for per-service/link dynamic routing.
Professional Network Management	A Cloud based Network Management allow the automatic configuration deployment for the complete bus fleet.

# Scenarios

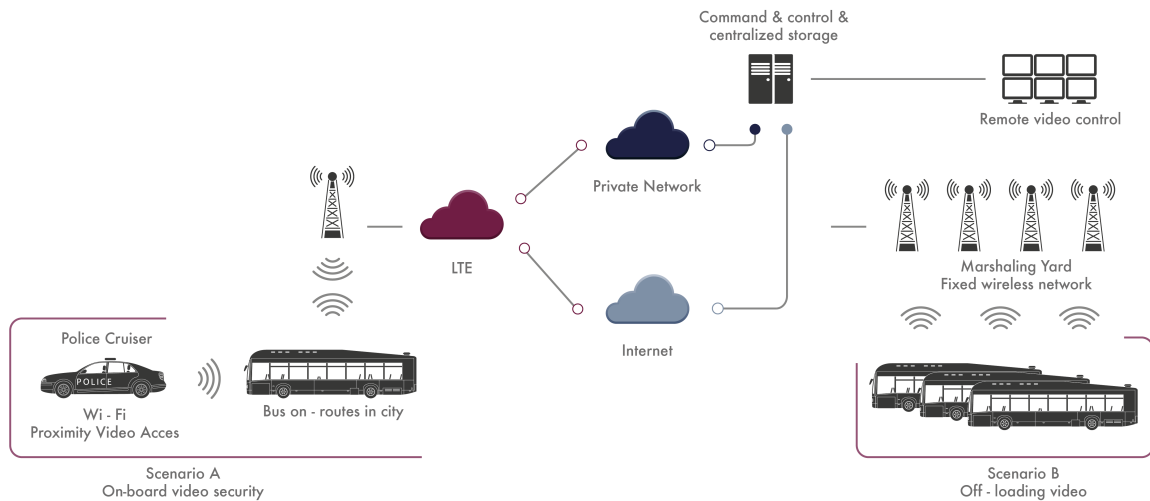


Figure: Connected transport: A new public transport paradigm

## Key Features

**Broadband with multiple concurrent LTE connections** Increased bandwidth and optimize the service continuity by up to four WAN connections (LTE, Wi-Fi, etc.).

**4G/LTE dual-SIM for operator redundancy** It has quad-SIM support in order to provide redundancy and maximize connection availability by using one of the telecoms operators to back up the others (if, for example, a connection drops) in a single module.

**2 x Wi-Fi (802.11a/b/g/n/ac)** Two 802.11a/b/g/n/ac Wi-Fi modules for increased Wi-Fi service capacity in high-density environments. Intelligent algorithms allow good performance for more than 120 simultaneously user.

**Optimized hardware design for onboard environments** Extended operating temperature range (-25 to 70°C). Shock and vibration isolation. Voltage range from 9 to 36 VDC for direct battery connection. Delayed power off for continuity when the vehicle has been turned off.

**ISO7637-2 power supply protection (enhanced MTBF)** ISO7637-2 power supply protection allows the device to be directly connected to the vehicle's battery and protects against failures caused by an unstable power supply. Temperature sensor for automatic shut-down.

**Bandwidth aggregation/load balancing** Concurrent use of multiple WAN interfaces (LTE, Wi-Fi, satellite, etc.) to distribute and/or aggregate load from multiple services on different interfaces, thus optimizing coverage areas and enhancing overall performance.

**Secure, isolated multi-service communications** By using advanced protocols with multiple WAN, it allows the services and management of the different solutions sharing the communications to be logically separated from each other.

**Embedded GPS (NMEA): full integration of third parties** Ideal for telemarketing and fleet management. The router incorporates a GPS (accessible via a TCP port) that provides real-time geo-location data in NMEA format.

**Location-based (GPS) dynamic behavior** The device can behave differently depending on its GPS position. The Wi-Fi can be used as AP or client for data synching at depots while the SIM selection feature can be used to optimize coverage and data consumption.

**Professional Network Management** Cloud based Network Management with autoprovision functionality. Additional functions allow the analysis of the service quality and availability along the route.

## HARDWARE TECHNICAL FEATURES

### Up to 4 simultaneous WWAN interfaces (LTE/HSPA+/HSPA/EDGE)

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

Four SIM slot allow Dual SIM applications

2 external antennas with a SMA connector per module

### Up to 2 Wi-Fi interfaces (802.11a/b/g/n/ac)

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

2x2 MIMO external antennas (SMA-RP connector) per module

WPA, WPA2 security. WMM QoS. Multi SSID.

### Dimensions and weight

Length x Width x Height: 237 x 180 x 59 mm

Approximate weight: 2.5 Kg

Flexible installation: wall, ceiling and horizontal

### Ethernet Interfaces

4 port switch plus optional WAN port (RJ-45F connector)

802.3i (10BaseT), 802.3u (100BaseT), 802.3ab (1000BaseT)

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

### GPS Interface

Active GPS antenna with FME connector and NMEA protocol

Acquisition time (Hot start 1sec, Warm start 29sec. Cold start: 32sec)

Precision (Horizontal < 4m (50%); Rate

### Environmental specifications

Temperature: -25 °C to 70 °C

Relative humidity: 5% to 95%

Shock and vibration isolation (EN 60068-2)

## SOFTWARE TECHNICAL FEATURES

### Specific Wi-Fi functions

Hotspot gateway function to support hotspot services

WLAN controller function for Teldat's onboard APs

Location-based dynamic function (AP or client)

### IPv6 support

DHCPv6, IPv6 Addressing, Static routing, Access list,

IPv6 Tunnel over IPv4, IPv4 Tunnel over IPv6

### Security

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

Static and dynamic access lists and session-based firewall

DoS/DDoS attack detection

### Quality of Service

Classification, marking, bandwidth management and limiting/prioritizing

Up to 32 classes and 16 queues per interface

Strict policies (PQ), low latency (LLQ), by weight/class (WFQ,

CBWFQ)

### Management

CLI configuration and storing in plain text file

Assignment of user/group licenses

RADIUS and TACACS+ compatible AAA support

### IP Protocol (IPv4)

ARP, ARP Proxy, MTU discovery, NAT, ECMP, BFD

Static and dynamic routing: RIP, OSPF, BGP, policy-based

Virtual Router Forwarding (Multi-VRF)

### VPN-Security

IPSec support in transparent and tunnel mode (including DMVPNs)

Pre-shared authentication, RSA, Certificates, MD5, SHA-1, SHA-2

DES (56 bits), 3DES (168 bits), AES (128, 192 & 256 bits), IKEv1,

IKEv2

### IP Services

Telnet, DHCP, DNS, FTP, SFTP and SSH server and client

NTP, LDAP, Syslog, SCP Client. TFTP Server

DHCP Relay, dynDNS.

### Specific WWAN functions

Automatic hand-over (passive and active probe-based detection)

Advanced link monitoring (packet error, latency, jitter)

Up to two SIM cards can associated to the hand-over mechanism

### Management (2)

Support for Netflow, RMON V5 & V9, SNMPv1, v2c & v3, Syslog

Manageable through SMS

Wireshark-compatible remote traffic capture

## ADDITIONAL TECHNICAL FEATURES

### Console interface and asynchronous serial port connector

DB-9 with propriotor pin (including adapter)

RS232, N81

Default speed 9600 bps. Maximum speed 115200 bps

### VoIP

Protocols: SIP (UDP, TCP, TLS) with SIP and GSM Gateway terminal support

GSM media gateway for backup calls over GSM network

Survival services: calls, hold, transfer

### Traffic balance and aggregation of up to 4 x the bandwidth

Per-session multipath (TCP/IP)

Intelligent IPSec-based load balancing aggregation mechanism

Use of DMVPNs and dynamic routing for application continuity

### Onboard environment ruggedness and power supply protection

Certificates: ISO7637-2 power protection for direct battery power supply

EN60068-2, EN60950-1, EN55022, EN55024, ISO7637-2, E-Mark (selected models)

Delayed power off (ignition-sensing activation)

# FLEXIBLE

## COMMUNICATIONS SOLUTIONS

### THAT GROW WITH YOU.

## H2-Automotive+: Teldat onboard router for vehicles

Rugged onboard communications platform for vehicles with LTE and Wi-Fi



**Teldat is a leading provider in Enterprise Communications equipment and Services for the top corporate to mid-sized and SME markets.**

### About TELDAT



**ROUTERS | Wi-Fi | MANAGEMENT | TRANSPORT | SMART GRID | INDUSTRIAL | VoIP | CLOUD | SECURITY | NFV |**

Teldat Group is a leading technology holding that designs, manufactures and distributes advanced Internetworking platforms for corporate environments, providing new and cutting-edge communication solutions without ever losing sight of its customers real requirements. Teldat's solutions development is based on proprietary technology, which is in the Group's DNA. This allows Teldat to be a leading provider in Enterprise Communications equipment and Services for the top corporate to midsized markets, as well as the SME and SoHo markets.

From a geographical viewpoint, Teldat Group has a presence in all continents, with its corporate headquarters located in Spain, and operational affiliates in Europe (Germany, Austria, Portugal, Italy and France) and in LATAM (Mexico and Brazil), as well as two business development offices in USA and China.

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