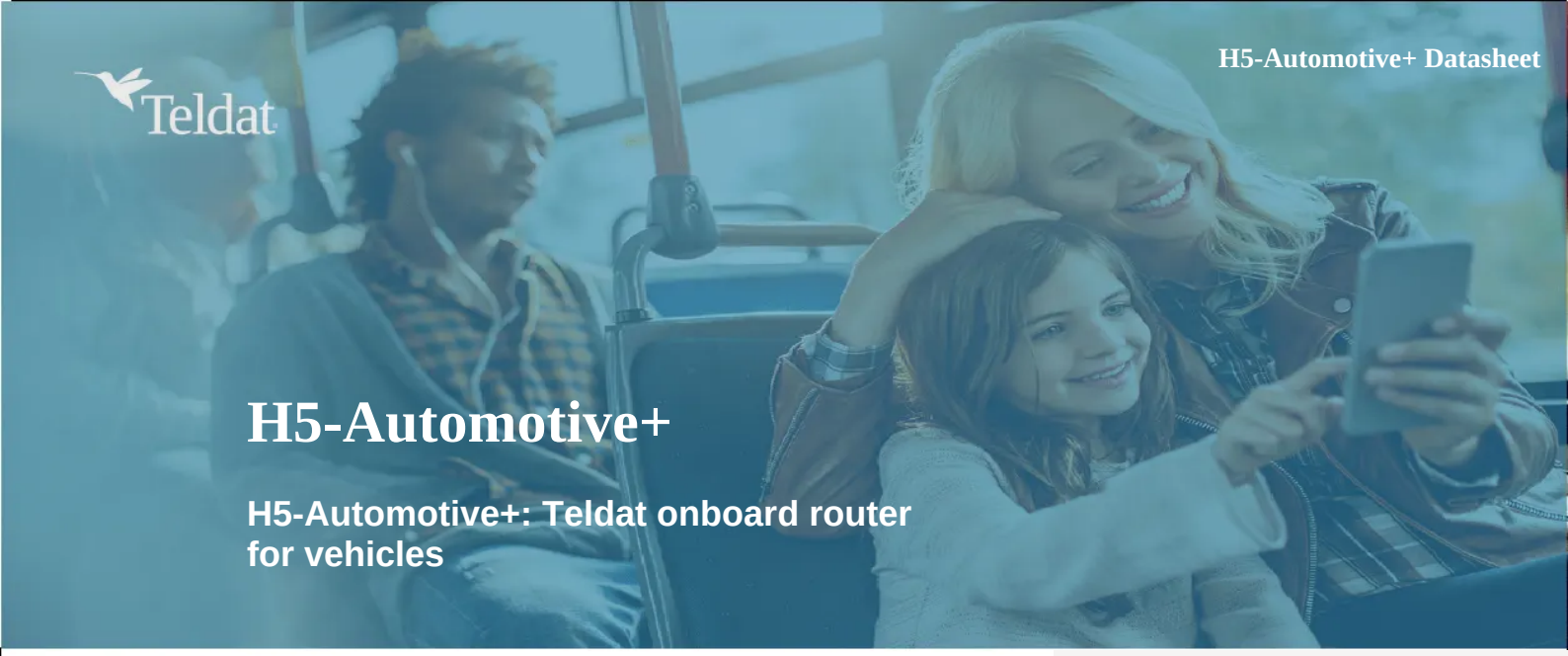


H5-Automotive+

H5-Automotive+: Teldat onboard router for vehicles

Introduction

The H5-Automotive+ is Teldat's new multi-module communications platform for vehicles. It provides up to 2x5G broadband and a Wi-Fi 7 module 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.

Highlight

- **Multi-service communications platform**
- **Concurrent multiple WANs (aggregation&balancing)**
- **Power supply protection (ISO 7637-2 compliant)**
- **Geo-fencing: GPS-based dynamic configuration**
- **Standards-based service isolation**
- **Battery-saving feature: remote/managed power off**
- **Passengers Wi-Fi, CCTV, Management, ...**

Interfaces

Up to 2 x 5GNR (sub-6GHz) modules	Yes (depending on the model)
Up to 4x SIM card slots (2FF) + 2x eSIM	Yes
1 x 802.11be Wi-Fi 7 (client & AP)	Yes (depending on the model)
4x 1Gbps LAN + 1x 2.5Gbps WAN (RJ45)	Yes
1x BT/BLE (UART, RP-SMA)	Yes
Built-in GNSS with Dead Reckoning	Yes
4x SMA per cellular module (4x4 MIMO)	Yes
2x RP-SMA for Wi-Fi (2.4/5GHz, 2x2 MIMO)	Yes

Competitive Advantages

Concurrent multiple WWAN interfaces	Up to 2 cellular modules 5G/4G and Wi-Fi7 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.

Key Features

- **5G/LTE dual-SIM for operator redundancy** It has 4 x SIM slots + 2 x eSIM support, 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.
- **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.
- **Bandwidth aggregation/load balancing** Concurrent use of multiple WAN interfaces(5G, Wi-Fi, satellite, etc.) to distribute and/or aggregate load from multiple services on different interfaces, thus optimizing coverage areas and enhancing overall performance.
- **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.
- **Professional Network Management** Cloud based Network Management with autoprovision functionallity. Additional functions allow the analysis of the service quality and availability along the route.
- **1 x Wi-Fi 7 (802.11be)** Wi-Fi 7 (802.11be) module for increased Wi-Fi service capacity in high-density environments. Intelligent algorithms allow good performance for more than 200 simultaneously user.
- **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.
- **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.
- **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.

HARDWARE TECHNICAL FEATURE

Up to 2 simultaneous 5GNR/LTE WWAN interfaces

Up to 2 built-in 5GNR/LTE modules
4x SIM slots (2FF) + 2x eSIM (1 per module) for multi-operator support
4 external SMA connectors per 5GNR module (4x4 MIMO).

1 x Wi-Fi 7 (802.11be)

802.11be selectable band (2.4/5/6 GHz) with AP and client mode
2x2 MIMO external antennas (SMA-RP connector) per module
WPA3, WPA2 security. WMM QoS. Multi SSID.

Dimensions and weight

Length x Width x Height: 186 x 483 x 43,6 mm (1U rack)
Approximate weight: 2.5 Kg
Flexible installation: wall, ceiling and horizontal

Ethernet Interfaces

4-port Gigabit Ethernet switch + 1x 2.5Gbps WAN (RJ45).
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 ºC to 70 ºC
Relative humidity: 5% to 95%
Shock and vibration isolation (EN 60068-2)

SOFTWARE TECHNICAL FEATURE

SDWAN edge

Support for hybrid networks with user application-based routing & QoS
Controller-based SD-WAN network intelligence
Zero Touch Provisioning (ZTP)

IP Protocols (2)

Multicast routing: IGMP (v1,v2, v3), PIM-SM, MSDP, MLD, MLDv2
IPSLA 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
Session-based firewall. Deep Packet Inspection (Firewall N7)

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
Support for RADIUS, TACACS+ AAA, NetFlow, RMON, SNMPv1, v2c, and v3.

Protocolo IP (1)

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

Security (1)

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 4 SIM with eSIM can associated to the hand-over mechanism

IPv6

Dual Stack, IP6oIPv4, IPv4oIPv6, GRE, 6rd, DHCPv6, ICMPv6, SLAAC
Static and dynamic routing: RIPng, OSPFv3, MP-BGP
Multicast: MLD, MLDv2, Listener, Querier

ADDITIONAL TECHNICAL FEATURE

Console interface and asynchronous serial port connector

DB-9 with proprietor 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

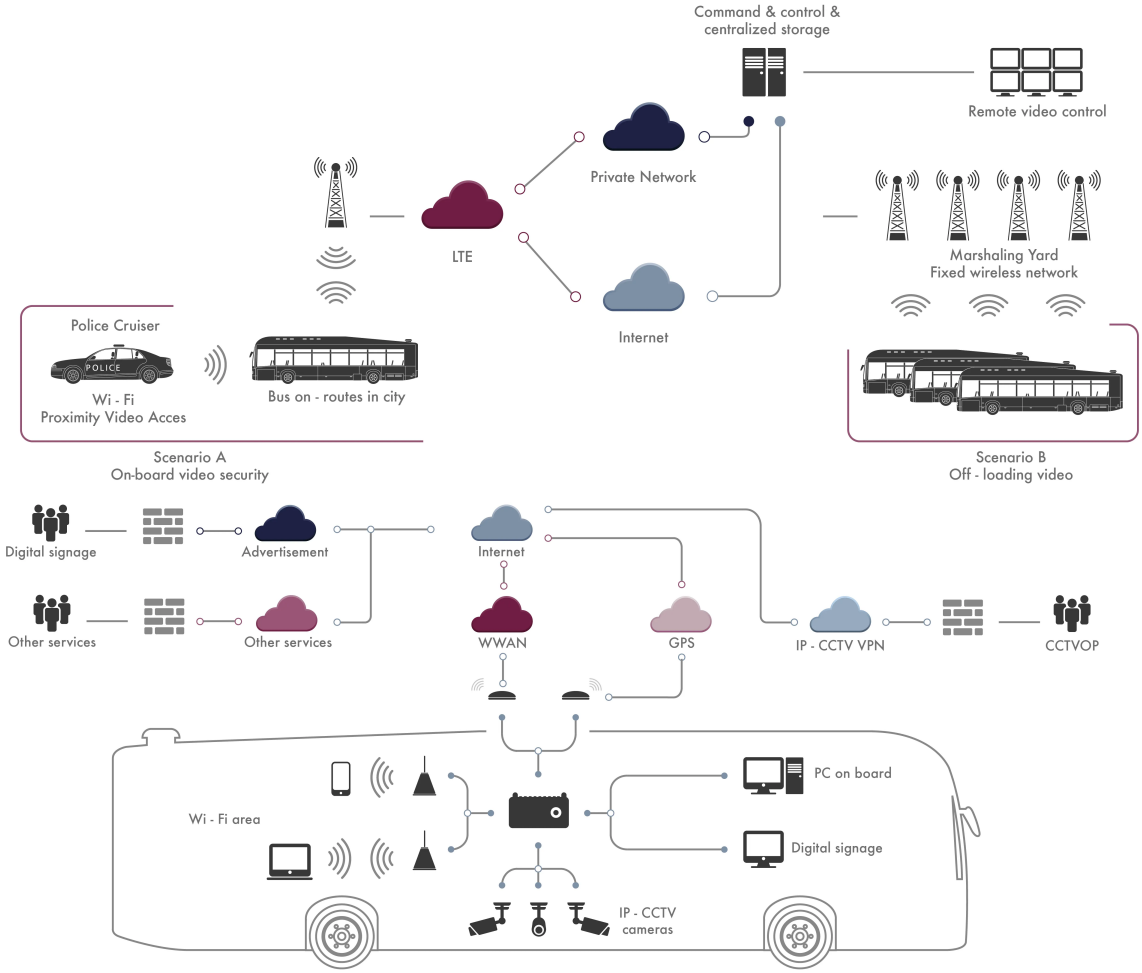
Relevant additional information

RAM memory:2GB
Flash memory: 4GB
External PSU 100-240 V AC, 50-60 Hz

Onboard enviroment 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)
EN50155, EN61373, EN50121-3-2, EN301-511, EN301-908- 1.

Scenarios



Founded in 1985, Teldat is a Spanish company whose mission is to provide companies with valuable solutions for cloud access, remote office communications, cyberse-curity and voice/data connectivity both in the office and in specific environments whether they are industrial, railway, vehicles or public services.

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