

AirCast-M12

5G vehicle communication gateway for road and trams applications, ITxPT compliant



APPLICATIONS

Public transportation (buses and trams)
Public safety vehicles
Trucks

- 5G router + GNSS positioning with dead reckoning
- WiFi 6 with fast roaming
- 4 Gigabit Ethernet ports type M12
- Smart Traffic routing (WiFi / 5G) : intelligent, per-flow data routing for granular control
- ITxPT compliant :
 - M12 and FAKRA connectors,
 - Delayed shutdown (Ignition) + full power/ low battery signal management for electric buses
 - Services: Inventory/GNSS location/Time/MQTT
- ECE R10, EN 50155 and EN 45545-2 certified
- Micro SD slot for configuration and logs storage
- Built-in Cybersecurity according to EN 18031 with secure boot, secured access, VPN, firewall...
- Remote administration and monitoring with WaveManager



5G



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Introduction

AirCast is the cutting-edge router designed for connecting fleets of vehicles such as buses, trams, trucks, emergency and public safety vehicles, etc., thanks to its full cellular 5G capabilities, dual-band WiFi 6 (2.4/5GHz) and GNSS (GPS, Galileo, GLONASS, Beidou) interfaces, as well as its 4 Gigabit Ethernet ports.

Mobility :

AirCast is equipped with high-speed wireless technologies for transmitting data to and from vehicles. For public transport applications (bus and trams), AirCast makes it possible to pool all data streams (SAE, ticketing, PIS, CCTV...) on a single router. Its WiFi fast roaming capabilities ensure continuous data transmission when buses arrive at the depot. Its automatic switching capabilities between WiFi and 5G ensure service continuity when they go into operation.

Smart policy routing (5G / WiFi), along with segmentation and prioritization capabilities, allow seamless transmission of onboard applications (ticketing, AVL/M/ACS...) including high-demanding real time applications such as CCTV and VoIP with no failure.

Cybersecurity :

The onboard network being an extension of the operator IT network, it is now mandatory to secure the vehicle network according to NIS 2 regulations. ACKSYS AirCast integrates the latest cyber-security standard EN18031, including secure boot, robust encryption and authentication, along with network isolation firewall to safeguard critical communications.

Remote administration and monitoring of the routers' fleet is performed with cloud or 'on-premise' ACKSYS WaveManager. The MQTT broker and bridge facilitate data transmission, system maintenance and monitoring of all onboard equipment.

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Technical Characteristics overview

Ethernet Interface	<ul style="list-style-type: none"> 4 ports Gigabit Ethernet (10/100/1000) Base TX auto-sensing, auto MDI/MDIX cross-over, 4x M12 8 points X-coded connectors
Radio interfaces	<p>High-Speed WiFi</p> <ul style="list-style-type: none"> Standards: WiFi 6 (802.11ax) with Adaptive Noise Immunity (ANI), DFS (Dynamic Frequency Selection), and TPC (Transmit Power Control) Bands: 2 concurrent radios, 2.4GHz and 5Ghz (support for HT20, HT40, HT80, HT160 channel widths) Radio data rate: Up to 1201Mbps @5GHz, and up to 573.5 Mbps @2.4GHz Max output power (aggregate EIRP, per regional regulations): up to 22 dBm @2.4 GHz / up to 21 dBm @5 GHz Antenna: 2x2 MIMO (2x FAKRA I-coded male connectors) <p>5G/ LTE Connectivity</p> <ul style="list-style-type: none"> 5G SA (3GPP release 16): Sub-6 GHz, DL up to 2.4 Gbps / UL up to 900 Mbps 5G NSA (3GPP release 16): Sub-6 GHz, DL up to 3.4 Gbps / UL up to 550 Mbps 4G: DL up to 1,6 Gbps (cat. 19) / UL up to 200 Mbps (cat.18) 3G: backward compatibility with WCDMA/HSPA+ Region: global Private 5G/4G: supports n38 (3.5 GHz), n77 (3.7–4.2 GHz), and n78 (3.3–3.8 GHz) for private networks Antenna: 4x4 MIMO (4x FAKRA D-coded male connectors) <p>Positioning/ GNSS</p> <ul style="list-style-type: none"> Multi-constellation support: GPS, Galileo, GLONASS, Beidou, QZSS Dead Reckoning Accuracy (open sky): ≤ 1.35 m (CEP 50%) Antenna: active GNSS (1x FAKRA C-coded male connector)
SIM	2x micro SIM (dual SIM redundancy for high availability)
Cellular Services	Dynamic DNS, Auto APN, Switch SIM, Multi APN
WiFi Modes	Client or router with fast roaming capabilities, Access point, Rogue AP detector
WiFi Services	Hot Spot 2.0 with Wireless Load Balancing (load balancing, band steering, client roaming control, association control per SSID)
Security	EN18031 certified with secure BOOT, firewall, DoS, https, MAC filtering, WPA2/WPA3-Personal & Enterprise (IEEE 802.1X/RADIUS), tunnels L2 (GRE), VPN (OpenVPN, IPsec), SNMP V3, Rogue AP detector, strong password policy, ports and services management
Ethernet networking	IPv4/IPv6 compliance, frames filtering, bridging, repeater, STP/RSTP, VLAN and QoS, DHCP (server & client), DNS relay, LLDP, MQTT (bridge & broker)
Ethernet routing	Multicast (PIM), IP redundancy (VRRP), static routes, NAT 1:1, NAT router, router
ITxPT	Services: Inventory, Time, GNSS location, MQTT (bridge & broker) Power Management: Delayed shutdown (ignition) and full power/low battery signal management for electric buses
Administration and easy maintenance	https, MQTT, SNMP agent (V2C, V3), CLI WaveManager On premise or Cloud administration tool Micro-SD card: save/ restore configuration (MTTR < 2 minutes) and logs storage Fanless, no battery
LEDs signaling	Ethernet : link - state Power : on-off SD card status and config file present WiFi : status 5G: activity, state GNSS state
Power supply	Insulated 9 to 48 VDC input power supply, or PoE+ 802.3at Delayed shutdown and full power/low battery management (ITxPT compliance) 6-point Phoenix connector
Consumption	Typical power consumption 25W / Recommended power supply 30W
Dimensions & weight	Product: compact rugged aluminum enclosure, TBC: 180 x 40 x 100 mm, 600 g
Environment	IP40 seal rating • Operating: -40°C to +70°C (HR 0-99%)
Standards and certifications	<p>ITxPT compliant CE (RED)</p> <p>Cybersecurity : EN 18031 Safety : EN 62368-1, EN62311 EMC : EN 301-489-1, EN 301-489-17 Radio WiFi : EN 300 328 (2.4 GHz), EN 301 893 (5 GHz, DFS) Radio 5G : EN 301 908 (-1, -2, -13), EN 301 511, EN 303 413</p> <p>FCC</p> <p>Radio: • WiFi : FCC ID TBC • 5G : FCC ID TBC</p> <p>Automotive</p> <p>EMC : ECE R10 (UTAC E2/ R10) Environmental: • Shock and vibration : EN 61373 • Fire/smoke : UNR118</p> <p>Railway</p> <p>EMC : EN 50155 Environmental: • Shock and vibration : EN 61373 • Fire/smoke : EN45545</p>
Warranty	5 years

Ordering references

AirCast-M12	5G router (world) + WiFi 6 and multi-constellation GNSS interface with dead reckoning, 4 ports Gigabit Ethernet, shipped without antennas
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