

Bus & Tramway

Wireless communication solutions
for connected vehicles



ACKSYS
COMMUNICATIONS & SYSTEMS

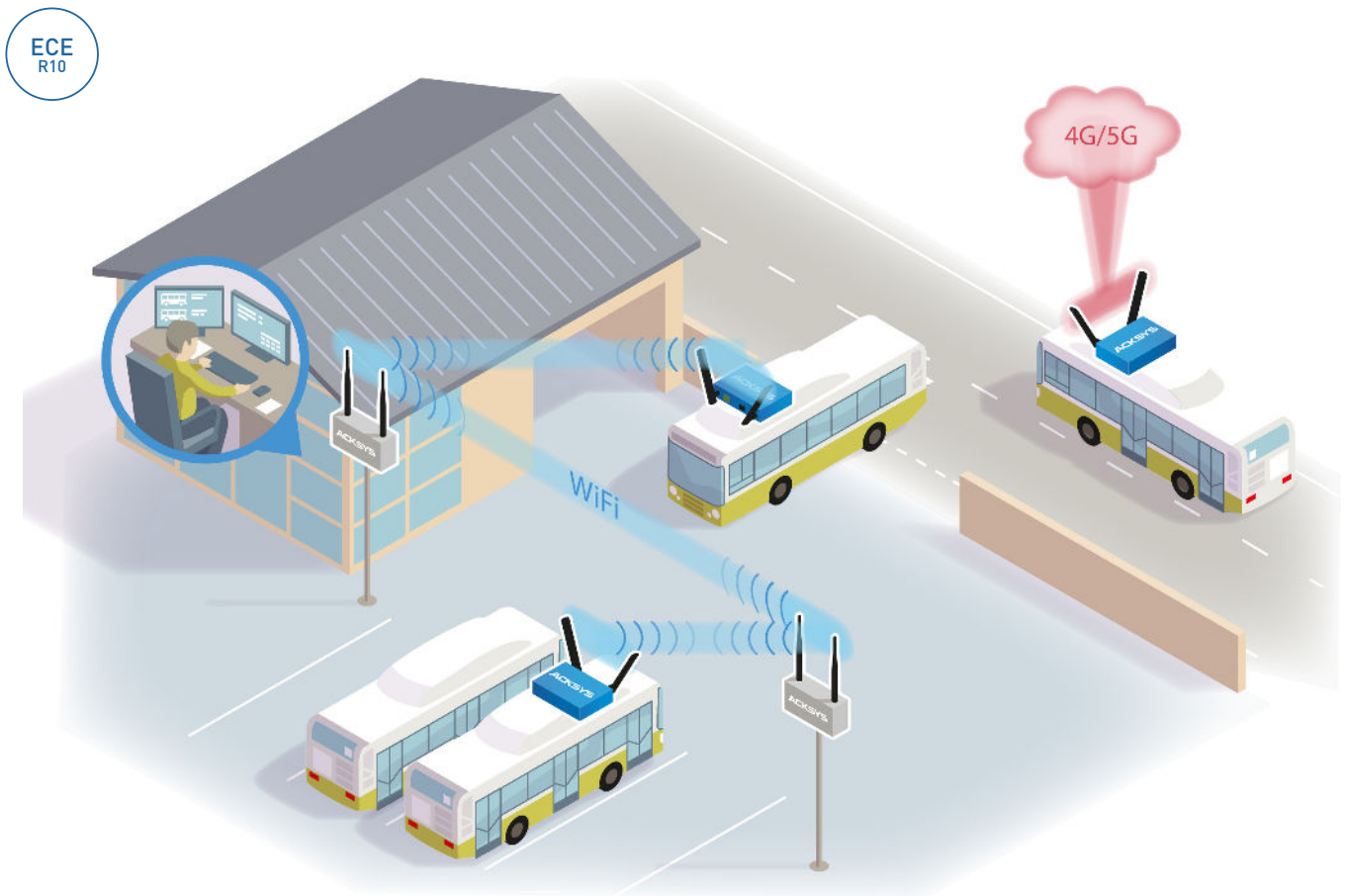
Bus & Tramway

Vehicles connected at all times

The rapid evolution of technology and the growing demand for more attractive, sustainable, and connected transport options are placing buses and trams at the heart of a true digital transformation.

In this context, transport operators can rely on ACKSYS communication gateways to ensure robust and secure WiFi and cellular connectivity across their entire fleet.

This enables onboard systems to continuously and safely transfer their data to the operators' control centers (video surveillance, VoIP, passenger counting and passenger information, open payment, operational support systems, etc.).



DIGITALIZATION
OF TRANSPORT

BUS / TRAM
& GROUND

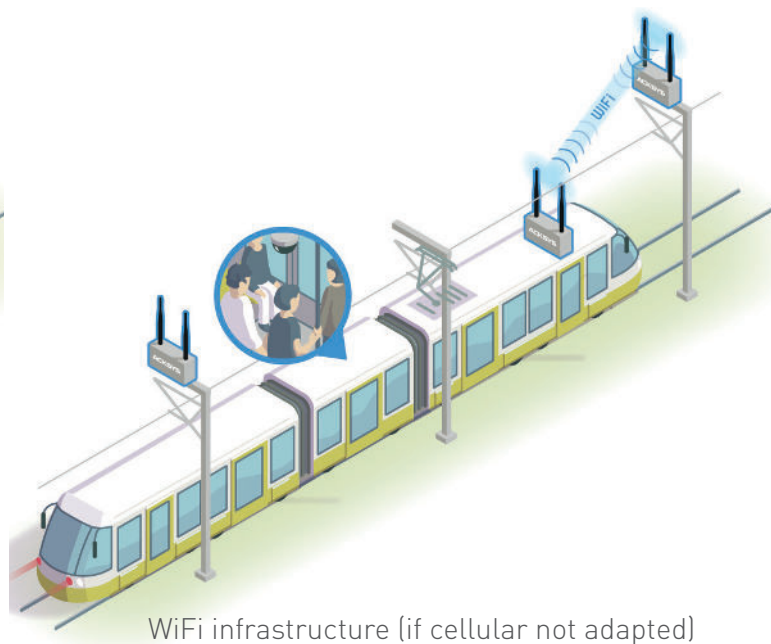
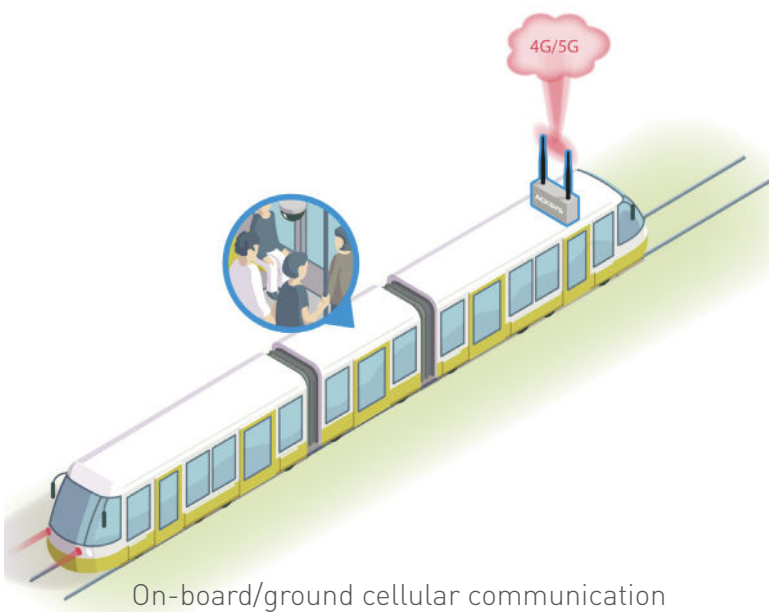
5G / WiFi / GNSS
CONNECTIVITY

Mastering connectivity is crucial to ensure proper sizing and quality of data transfers, while guaranteeing end-to-end security of transport operators' IT networks.

In this context, and in line with ITxPT recommendations, ACKSYS's WiFi 6 and 5G routers enable the shift away from siloed networks toward a modern, managed, and shared onboard IP architecture.

This makes it possible to:

- Avoid the multiplication of onboard equipment (routers, antennas, mobile subscriptions, etc.),
- Reduce and control related deployment and maintenance costs,
- Strengthen the IT network security of operators (in compliance with the European NIS 2 regulation).



DATA STREAMS
MUTUALIZATION

SMART TRAFFIC
ROUTING

ITxPT
SERVICES

“ACKSYS offers devices tailored for both **ground** and **onboard** use”



SIMPLIFIED DEPLOYMENT

- Centralized administration (WaveManager on premise or cloud software)
- Vehicle gateway : a single embedded router, accessible to all the vehicle's equipment
- Identical IP addressing scheme in all vehicles without interconnection risks
- Multi-radios repeaters to simplify the deployment of the depot WiFi infrastructure



MOBILITY

- Vehicle communication gateway: WiFi 6, 5G, and GNSS interfaces
- At the depot: high-speed WiFi transfers while moving (fast roaming < 30 ms)
- In operation: smart traffic routing for automatic switching or managed switching (cellular / WiFi)



SECURITY

- Cybersecurity (CE RED): EN 18031
- Secure BOOT (depending on model)
- Secure access and strong authentication
- Latest encryption standards
- Secure tunnels (OpenVPN, IPsec)
- Built-in firewall
- Network isolation and prioritization (VLAN/QoS)



PRODUCTS DESIGNED FOR TRANSPORT






- Rugged 5G routers for onboard and outdoor access points/repeaters for WiFi infrastructure
- Rugged connectors: M12, FAKRA, and QMA
- UTAC E2 – ECE R10 certification (buses)
- EN50155 – EN50121-3-2 – EN45545 certifications (trams)
- EN61373 (shock/vibration) and EN60068-2 (climatic) certifications
- Integrated ITxPT services

HIGH BANDWIDTH
SOLUTIONS

CENTRALIZED
ADMINISTRATION

MADE
IN FRANCE

Cellular routers & WiFi access points for public transportation

	 AirWan M12	 AirCast M12	 RailBox LTE	 RailBox
Function	WiFi, cellular router + GNSS			WiFi access point
Market	BUS - TRAM			GROUND
Certifications	ECE R10 & R118 EN50155 & EN45545	ECE R10 & R118 & ITxPT EN50155 & EN45545	EN50155 & EN45545 ITxPT	EN 50121-4 & EN 50121-3-2
WiFi interface	802.11n 2.4 / 5 GHz	802.11ax 2.4 / 5 GHz	802.11ax 2.4 / 5 GHz	802.11ax 2.4 / 5 GHz
Cellular	4G LTE Dual SIM + GNSS	5G Dual SIM + GNSS	5G Dual SIM + GNSS	-

TECHNICAL CHARACTERISTICS

Ethernet Interface	2 x 10/100 M12	4 x 10/100/1000 M12	2 x 100/1000/2500 M12	2 x 100/1000/2500 M12
I/O	-	-	1 isolated input 1 isolated output	1 isolated input 1 isolated output
Dimensions (mm)	147 x 41 x 100	180 x 40 x 100	80 x 175 x 57	80 x 175 x 57
Power supply	7 to 48 VDC or PoE	7 to 48 VDC or PoE+	Redundant isolated 24 to 110 VDC or PoE+	Redundant isolated 24 to 110 VDC or PoE+
Environment Operating temp IP rating	-20°C to +60°C IP40	-40°C to +70°C IP40	-40°C to +70°C IP66	-40°C to +70°C IP66

FUNCTIONALITIES

Mobility	Roaming : WiFi < 30 ms Smart Traffic routing (WiFi / cellular) by application	-
Security	EN18031 certified with firewall, DoS, https, MAC filtering, WPA/WPA2/WPA3-Personal & Enterprise (IEEE 802.1X/RADIUS), tunnels L2 (GRE), VPN (OpenVPN, IPsec), SNMP V3, Rogue AP detector, Secure BOOT (depending on model)	
Ethernet Routing	Multicast (PIM), IP redundancy (VRRP), static routes, NAT 1:1, NAT router, router	
Ethernet Networking	IPv4/IPv6 compliance, frames filtering, bridging, repeater, STP/RSTP, VLAN, DHCP (server & client), DNS relay	
Administration	https, MQTT (bridge & broker), SNMP agent (V1, V2C, V3), CLI WaveManager On premise or Cloud administration tool	
ITxPT services	Module inventory, Time service, GNSS location, MQTT broker & bridge	

Hardened memory key (configuration backup) : RailBox + RailBox LTE



Why choose ACKSYS ?

> RELIABILITY AND ROBUSTNESS

ACKSYS' products are designed to be used in harsh environment, this is why their manufacturing components are carefully selected, controlled and submitted to endurance tests. They come with a 5-year or lifetime warranty.

> LONG LASTING PRODUCTS

In order to provide long lasting solutions to its customers, ACKSYS works closely with its suppliers to foresee any eventual obsolete products and thus back-up its product line to avoid any stock rupture. ACKSYS also pays attention to develop products compatible with existing solutions.

> RELEVANT SOLUTIONS

ACKSYS develops tailored solutions designed to fit its customers' specific business needs or unique application environment and is also able to adapt its products upon request. All ACKSYS' products are compliant with the standards in the various targeted markets.

> CUSTOMER SERVICE COMMITMENT

ACKSYS has developed a solid pre-sales and after-sales process to ensure that customers receive the highest level of support at every stage of their projects. ACKSYS commits to provide state-of-the-art technology, products and training to keep its customers and distributors in the forefront of communication solutions.

ACKSYS
COMMUNICATIONS & SYSTEMS

Since 1984, ACKSYS Communications & Systems has acquired a strong know-how in designing and manufacturing industrial data communication solutions (WiFi and cellular).

Its expertise and high quality standards allows it to meet the most severe requirements in transportation (rail & road), industrial (M2M, IIoT, automation), military, aeronautics, mining industry, oil & gas and environment (renewable energy, water, waste water).

Its teams - R&D, technical and commercial - welded and highly qualified can answer with precision the expectations of its customers and help them from the definition of their needs to the deployment on site. Thanks to a structured distribution network, ACKSYS is present on the five continents.