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Products & Services Mobility



About Us

InHand Networks is a leading IoT solutions provider founded in 2001, dedicated to driving digital transformation across industries and empowering customers to unlock their full potential and achieve accelerated growth.

We specialize in delivering industrial-grade connectivity solutions for diverse sectors, such as enterprise networks, industrial and building IoT, digital energy, smart commerce, and mobility. Our comprehensive product portfolio and services cater to various applications worldwide, including smart manufacturing, smart grid, intelligent transportation, smart retail, etc. With a global footprint spanning over 60 countries, we serve customers in China, the United States, France, Germany, the United Kingdom, Italy, and beyond.





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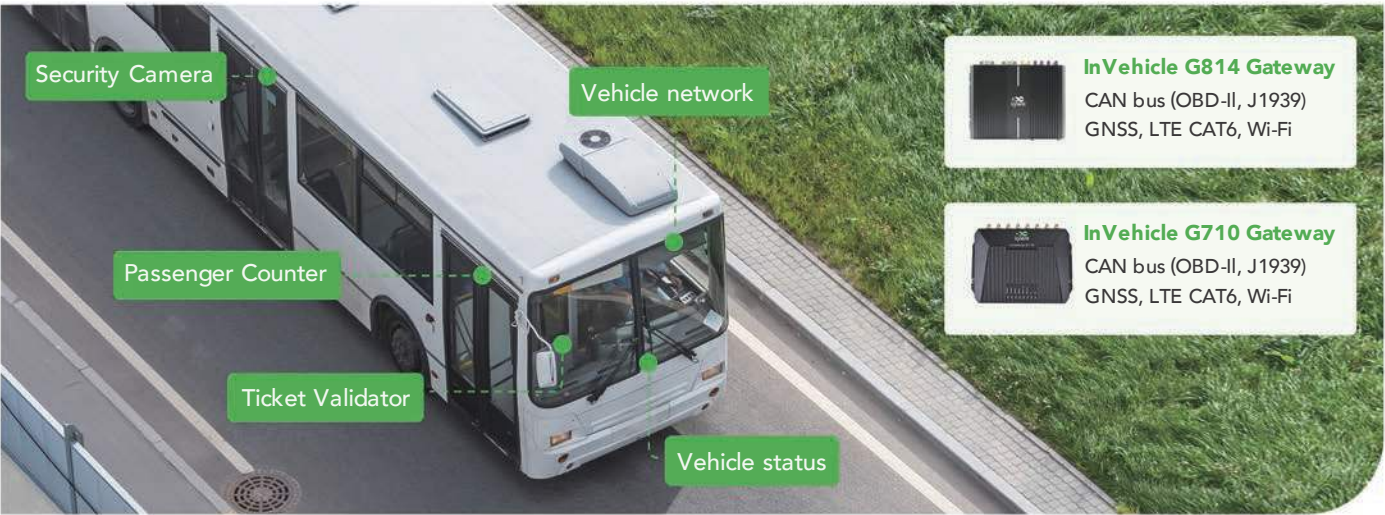
Public Transport

Shape a future of integrated services, low-carbon operations, and digitalization through the utilization of emerging digital technologies.

New market entrants are transforming travel patterns with enhanced services. Accustomed to the convenience of ride-hailing and other new business models, people now expect more from public transport. How can authorities create a future that prioritizes customer experience, integrated services, low-carbon operations, and digitalization?

Digital technologies hold the key. Harness the power of 5G, IoT, AI, and more to transform the public transportation ecosystem. InHand provides intelligent digital solutions, enhancing agility, operational efficiency, safety, reliability, and passenger experience for transportation authorities.

Intelligent Solution for Public Transport



Why InHand Networks?

Enhanced Operation Efficiency

Reduced Costs

Enhanced Reliability

Better Security

Optimized Management

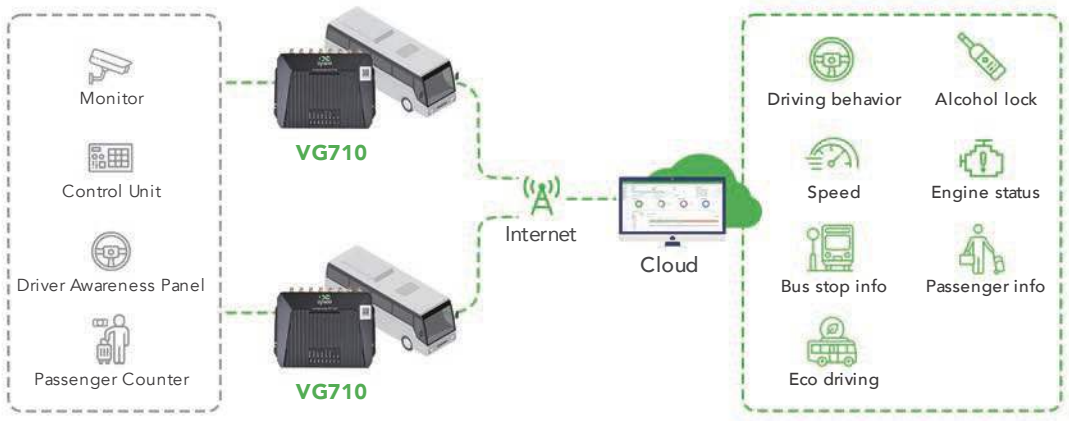
Higher-quality Services

Success Story: Multi-channel on-board Communications & Remote Management

Challenges

- Fast, reliable and uninterrupted networking of vehicles;
- Plenty of interfaces for connection to a variety of devices and applications;
- Sophisticated data security mechanism and encrypted data transmission;
- Connected to cloud for easier management and deployment;
- Industrial design, stable operation for long time in harsh environments.

Solution



The VG710 connects a wide range of applications on board, including the monitor, control unit, driver awareness panel, passenger counter, etc. Integrating OBD-II and J1939, the VG710 keeps updating the operation status of each bus. With high-precision GNSS and inertial navigation system, the VG710 continuously tracks the bus's location whether GNSS signal is available or not.

Data from different interfaces are constantly transmitted over high-speed LTE CAT6 network via secure VPN tunnels. From the Remote Maintenance Center, each bus can be monitored in real time, and when a fault occurs, the problem equipment can be immediately identified, which facilitates troubleshooting and reduces downtime.

Benefits

Fast, reliable and uninterrupted 4G connectivity
The VG710 delivers continuous access to high speed LTE CAT6 networks. Multi-layer auto link detection and recovery ensure that all the buses are online 24/7.

Multiple interfaces for a wide range of peripherals
Featuring extensive interfaces, the VG710 is able to host a variety of devices on board, providing users with all-around understanding of the buses.

Real-time monitoring of vehicle status
Integrating OBD-II and J1939, the VG710 keeps monitoring location, oil consumption, temperature, etc. on the bus, enabling customers to better manage energy use and ensuring driving safety.

Uninterrupted high-accuracy vehicle location
Embedded with 72-channel high-accuracy GNSS positioning system, the VG710 delivers real-time location information of the vehicles. Inertial navigation system enables buses to be constantly tracked even when GNSS signal is unavailable.

Engineering Machinery

Take a solid step towards efficiency and sustainability.

Digitalizing engineering vehicles enables real-time monitoring, data analysis, operational optimization, and decision support, leading to improved efficiency, cost reduction, safety, and compliance. It is driven by the adoption of information technology, the need for operational efficiency, safety and compliance, data-driven decision-making, as well as customer demand and industry trends.

As a provider of digitalization solutions of engineering vehicles, InHand Networks is committed to offering comprehensive solutions to our customers, which combine advanced information technology with expertise in engineering vehicles, including vehicle communication devices, vehicle monitoring systems, operation planning and scheduling systems, data analysis and predictive platforms, and more.

Integrated Management, Operation & Maintenance of Engineering Vehicles



Why InHand Networks?



Success Story: Remote Monitoring of Heavy Equipment

Challenges

- Real-time monitoring and management: Monitor the location, status, and operations of construction vehicles in real-time, enabling remotely supervision and prevent unauthorized route deviations
- Enhance driver safety: Assess driver behavior, analyze driving data, identify and address unsafe driving habits, provide targeted training and recommendations, and avoid non-compliant operations.
- Preventive maintenance and fault diagnosis: Real-time monitoring of the health condition of construction vehicles and providing predictive maintenance.

Solution



The intelligent solution for heavy-duty vehicle connectivity includes components such as lower-end devices, VT310 vehicle telematics gateway, and remote management platform. The VT310 connects to devices such as pressure sensors and vehicle controllers.

Equipped with dual CAN bus interfaces, the VT310 allows simultaneous collection of diagnostic information from both the heavy-duty vehicle and its installed equipment. By monitoring construction processes comprehensively from various angles such as vehicle location, fuel consumption, drilling positions, and total working time, it enables an information-rich and intelligent construction process.

Benefits

Stable 4G cellular network

Equipped with an industrial-grade 4G communication module, supporting 4G CAT1/CAT4 communication, ensuring real-time network stability.

Low power consumption and power backup

Designed with low power consumption and a 1200mAh lithium battery, enabling long-term monitoring even when the vehicle is turned off.

Specially designed for vehicle environments

With an IP67 protection rating and industrial-grade specifications, it can withstand environmental pressures such as impact, vibration, humidity, and extreme temperatures, ensuring reliable operation even in harsh conditions.

Cost-effective with rich network interfaces

Providing two CAN bus interfaces, one J1708, one 1-Wire, multiple I/O ports, and Bluetooth 5.0, meeting various application scenarios.

FlexAPI functionality

Adhering to the MQTT protocol-based third-party platform access specification, offering high flexibility for customers to customize data collection and frequency according to their needs.

Smart Logistics

Finely-tuned, dynamic, and visualized management for each process.

Continuous technical advances, especially the development of information technology, are bringing a digital revolution to the logistics industry. This transformation aims to improve the efficiency, visibility and sustainability of logistics transportation through the adoption of advanced digital technologies.

Challenges abound in traditional logistics transportation, such as information opacity, inefficiency and high costs. With the rise of digital technologies, cloud computing, Internet of Things (IoT), artificial intelligence (AI) and big data analytics are being applied to addressing those problems.

Innovative Solution for Smart Logistics



Why InHand Networks?

Real-time Tracking & Visibility

Smart Route Planning

Data Analytics & Forecasts

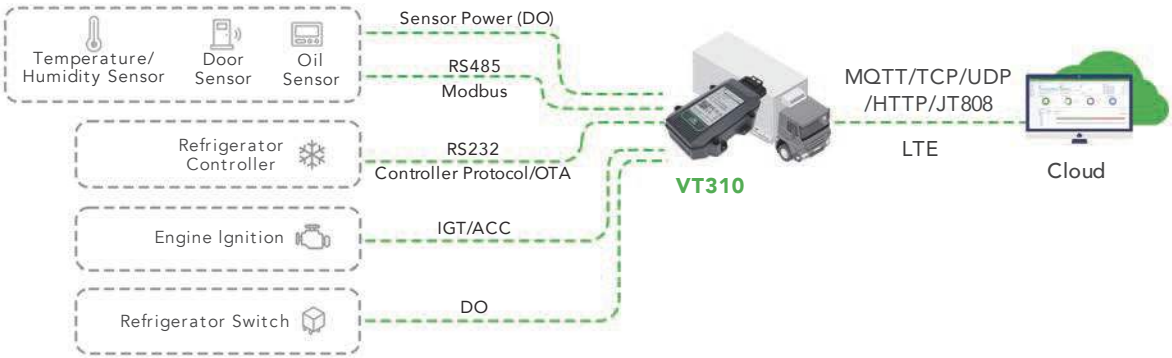
Sustainable Logistics

Success Story: Telematics Solution of Cold Chain Logistics

Challenges

- Uninterrupted and stable 4G/5G connectivity for constant acquisition and uploading of multiple variables from the on-board refrigeration system through different interfaces;
- Support for Modbus protocol, capable of connection to multiple clouds;
- Available with GNSS (Beidou and GPS) location tracking capabilities;
- Remote control of the refrigeration system
- Power saving, capable of working long hours in harsh environments and enduring extreme temperatures and vibration during transportation.

Solution



The solution includes cooler equipment, the VT310, a generator set, and the cloud platform, etc. The gateway is connected through RS485 to the sensors of temperature, humidity, oil and doors, and through RS232 to the refrigeration system controller. Coolers for train and road transportation are thus monitored. Operation data of the cooler are collected in real time, and control commands of the coolers are sent out from the cloud. The I/O ports help identify the status of the engine, and location information of the vehicle is also constantly uploaded. When the vehicle is not moving and the cooler is not working, the VT310 enables automatic sleep and supports wake-up.

Benefits

Extended machinery lifetime

With all devices connected and enable remote monitoring to help deliver real-time alerts to the right person, take proper actions, provide feedback, and even predict equipment failure to avoid damage of the quality of goods.

Reduced load loss

With the remote monitoring the thresholds of temp and any other indicators on board to have an efficient and fast response to keep the safety and high quality of temperature-sensitive products and overall in your revenue growth.

Improved efficiency with data

Improve the efficiency of the supply chain with data analytics. With many operational data that are collected and forwarded to the control center, It is easy to find insights, predict, get feedback, and share across the entire business. In addition, analytics can improve asset utilization efficiency with predictive maintenance.

Municipal & Public Safety

Embark on an era of greater intelligence and efficiency.

Traditional management methods are no longer sufficient to meet the growing number of vehicles and increasingly complex operations. Digitalization becomes must-have as it can optimize resource allocation, enhance operational efficiency, and improve services through real-time data collection, intelligent decision support, and automated process management.

With urbanization and environmental concerns on the rise, traditional management is insufficient to handle increasingly severe challenges. Digital transformation is the only way to survive and lead the market as it enables intelligent traffic management, safe operations and sustainability.

Innovative Solution for Municipal & Public Safety



Why InHand Networks?

		
Improved Operation Efficiency & Services	Reduced Operation & Maintenance Costs	Greater Security of Transportation
		
Strengthened Security and Privacy Protection	Optimized Decision-making	Driving Sustainability

Success Story: Firetruck Management: In-vehicle Connectivity & Fleet Management

Challenges

- Reliable and uninterrupted in-vehicle Wi-Fi
- Fast and reliable 4G cellular connectivity to communicate with the fleet management center
- High-precision and reliable GNSS location tracking function
- Extensive interfaces such as I/Os to connect to vehicles' status inputs and upload data
- Easy integration to the customer's fleet management cloud

Solution



Each firetruck's emergency lights and siren are connected to the VG710 via I/O. The VG710 also offers fast and reliable on-board Wi-Fi to the navigation tablet which helps the driver receive dispatch routes from the management center. Built with 72-channel GNSS, the VG710 keeps locating each firetruck and sends the data back to the fleet management system.

Data collected by the VG710 include time, location, speed, vehicle battery voltage, etc. While parked in the fire hall, firetrucks need to report their location to the FMS once per hour, and every few seconds in motion. Everything can be seen from the management center, so that staff can locate each vehicle and dispatch them when emergencies occur. Technicians also monitor the vehicle status for troubleshooting purposes and adjust configuration settings if needed.

Benefits

Strong in-vehicle Wi-Fi, uninterrupted communications on board

The VG710 delivers high-speed and reliable Wi-Fi for on-board devices, which enables the driver to receive dispatch routes from the fleet managers at the earliest possible time and hence better carry out their fire protection duties.

Fast, reliable and uninterrupted 4G connectivity for continuous communication with the management center

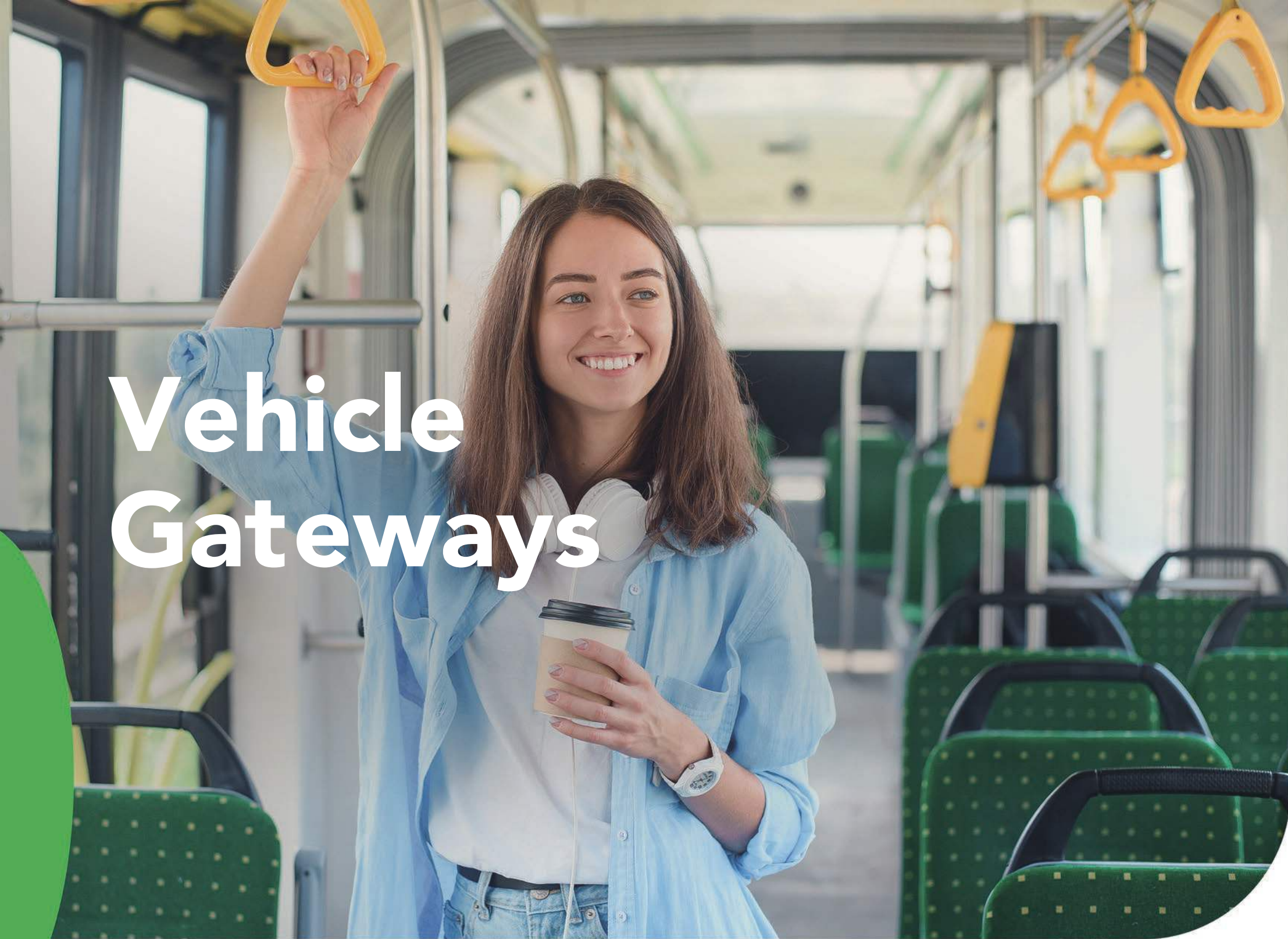
The VG710 delivers continuous access to high speed LTE CAT6 networks. With multi-layer auto link detection and recovery, the VG710 ensures that all the firetrucks remain online 24/7.

Constant status tracking gives customer peace of mind

Built with extensive interfaces like I/O, the VG710 keeps collecting the status of the firetruck; high-precision 72-channel GNSS keeps tracking the position of each truck so that fleet managers can always locate their vehicles and dispatch them with ease and efficiency.

Easy integration to clouds, "cloud + edge" smart management

With simple configuration, the VG710 can be connected to the customer's own platform through MQTT and HTTP standard protocol, so that users can custom their applications for enhanced performance.



Vehicle Gateways

VG910 / VG814 / VG710 / VG710-M

The VG series is a 5G/4G cellular vehicle gateway specially for the Internet of Vehicles (IoV). It provides high-speed and secure connectivity for a wide range of scenarios in the mobility industry, such as public transport, heavy equipment, logistics, municipal and public safety. With extensive interfaces, cloud integration and developer features, it enables connectivity to various on-board devices and remote monitoring of vehicle status, improving operation and management efficiency.



VG910

Next-Generation 5G Vehicle Gateway

Resilient Vehicle Network

5G SA/NSA, optional dual-5G modules, dual SIM, four Gigabit Ethernet ports and Wi-Fi 6 provide fast, flexible connectivity for moving fleets.

Cloud-Managed Fleet

DeviceLive supports centralized provisioning, firmware deployment, link-health monitoring, SLA reports, alarms and remote diagnostics across distributed vehicle fleets.

Wi-Fi 6 & Multi-Link

Multi-link failover and bonding combine cellular, Wi-Fi and wired WAN paths, while link-quality scheduling reduces the impact of packet loss and outages.

Secure by Design

A discrete TPM 2.0, secure boot, encrypted storage, device identity, VPN key protection and IEC 62443-4-2 SL2 design protect vehicle communications.

The VG910 is a 5G vehicle gateway for connected fleets, public safety, emergency response, logistics and mobile assets. It combines 5G, Wi-Fi 6, dual-band GNSS, CAN-FD, multi-link networking, TPM 2.0 security and Linux edge computing with DeviceLive cloud management.

Hardware

CPU	4× ARM Cortex-A53 @ 1.6 GHz + 1× Cortex-M7 @ 800 MHz real-time co-processor
RAM / Storage	1/2 GB LPDDR4 with Inline ECC; 8/16 GB eMMC 5.1; MicroSDXC up to 512 GB
Cellular	5G NR Sub-6 SA/NSA (3GPP Rel.16), optional dual 5G; LTE-A Cat-19/Cat-18 and WCDMA
Wi-Fi / Bluetooth	Wi-Fi 6, 2.4/5 GHz, 2T2R MU-MIMO, AP/Client/Mesh; Bluetooth 5.0
Ethernet	4× 10/100/1000 Mbps RJ45, software-configurable WAN/LAN
GNSS	Dual-band L1+L5 BDS/GPS/Galileo/GLONASS/QZSS; 6-axis IMU + DR, up to 10 Hz
Vehicle Interfaces	2× CAN-FD with J1939, OBD-II and UDS over ISO-TP; ignition detection
Other Interfaces	4× DI, 2× DO, 1× RS232, 1× RS485, USB 2.0 Type-C, MicroSDXC
SIM / eSIM	2× Nano-SIM + eSIM Ready; dual-module models support 2×2 Nano-SIM and 1/2× eSIM
Antenna	1/2× mini FAKRA-D 4-in-1; 1× GNSS FAKRA-C; 2× Wi-Fi/BT FAKRA-I
Power	9–36 VDC; <10 mW standby, ~8 W typical, ~17 W peak; ignition-delayed shutdown
Operating Temperature	–40~+70 °C; storage –40~+85 °C
Vehicle Standards	UN/ECE R10/R118; ISO 16750-3 Class 5M3; IEC 60068-2-27; EN/IEC 62368-1
Protection / Dimensions	IP64; 234 × 164.3 × 52.5 mm

Software

OS	Linux
Network Access	Public/private APN, VPDN, dual-stack IPv4/IPv6; CHAP/PAP/MS-CHAP/MS-CHAPV2
Network Type	WCDMA, LTE-A Cat-19/Cat-18, 5G NR SA/NSA; optional dual-5G modules
Protocol & Application	IPv4/IPv6, DHCP, DNS/DDNS, Telnet, SSH, HTTP/HTTPS, TFTP, FTP/SFTP, Portal
Routing & Switching	Static routing, RIP, OSPF, BGP, IGMP Proxy; VLAN segmentation and port mirroring
Network Security	SPI firewall, DoS protection, ACL, NAT/PAT, DMZ, port mapping, RBAC and AAA
Data Security	IPsec, L2TP, GRE, OpenVPN, WireGuard; PEM/PKCS12/SCEP; LUKS disk encryption
Reliability & Multi-Link	VRRP, link backup, watchdog, heartbeat, offline buffering, <3 s failover and link bonding
Configuration & Management	HTTP/HTTPS/Telnet/SSH; DeviceLive upgrades, batch provisioning, dashboards, SLA reports and alarms
Edge Computing	Python 3, Java, C/C++, Docker, Node-RED, Ubuntu images, VS Code and DeviceLive/FlexAPI SDKs
IoT / Vehicle Protocols	MQTT, DDS, AMQP, XMPP, JMS, REST, CoAP; OBD-II, SAE J1939 and UDS over ISO-TP
TPM & Secure Boot	Discrete TPM 2.0 CC EAL4+; secure boot, VPN key protection, X.509 identity and remote attestation
Certification	CE, E-Mark, FCC, IC, PTCRB, RoHS, REACH; carrier certifications include AT&T, T-Mobile and Verizon



VG814

5G Vehicle Gateway

High Performance Vehicle Network

Brand new network experience with 5G, high bandwidth, low latency and massive connectivity

All-in-one Design

More devices accessible with M12 GbE, Wi-Fi 5, serial port and I/O

Highly Accurate Vehicle Positioning

72-channel high precision and high sensitivity Global Navigation Satellite System(GNSS) inertial navigation with ADR or UDR support

ITxPT Standards

Guarantee reliable operation in harsh environments with ITxTP and E-mark certification

The InVehicle G810 is a high-performance vehicle gateway that integrates 5G/4G WAN, Wi-Fi 5, Gigabit Ethernet and CAN bus. It provides fast, reliable and secure network access for the vehicle area.

Hardware

CPU	4-Core ARM Cortex-A7
RAM	1GB DDR3L
Cellular	5G or 4G
GNSS	GPS, GLONASS, Galileo, Beidou
Wi-Fi	IEEE802.11 a/b/g/n/ac
Ethernet	4*Gigabit Ethernet M12 X-coded
Other Interfaces	1*RS485, 1*RS232, 1*CAN 2.0B dual wire, 11*DI, 4*DO, Audio, Voice
SIM Card	2*Mini SIM 2FF
Indicator	System, Cellular, Signal, GNSS, Wi-Fi 2.4G, Wi-Fi 5G
Operating Temperature	-30℃ ~ +70℃
IP Rating	IP53
Ingress Protection	EN61373, ISO 16750, EN50155, EN45545
Vehicle Standard Dimension	223*148.8*60 mm

Software

Network Access	APN, VPDN
IP Application	Ping, Traceroute, DHCP server/relay/client, DNS relay, DDNS, Telnet, SSH, HTTP, HTTPS, MQTT
IP Routing	Static routing, RIP, OSPF, BGP
VPN	IPsec VPN, OpenVPN, L2TP, GRE
Cyber Security	Firewall, SPI, Attack, AAA
Reliability	VRRP Link Backup, Watchdog, Link Detection
Configuration	HTTP, HTTPS, Telnet, SSH, Device Manager
Cloud Platforms	Azure, AWS, third-party platform
Edge Computing	Programmable environment Python3.0, C/C++, Docker environment
IoT Transmit Protocol	Supports MQTT, DDS, AMQP, XMPP, JMS, REST, CoAP
Certification	CE, E-Mark, ITxPT, RoHS, ECE-R118, EN50155, EN45545-2



VG710

Wireless Vehicle Gateway

High Performance Vehicle Network

Brand new network experience with 5G, high bandwidth, low latency and massive connectivity

Powerful Data Processing

4-Core ARM Cortex-A7 CPU and 8GB ROM

Flexible Application Development

Support secondary development C/C++ , and Python

Vehicle Design

IP64 IP rating, compliant with vehicle standard EN50155, EN50121, EMC, EN61373

The InVehicle G710 is a new generation of 5G vehicle gateway launched for the field of vehicle networking, which provides high-speed and secure network for cars and transportation service vehicles, meeting the mobile high-speed network needs of police vehicles, emergency command vehicles, engineering vehicles, medical vehicles, logistics vehicles, etc.

Hardware

CPU	4-Core ARM Cortex-A7	Antenna	4* Cellular, GNSS, 2*Wi-Fi, Bluetooth
RAM	5G: 1GB DDR3L, 4G: 1GB/512M DDR3	Indicators	System, Cellular, Signal, GNSS, Wi-Fi 2.4G, Wi-Fi 5G, U1, U2
Cellular	5G, downlink 2.1Gbps, Sub6, LTE-A	Operating Temperature	-30℃ ~ 70℃, -22F~158F
GNSS	GPS, GLONASS, Galileo, Beidou	IP Rating	IP64
Wi-Fi	IEEE802.11 a/b/g/n/ac	Vehicle Standard	ECE-R118, IEC60068-2-31, EN50155, EN50121, EN61373, EN45554, EMC Level3
Ethernet	4*10/100/1000Mbps RJ45	Dimensions	186*128.5*48 mm
MicroSD/ Bluetooth	Micro SD Card		
Other Interfaces	RS232, RS485, Micro USB, I/O, Audio, Voice		
SIM Card	2FF		

Software

Network Access	APN, VPDN
IP Application	Support IPv6, Ping, Traceroute, DHCP server / relay / client, DNS relay, dynamic domain DDNS, Telnet, SSH, HTTP.HTTPS, TFTP, FTP, SFTP
IP Routing	Support static route, RIP, OSPF, BGP, IGMP Proxy
VPN	IPsec VPN, L2TP, GRE, OpenVPN
Cyber Security	Firewall, SPI, anti-DoS attack, AAA
Link Backup	Send heartbeat packet detection, disconnection auto-connect
Configuration	Support local or remote HTTP, HTTPS, Telnet, SSH
Cloud Platforms	Azure, AWS, AliCloud, and other third-party cloud platforms
Edge Computing	Programmable environment Python 3.0, C/C++, Docker runtime environment
IoT Transmit Protocol	Support MQTT, DDS, AMQP, XMPP, JMS, REST, CoAP
Certification	CE, FCC, IC, PTCRB, AT&T, E-Mark, ITxPT, RoHS, ECE-R118



VG710-M

Vehicle Gateway

High Preformance Vehicle Network

Brand new network experience with 5G, high bandwidth, low latency and massive connectivity

Powerful Data Processing

4-Core ARM Cortex-A7 CPU and 8GB ROM

Flexible Application Development

Support secondary development C/C++ and Python

ITxPT standard Design

M12 Ethernet connector
FAKRA antenna connector
IP65 protection grade

The InVehicle G710 is a new generation of 5G vehicle gateway launched for the field of vehicle networking, which provides high-speed and secure network for cars and transportation service vehicles, meeting the mobile high-speed network needs of police vehicles, emergency command vehicles, engineering vehicles, medical vehicles, logistics vehicles, etc.

Hardware

CPU	4*Core ARM Cortex-A7	Antenna	4 /2*Cellular, GNSS, 2*Wi-Fi, Bluetooth
RAM	1GB DDR3L	Indicators	System, Cellular, Signal, GNSS, Wi-Fi 2.4G, Wi-Fi 5G, U1, U2
Cellular	5G, downlink 2.1Gbps, Sub6, LTE-A	Operating Temperature	-30℃ ~ +70℃, -22F~158F
GNSS	GPS L1+L5 , BSD, GLONASS, Galileo	IP Rating	IP65
Wi-Fi	IEEE802.11 a/b/g/n/ac	Vehicle Standard	ECE-R118, IEC60068-2-31, EN50155, EN50121, EN61373, EN45554, EMC Level3
Ethernet	3*M12 D-coded 10/100 Mbps 1*M12 X-coded 10/100/1000 Mbps	Dimensions	186*128.5*48 mm
Other Interfaces	CAN Bus、 IGT、 1*AI/DI		
SIM Card	2FF		

Software

Network Access	APN, VPDN
IP Application	Support IPv6, Ping, Traceroute, DHCP server / relay / client, DNS relay, dynamic domain DDNS, Telnet, SSH, HTTP, HTTPS, TFTP, FTP, SFTP
IP Routing	Support static route, RIP, OSPF, BGP, IGMP Proxy
VPN	IPsec VPN, L2TP, GRE, OpenVPN
Cyber Security	Firewall, SPI, anti-DoS attack, AAA
Link Backup	Send heartbeat packet detection, disconnection auto-connect
Configuration	Support local or remote HTTP, HTTPS, Telnet, SSH
Cloud Platforms	Azure, AWS, AliCloud, and other third-party cloud platforms
Edge Computing	Programmable environment Python 3.0, C/C++, Docker runtime environment
IoT Transmit Protocol	Support MQTT, DDS, AMOP, XMPP, JMS, REST, CoAP
Certification	CE, FCC, IC, PTCRB, AT&T, E-Mark, ITxPT, RoHS, ECE-R118



InVehicle Router

VR624

VR624 series is an industrial-grade mobile network access solution, suitable for multi-field transportation scenarios, covering special vehicles, heavy machinery, law enforcement vehicles, emergency vehicles, engineering fleets and ambulances, providing stable support for device networking and data interaction.

VR624 supports high-speed 5G, enabling high-speed and low-latency transmission. It is also integrated with high-speed Wi-Fi 6 to realize secure access for multiple devices. The integrated Global Positioning System (GPS) allows for real-time and precise positioning of vehicles, which is crucial for fleet dispatching, route optimization, and location-based monitoring, significantly enhancing vehicle operation and management efficiency.

The hardware adopts an industrial-grade design. The M12 connector is anti-vibration and anti-corrosion, can work in a wide temperature environment of $-30^{\circ}\text{C} \sim +70^{\circ}\text{C}$, making it suitable for harsh conditions.

Paired with the InHand DeviceLive platform, it can monitor device status in real time, diagnose faults, support remote operation and maintenance, and improve fleet management efficiency. Its integrated design provides a reliable network for in-vehicle systems and helps promote the digital transformation of the transportation field.



VR624

Vehicle Router

Cloud-Managed

DeviceLive IoT device management platform, enabling real-time management of tens of thousands of distributed site devices

ITxPT Standards

Follow the ITxPT design specification framework. ITS system integrators support plug-and-play operation.

Robust design for mobility

M12 connectors for reliable, vibration -resistant wired connections in harsh environments. Certified to ECE R10, ECE R118, and EN 50155 standards for EMC compliance, fire safety.

5G + Wi-Fi 6 Always-On Connectivity

Real-time tracking, control center link, OTA updates, CCTV streaming, cloud analytics — all running non-stop. Mission-critical communication, never misses a beat.

Hardware

CPU	Dual-core ARM® Cortex-A53 1.3GHz
RAM / Storage	512MB / 128MB Flash
Cellular	5G, downlink speed of up to 3.4Gbps, compatible with 4G/3G
Wi-Fi	Wi-Fi6 IEEE802.11 ax/ac/a/b/g/n
Ethernet	4 x 10/100/1000 Mbps M12 X-coded
GNSS	GPS, BDS, Galileo, GLONASS, QZSS
Other Interfaces	2 x Input (Ignition detection/Low battery)
SIM Card	1 x Drawer-type slot, support dual-NANO SIM, 1.8 V/3 V, 1 x Eembedded SIM (Optional)
Antenna	4 x SMA for 5G, 2 x SMA for 4G, 2 x RP-SMA for Wi-Fi, 1 x SMA for GNSS
Indicators	1 x System, 1 x Cellular, 1 x Signal , 1 x 2.4G Wi-Fi, 1 x 5G Wi-Fi
Operating Temperature	-30℃ ~ +70℃
EMC	EN61000-4-2,/3/4/5/6/12 level 3
IP Rating	IP30
Dimensions	177 * 144.25 * 43mm

Software

Network Access	APN, VPDN
Access Authentication	CHAP/PAP
Network Type	WCDMA, TDD LTE/FDD LTE, 5G NR(SA/NSA) (Please refer to the Ordering Guide for frequencies)
WAN Protocol	Static IP, DHCP, PPPoE
Protocol & Application	TCP, UDP, IPv4, IPv6, ICMP, NTP, DNS, HTTP, HTTPS, SSL/TLS, ARP, VRRP, SSH, DHCP Server, DHCP Relay, DHCP Client, DDNS, Telnet, IP Passthrough, VXLAN
Routing	Static routing, BGP
Network Security	Support access control, NAT, port mapping and firewall filtering based on MAC/IP/port/protocol Support Policy-Based Routing, Support 802.1X
Data Security	IPsec VPN, L2TP VPN, OpenVPN, WireGuard VPN
TPM	Integrated Trusted Platform Module, TPM 2.0 compliant
Certification	CE, E-MARK, ECE R118,ITxPT

Selection Guide

Model	VR624	VG710	VG710-H	VG710-M	VG814-V Road	VG814-R Rail	VG910
CPU	Dual-Core ARM Cortex-A53 1.3 GHz	Quad-core ARM Cortex-A7 717 MHz	Quad-core ARM Cortex-A7 717 MHz	Quad-core ARM Cortex-A7 717 MHz	Quad-core ARM Cortex-A7 717 MHz	Quad-core ARM Cortex-A7 717 MHz	4× ARM Cortex-A53 @ 1.6 GHz + 1× Cortex-M7 @ 800 MHz
RAM	512 MB LPDDR3	512 MB / 1 GB LPDDR3	1 GB LPDDR3	1 GB LPDDR3	1 GB LPDDR3	1 GB LPDDR3	1 GB (VG910-S) / 2 GB (VG910-D) LPDDR4 with Inline ECC
Storage	128MB Flash	8 GB eMMC	8 GB eMMC	8 GB eMMC	8 GB eMMC	8 GB eMMC	8 GB (VG910-S) / 16 GB (VG910-D) eMMC 5.1
Ethernet Port	4× M12 X-coded 10/100/1000 Mbps	4× RJ45 10/100/1000 Mbps	4× RJ45 10/100/1000 Mbps	1× M12 X-coded 10/100/1000 Mbps; 3× M12 D-coded 10/100 Mbps	4× M12 X-coded 10/100/1000 Mbps	4× M12 X-coded 10/100/1000 Mbps	4× RJ45 10/100/1000 Mbps
Serial Port	-	1× RS232, 1× RS485	1× RS232, 1× RS485	-	1× RS232, 1× RS485	2× RS232, 1× RS485	1× RS232 + 1× RS485
USB Port	-	1× USB 2.0 Type Micro-B	-	-	1× USB 2.0 Type-A	1× USB 2.0 Type-A	1× USB 2.0 Type-C
CAN Bus	-	1× CAN 2.0B	-	1× CAN 2.0B	2× CAN 2.0B	2× CAN 2.0B	2× CAN-FD (CAN 2.0A/B compatible),
Digital I/O	1× DI	4× DO, 4× AI/DI	2× DO, 4× AI/DI; or 2× DO, 2× AI/DI	1× DI	4× DO, 11× DI	4× DO, 11× DI	4× DI ,2× DO
IGT / ACC	1× IGT/ACC	1× IGT/ACC	1× IGT/ACC	1× IGT/ACC	1× IGT/ACC	1× IGT/ACC	1× Ignition (IGT) with configurable power-on/off delay
Cellular	5G SA/NSA or 4G LTE Cat 6	4G LTE Cat 6/Cat 4	5G SA/NSA	5G SA/NSA or 4G LTE Cat 6	5G SA/NSA or 4G LTE Cat 6	5G SA/NSA or 4G LTE Cat 6	5G NR Sub-6 (3GPP Rel-16, NSA + SA)
SIM Slot	1× Dual-Nano SIM, drawer-type slot	2× SIM push-in slots	2× SIM push-in slots	2× SIM push-in slots	2× or 4× SIM push-in slots	2× SIM push-in slots	2× Nano-SIM (dual-SIM dual-standby) + 1× eSIM Ready; dual-module models support 2x2 Nano-SIM
Wi-Fi	Wi-Fi 6	Wi-Fi 5	Wi-Fi 5	Wi-Fi 5	Wi-Fi 5	Wi-Fi 5	Wi-Fi 6, IEEE 802.11a/b/g/n/ac/ax, 2.4/5 GHz, 2T2R MU-MIMO
GNSS	GPS, BDS, Galileo, GLONASS, QZSS	GPS, BDS, Galileo, GLONASS, QZSS with DR	GPS, BDS, Galileo, GLONASS, QZSS with DR	GPS, BDS, Galileo, GLONASS, QZSS with DR	GPS, BDS, Galileo, GLONASS, QZSS with DR	GPS, BDS, Galileo, GLONASS, QZSS with DR	Dual-band L1+L5 BDS, GPS, Galileo, GLONASS, QZSS; 6-axis IMU + DR; 1.0 m accuracy
Antenna Connector	2/4× SMA 4G/5G; 2× RP-SMA Wi-Fi; 1× SMA GNSS	2× SMA 4G; 2× RP-SMA Wi-Fi; 1× SMA GNSS; 1× RP-SMA Bluetooth	4× SMA 5G; 2× RP-SMA Wi-Fi; 1× SMA GNSS; 1× RP-SMA Bluetooth	4/2× FAKRA D-coded 5G/4G; 2× FAKRA I-coded Wi-Fi; 1× C-coded GNSS	2/4/6× FAKRA D-coded 4G/5G/Dual 5G; 2× FAKRA I-coded Wi-Fi; 1× C-coded GNSS	2/4× TNC 4G/5G; 2× TNC Wi-Fi; 1× TNC GNSS	1 or 2× mini FAKRA D-coded 4-in-1; 1× FAKRA C-coded GNSS; 2× FAKRA I-coded Wi-Fi/BT
Physical Keys	Reset Key	Reset Key	Reset Key	Reset Key	Reset Key	Reset Key	Reset Key
Audio and Voice	-	-	Audio Left/Right Channel, Mic	-	-	-	Optional Line-out Left/Right, Mic-in, and Speaker signals reserved on the connectors
Power Input	9–48 VDC	9–36 VDC	9–36 VDC	9–36 VDC	9–36 VDC	9–36 VDC	9–36 VDC, compatible with 12 V / 24 V vehicle electrical systems
Power Connector	M12 A-coded male	4-pin Terminal Block	4-pin Terminal Block	8-pin Terminal Block	M12 A-coded male	M12 A-coded male	4-pin terminal block: V+, V–, Ignition, Earth
Dimensions (W×D×H)	177 × 144.25 × 43 mm	186 × 128.5 × 48 mm	186 × 128.5 × 48 mm	188.1 × 144.9 × 48.8 mm	223 × 181.36 × 66.2 mm	223 × 178 × 66.2 mm	234 × 164.3 × 52.5 mm
Weight	810 g	775 g	775 g	974 g	1340 g	1438 g	TBD
Mounting	Wall	Wall / DIN Rail	Wall / DIN Rail	Wall / DIN Rail	Wall	Wall	Wall-mount / 4× M4 screw fixing
Enclosure	Metal	Die-cast aluminum	Die-cast aluminum	Die-cast aluminum	Aluminum profile	Aluminum profile	Anodized aluminum-alloy extrusion for thermal management and EMI shielding
Operating Temperature	–30℃ ~+70℃	–30℃ ~+70℃	–30℃ ~+70℃	–30℃ ~+70℃	–30℃ ~+70℃	–30℃ ~+70℃	–40℃ ~+70℃
Storage Temperature	–40℃ ~+85℃	–40℃ ~+85℃	–40℃ ~+85℃	–40℃ ~+85℃	–40℃ ~+85℃	–40℃ ~+85℃	–40℃ ~+85℃
Operating Humidity	5%–95% RH (non-condensing)	5%–95% RH (non-condensing)	5%–95% RH (non-condensing)	5%–95% RH (non-condensing)	5%–95% RH (non-condensing)	5%–95% RH (non-condensing)	95% RH @ 60℃ (non-condensing)
Ingress Protection	IP30	IP64	IP64	IP64	IP54	IP53	IP64
Regulatory Compliance	CE, E-Mark, FCC, RoHS, REACH	CE, E-Mark, FCC, RoHS, REACH	CE, E-Mark, FCC, RoHS, REACH	CE, E-Mark, FCC, RoHS, REACH	CE, E-Mark, FCC, RoHS, REACH	CE, E-Mark, FCC, RoHS, REACH	CE, E-Mark, FCC, IC, PTCRB, RoHS, REACH
Safety Certification	-	EN 18031	EN 18031	EN 18031	EN 18031	EN 18031	EN 62368-1 / IEC 62368-1
Industry Standard	ITxPT, EN 50155, EN 45545	ITxPT, EN 50155, EN 45545, EN 61373	ITxPT, EN 50155, EN 45545, EN 61373	ITxPT, EN 50155, EN 45545, EN 61373	ITxPT, EN 50155, EN 45545, EN 61373, ISO 16750, ISO/IEC 17025	ITxPT, EN 50155, EN 45545, ISO 16750, ISO/IEC 17025	ISO 16750-3, IEC 60068-2-27, UN/ECE R10, R118; designed to IEC 62443-4-2 SL2
Carrier Certification	-	Verizon, AT&T, T-Mobile	Verizon, AT&T, T-Mobile	Verizon, AT&T, T-Mobile	-	-	AT&T, T-Mobile, Verizon, etc.

A yellow Volvo bus is driving on a city street. The bus has '66 Emdrup Torv' on its destination sign, 'DOT' and 'movia' logos on the front, and the number '1057'. The license plate is 'XN 90 823'. The background shows city buildings and a pedestrian crossing. The text 'Mobile Data Terminal' is overlaid in large white letters on the left side of the image.

Mobile Data Terminal

MDT600

The InHand MDT600 is a rugged, ITxPT-compliant Multi-Application Driver Terminal designed for connected public transport and commercial vehicles. It serves as the central Human-Machine Interface (HMI) between drivers and multiple ITS or fleet management systems.

Powered by a high-performance ARM processor and a 6 TOPS NPU, the MDT600 supports advanced driver applications, multi-camera analytics, dispatch, ticketing, and fleet operations all on one device. With 5G, Wi-Fi 6, GNSS, and extensive vehicle I/O, it delivers robust edge-computing capability in a compact 10.1" IP65 design. Supporting both Android and Linux, the MDT600 provides an open, future-proof platform for integrators and operators seeking reliable in-vehicle HMI and intelligent mobility solutions.



MDT600

Mobile Data Terminal

All-in-One Interface Hub

CAN, RS232/485, M12 Ethernet, DI/DO, USB — plus 8× AHD cameras. One MDT600 bridges sensors, ticketing, telematics, and safety systems.

ITxPT Standards

Follow the ITxPT design specification framework. ITS system integrators support plug-and-play operation.

Born Tough, Built to Move

10.1" ruggedized brilliance. EN 50155, EN 45545, ECE R118/R10 certified — engineered for buses, trams, trucks, and the harshest roads. Unstoppable performance, anywhere you roll.

5G + Wi-Fi 6 Always-On Connectivity

Real-time tracking, control center link, OTA updates, CCTV streaming, cloud analytics — all running non-stop. Mission-critical communication, never misses a beat.

Hardware

CPU	Quad-Core Cortex-A72 + Quad-Core Cortex-A53, Up to 2.0 GHz with 6 TOPS INT8 NPU
RAM / Storage	8GB/256GB UFS or 4GB/64GB eMMC, M.2 SSD slot, Micro SD slot
Cellular	5G, LTE Cat.6
Wi-Fi	Wi-Fi6 IEEE802.11 a/b/g/n/ac/ax,
Ethernet	1 x 10/100/1000 Mbps M12 X-coded
GNSS	GPS L1 C/A+L5, BDS, Galileo, GLONASS, QZSS with DR
Other Interfaces	1 x CAN 2.0, 1 x RS232/RS485, 5xDI, 4xDO, USB Type-C, Audio, Mic, NFC, Fingerprint, 8x AHD Camera
SIM Card	2 × 4FF Nano-SIM
LCD Screen	10.1" display, 60 fps refresh rate, 1280×800 (16:9), 262K colors, ambient light sensor
Operating Temperature	-30~ 70℃
Vehicle Standard	ISO 16750-1/2/3/4, EN50155,EN50121,EN61373
IP/IK Rating	IP65 / IK08
Dimensions	300*182*38 mm

Software

OS	Android 14 or Linux OS
APP	InDesktop, Camera Record, Cloud Service, Devcie Manager, Record Player
AI and Edge Computing	TensorFlow Lite / PyTorch / Caffè / ONNX / Android NN API
Development Toolchain	Linux Kernel 5.10/6.1、 U-Boot、 Buildroot/Android AOSP
Network Type	WCDMA, TDD LTE/FDD LTE, 5G NR(SA/NSA)
Protocol & Application	IPv4, IPv6, ICMP, NTP, DNS, HTTP, HTTPS, SSL/TLS, ARP, SSH, DHCP Server, DHCP, Telnet
Data Security	IPsec VPN, L2TP VPN, OpenVPN
Security Architecture	ARM TrustZone + Secure Boot, Supporting AES/RSA/SHA hardware acceleration
Certification	CE, E-MARK, ECE R118,ITxPT



OBC820

Dual-5G ITxPT On-Board Computer

Dual-5G Connectivity

Two 5G NR Sub-6 modems, dual-SIM support, Wi-Fi 6 and GNSS dead reckoning provide resilient communications and continuous positioning for mission-critical routes.

High-Speed Interface Hub

Four Gigabit Ethernet ports plus one 2.5 Gigabit port, dual CAN, serial I/O, digital I/O, HDMI and audio connect onboard systems through rugged M12 interfaces.

Edge AI & Containers

An octa-core ARM platform, 6 TOPS NPU and Docker runtime support passenger analytics, driver monitoring, anomaly detection, video workloads and custom applications.

ITxPT + Rugged Design

ITxPT services, TPM-backed security, EN 50155 rail compliance, passive cooling and IP54 protection support dependable deployment on buses, trams and rail vehicles.

The OBC820 is a dual-5G onboard computer for public transport, rail and commercial fleets. It combines an octa-core ARM platform, 6 TOPS NPU, Wi-Fi 6, multi-GNSS dead reckoning and high-speed M12 Ethernet for resilient onboard networking and edge analytics.

Hardware

CPU	Octa-core ARM Cortex: 4× A72 @ 2.2 GHz + 4× A53 @ 2.0 GHz; 6 TOPS NPU
RAM / Storage	4 GB LPDDR4X / 64 GB eMMC 5.1
Cellular	2× 5G NR Sub-6 SA/NSA (3GPP Rel.16)
Wi-Fi / Bluetooth	Wi-Fi 6, 2.4/5 GHz, 2×2 MU-MIMO, AP/Client/Mesh; Bluetooth 5.0 + BLE
Ethernet	4× Gigabit Ethernet + 1× 2.5 Gigabit Ethernet, M12 X-coded female
GNSS	Dual-band L1+L5 GPS/BDS/Galileo/GLONASS/QZSS/NavIC; 6-axis IMU + DR
Vehicle Interfaces	2× CAN 2.0B, including FMS/J1939/OBD-II; 10× DI, 4× DO, 1× AI
Other Interfaces	1× RS232, 1× RS485, USB 2.0 Type-C for debug, HDMI, line-out, mic-in
SIM / Antenna	2×2 Nano-SIM; 2×4 cellular FAKRA-D, 2× Wi-Fi FAKRA-I, 1× GNSS FAKRA-C
Power	9–36 VDC isolated; typical 8 W, max 25 W; delayed ignition and surge protection
Operating Temperature	–25 to +70 °C; storage –40 to +85 °C
Standards / Certification	ECE R10/R118, ISO 16750; EN 50155, EN 50121-3-2, EN 61373 and EN 45545-2 listed as work in progress; CE, UKCA, FCC, E-Mark, ITxPT, RoHS
Protection / Dimensions	IP54; 223 × 181 × 66.2 mm; approximately 1.7 kg

Software

OS	Yocto Linux 5.0 LTS; Linux kernel 6.1; 10-year support
Containers / Edge AI	Docker 28.3; 6 TOPS NPU for containerized onboard AI workloads
Network Access	APN, VPDN; CHAP/PAP/MS-CHAP/MS-CHAP V2
Protocol & Application	IPv4/IPv6, DHCP server/client, DNS relay, DDNS, SSH, HTTPS, MQTT
Routing / WLAN	Static routing, RIP, OSPF, BGP; Wi-Fi 6 with WPA2/WPA3 and 802.11w PMF
Network Security	Stateful firewall, ACLs, NAT/NAPT, PAT, DMZ, port mapping; RBAC and audit logs
Data Security	TPM 2.0, PEM/PKCS#12/SCEP, signed firmware; IPsec, L2TP, OpenVPN, GRE, WireGuard
Reliability	Dual-cellular, dual-SIM and Wi-Fi backup; heartbeat, auto-redial, watchdog and offline buffering
ITxPT / Management	VCG, GNSS-Position, FMS, VehicleInfo, MQTT, SystemMonitoring; Connect Service OTA and diagnostics



OBC800

ITxPT-Ready On-Board Computer

All-in-One Interface Hub

Four Gigabit Ethernet ports, dual CAN 2.0B, RS232/RS485, digital I/O, USB Type-C, HDMI and audio connect ticketing, CCTV, sensors and vehicle diagnostics.

ITxPT-Ready Operations

VCG, GNSS-Position, FMS, VehicleInfo, MQTT and System Monitoring services support standardized integration with public-transport systems and fleet platforms.

Edge AI & Containers

The 6 TOPS NPU and Docker runtime support passenger counting, driver-behavior analysis, anomaly detection, video analytics and custom onboard applications.

5G + Wi-Fi 6

5G/LTE, dual-band Wi-Fi 6, dual-SIM failover and GNSS dead reckoning maintain connectivity and positioning across routes, tunnels and depots.

The OBC800 is an ITxPT-ready onboard computer for public transport, rail and commercial fleets. Its octa-core ARM platform, 6 TOPS NPU, 5G/LTE, Wi-Fi 6 and GNSS dead reckoning combine networking, telemetry and edge AI in one rugged unit.

Hardware

CPU	Octa-core ARM Cortex: 4× A72 @ 2.2 GHz + 4× A53 @ 2.0 GHz; 6 TOPS NPU
RAM / Storage	4 GB LPDDR4X / 64 GB eMMC 5.1; optional M.2 SATA3 SSD up to 2 TB
Cellular	5G NR Sub-6 SA/NSA (3GPP Rel.16) or LTE Cat 6, selectable by SKU
Wi-Fi / Bluetooth	Wi-Fi 6, 2.4/5 GHz, 2×2 MU-MIMO, AP/Client/Mesh; Bluetooth 5.0 + BLE
Ethernet	4× 10/100/1000 Mbps, M12 X-coded female
GNSS	Dual-band L1+L5 GPS/BDS/Galileo/GLONASS/QZSS/NavIC; 6-axis IMU + DR
Vehicle Interfaces	2× CAN 2.0B, including FMS/J1939/OBD-II; 10× DI, 4× DO, 1× AI
Other Interfaces	1× RS232, 1× RS485, USB 3.0 Type-C, HDMI, line-out, mic-in
SIM / Antenna	2× Nano-SIM; 4× cellular FAKRA-D, 2× Wi-Fi FAKRA-I, 1× GNSS FAKRA-C
Power	9–36 VDC isolated; typical 8 W, max 20 W; delayed ignition and surge protection
Operating Temperature	–25°C ~+70°C; storage –40°C ~+85°C
Standards / Certification	ECE R10/R118, ISO 16750; EN 50155, EN 50121-3-2, EN 61373 and EN 45545-2 listed as work in progress; CE, UKCA, FCC, E-Mark, ITxPT, RoHS
Protection / Dimensions	IP54; 223 × 181 × 66.2 mm; approximately 1.6 kg

Software

OS	Yocto Linux 5.0 LTS; Linux kernel 6.1; 10-year support
Containers / Edge AI	Docker 28.3; 6 TOPS NPU for containerized onboard AI workloads
Network Access	APN, VPDN; CHAP/PAP/MS-CHAP/MS-CHAP V2
Protocol & Application	IPv4/IPv6, DHCP server/client, DNS relay, DDNS, SSH, HTTPS, MQTT
Routing / WLAN	Static routing, RIP, OSPF, BGP; Wi-Fi 6 with WPA2/WPA3 and 802.11w PMF
Network Security	Stateful firewall, ACLs, NAT/NAPT, PAT, DMZ, port mapping; RBAC and audit logs
Data Security	TPM 2.0, PEM/PKCS#12/SCEP, signed firmware; IPsec, L2TP, OpenVPN, GRE, WireGuard
Reliability	Dual-SIM and cellular/Wi-Fi backup, heartbeat probes, auto-redial, watchdog, offline buffering
ITxPT / Management	VCG, GNSS-Position, FMS, VehicleInfo, MQTT, SystemMonitoring; Connect Service OTA and diagnostics

Selection Guide

Model	MDT600	OBC820	OBC800
CPU	Quad-Core Cortex-A72 + Quad-Core Cortex-A53, up to 2.0 GHz	Octa-core ARM Cortex: 4× A72 @ 2.2 GHz + 4× A53 @ 2.0 GHz	Octa-core ARM Cortex: 4× A72 @ 2.2 GHz + 4× A53 @ 2.0 GHz
RAM	8 GB or 4 GB LPDDR4, depending on SKU	4 GB LPDDR4X	4 GB LPDDR4X
Storage	256 GB UFS or 64 GB eMMC; M.2 SATA SSD up to 4 TB; microSD up to 256 GB	64 GB eMMC 5.1; no SSD expansion specified in the datasheet	64 GB eMMC 5.1; optional M.2 Key SATA3 SSD up to 2 TB
GPU / NPU	ARM Mali-G52 MC3 GPU; 6 TOPS INT8 NPU	ARM Mali GPU (OpenGL ES 3.2 / Vulkan 1.2); 6 TOPS NPU	ARM Mali GPU (OpenGL ES 3.2 / Vulkan 1.2); 6 TOPS NPU
Cellular	5G, 4G LTE Cat 6, or non-cellular, depending on SKU	Dual 5G NR Sub-6 (SA/NSA, 3GPP Rel.16)	5G NR Sub-6 (SA/NSA, 3GPP Rel.16) or LTE Cat 6, selectable by SKU
SIM Slot	2× 4FF Nano-SIM; optional eSIM	2×2 Nano-SIM; each cellular module supports dual-SIM single-standby	2× Nano-SIM, dual-SIM single-standby
Ethernet Port	1× M12 X-coded 1000 Mbps Ethernet	4× Gigabit Ethernet + 1× 2.5 Gigabit Ethernet, M12 X-coded female	4× Gigabit Ethernet, M12 X-coded female
Serial Port	1× RS232/RS485 on the 26-pin multi-function interface	1× RS232 + 1× RS485	1× RS232 + 1× RS485
USB Port	1× USB Type-C	1× USB 2.0 Type-C for debugging	1× USB 3.0 Type-C (data + 5 V/3 A)
CAN Bus	2× CAN 2.0 on the 26-pin multi-function interface	1× CAN 2.0B + 1× FMS CAN 2.0B, supporting J1939 / OBD-II	1× CAN 2.0B + 1× FMS CAN 2.0B, supporting J1939 / OBD-II
Digital I/O	6× DI + 4× DO on the 26-pin multi-function interface	10× DI (dry/wet contact) + 4× DO (open-collector, 200 mA) + 1× AI	10× DI (dry/wet contact) + 4× DO (open-collector, 200 mA) + 1× AI
Audio / HDMI	L/R audio, GND, and Mic-in on the 26-pin interface; HDMI not specified	Line-out stereo, Mic-in, optional driver intercom; 1× HDMI	Line-out stereo, Mic-in, optional driver intercom; 1× HDMI
Wi-Fi / Bluetooth	Wi-Fi 6 with AP/STA; Bluetooth 5.0	Wi-Fi 6 (802.11a/b/g/n/ac/ax), 2.4/5 GHz, 2×2 MU-MIMO, AP/Client/Mesh; Bluetooth 5.0 + BLE	Wi-Fi 6 (802.11a/b/g/n/ac/ax), 2.4/5 GHz, 2×2 MU-MIMO, AP/Client/Mesh; Bluetooth 5.0 + BLE
GNSS / DR	GPS L1 C/A/L5, Galileo E1/E5a, BDS B1I/B2a, GLONASS L1; 6-axis gyroscope;	Dual-band L1+L5 GPS, BDS, Galileo, GLONASS, QZSS, NavIC; 6-axis IMU + DR;	Dual-band L1+L5 GPS, BDS, Galileo, GLONASS, QZSS, NavIC;
	DR and accuracy not specified	Core Specifications state CEP ≤1.5 m, while Hardware Specifications state ≤1.0 m (source discrepancy)	6-axis IMU + DR; CEP ≤1.0 m and DR drift <2%
Antenna Connector	External-antenna cellular SKUs are available; connector types and counts are not specified	Cellular: 2×4× FAKRA D-coded; Wi-Fi: 2× FAKRA I-coded; GNSS: 1× FAKRA C-coded	Cellular: 4× FAKRA D-coded; Wi-Fi: 2× FAKRA I-coded; GNSS: 1× FAKRA C-coded
Indicators	Not specified in the datasheet; 4× backlit buttons are provided	Power, System, GNSS, 2× Cellular, 2× Signal, Wi-Fi, BLE	Power, System, GNSS, Cellular, Signal, Wi-Fi, BLE
Power Input	9–48 VDC wide-range input	9–36 VDC isolated input (24 V nominal), EN 7637-2 transient protection	9–36 VDC isolated input (24 V nominal), EN 7637-2 transient protection
Power Connector	VIN+, VIN–, and IGT on the 26-pin multi-function interface	5-pin M12 A-coded male: VIN1+, VIN1–, IGT, VIN2–, VIN2+	5-pin M12 A-coded male: VIN1+, VIN1–, IGT, VIN2–, VIN2+
Power Consumption	Maximum 25.94 W; normal 14.16 W; standby 1.224 W	Typical 8 W; maximum 25 W with 5G active	Typical 8 W; maximum 20 W with 5G active
Dimensions (W × H × D)	300 × 182 × 38 mm (datasheet order: W × D × H)	223 × 181 × 66.2 mm	223 × 181 × 66.2 mm
Weight	Approx. 1.51 kg	Approx. 1.7 kg	Approx. 1.6 kg
Mounting	VESA 75 × 75 mm	Wall-mounting	Wall-mounting
Enclosure / Cooling	Fanless conduction cooling	Anodized die-cast aluminum; passive fanless conduction cooling	Anodized die-cast aluminum; passive fanless conduction cooling
Operating Temperature	–30°C ~ +70°C	–25°C ~+70°C (EN 50155)	–25°C ~+70°C (EN 50155)
Storage Temperature	–40°C ~ +85°C	–40°C ~+85°C	–40°C ~+85°C
Operating Humidity	95% RH @ 60°C, non-condensing	5%–95% RH, non-condensing (EN 50155)	5%–95% RH, non-condensing (EN 50155)
Ingress Protection	IP65; IK08 impact rating	IP54	IP54
OS / Container	Android 14, Linux Debian 12, or Linux Yocto; container support not specified	Yocto Linux 5.0 LTS (Kernel 6.1); Docker 28.3	Yocto Linux 5.0 LTS (Kernel 6.1); Docker 28.3
Network Security / VPN	IPv4/IPv6, NAT, routing; IPsec/L2TP VPN and OpenVPN	Stateful firewall, ACL, NAT/PAT, TPM 2.0; IPsec, L2TP, OpenVPN, GRE, WireGuard	Stateful firewall, ACL, NAT/PAT, TPM 2.0; IPsec, L2TP, OpenVPN, GRE, WireGuard
Vehicle / ITxPT Protocols	ITxPT-aligned; FMS/J1939/OBD-II not specified	FMS/J1939/OBD-II; ITxPT VCG, GNSS-Position, FMS, VehideInfo, MQTT, SystemMonitoring	FMS/J1939/OBD-II; ITxPT VCG, GNSS-Position, FMS, VehideInfo, MQTT, SystemMonitoring
Compliance / Standards	CE, E-Mark, UKCA, FCC; EN 61373, EN 45545-2, ISO 16750-1/2, ECE R10, ECE R118;	CE (RED-DA), UKCA, FCC, E-Mark, ITxPT, RoHS; ECE R10, R118, ISO 16750 (WIP);	CE (RED-DA), UKCA, FCC, E-Mark, ITxPT, RoHS; ECE R10, R118, ISO 16750 (WIP);
	ITxPT-aligned	EN 50155 T1, EN 50121-3-2, EN 61373 Cat 1 Class B, EN 45545-2 HL2 (WIP)	EN 50155 T1, EN 50121-3-2, EN 61373 Cat 1 Class B, EN 45545-2 HL2 (WIP)



Vehicle Telematics Gateways

VT320 / VT310 / VT200

The VT series is a rugged and functionally capable vehicle telematics gateway. Integrating extensive interfaces, multiple diagnostic protocols and major IoT clouds, it delivers reliable vehicle data in some of the most challenging environments that involve severe cold or scorching heat, and/or water immersion, while remaining budget friendly.



VT320

Vehicle Telematics Gateway

Multiple Carrier Options

Access to multiple cellular networks and carriers, available with LTE CAT1, CAT M1, CAT4

Accurate Positioning

Accurate positioning of vehicle location with GNSS and LBS dual positioning

Major IoT Cloud Platforms

AWS, Azure, Wialon, ThingsBoard

Designed for Vehicles

Compliant with ISO 16750-3 random vibration, IP66 design, EMC level 3

The InVehicle T320 is a cost-effective, interface-rich, and powerful asset tracking product for logistics, engineering vehicles and other applications. With high-accuracy GNSS positioning, it helps track vehicles, monitor vehicle and driver status, and performs functions of historical track, electronic fence, abnormal alarms, etc.

Hardware

Cellular	LTE, CATM
Antennas	LTE FPC built-in antenna, GNSS ceramic built-in antenna
GNSS	GPS, GLONASS, Galileo, Beidou
Inertial Sensors	Built-in six-axis 3D gyroscope
Bluetooth	Bluetooth 4.1
Vehicle Features	2*CAN Bus, 1*J1708
I/O	1*RS485, 4*DI, 3*DO, 1*AI
Operating Voltage	9~48VDC
Power Consumption	0.55W
Battery	Ni-MH battery 1200mA
Operating Environment	-40°C~85°C
Dimensions	158*100*40mm
IP Rating	IP66

Software

Network Access	APN, VPDN
Cloud Platforms	AWS IoT, Azure IoT, Wialon, Traccar, GPSWox, WhiteLable Tracking, Thingsboard, Customer Private Cloud
Transport protocol	TCP, UDP, HTTP, MQTT, JT/T 808
Encrypted Communications	SSL/TLS
Vehicle Diagnostic Protocol	OBD-II, J1939, J1708, CAN bus and ELD data transparent transmission
Serial Port Protocol	Transparent, Modbus RTU
Event Alarm	Collision detection, Motion detection, Overspeed, IO change, ignition signal detection, etc.
Configuration	RS232 or Bluetooth
Certification	FCC, IC, PTCRB, AT&T, Verizon



VT310

Vehicle Telematics Gateway

Multiple Carrier Options

Access to multiple cellular networks and carriers, available with LTE CAT1 and CAT4

Accurate Positioning

Accurate positioning of vehicle location with GNSS and LBS dual positioning

Major IoT Cloud Platforms

AWS, Azure, Wialon ThingsBoard

Designed for Vehicles

Compliant with ISO 16750-3 random vibration, IP66 design, EMC level 3

The InVehicle T310 is a cost-effective, interface-rich, and powerful asset tracking product for logistics, engineering vehicles and other applications. With high-accuracy GNSS positioning, it helps track vehicles, monitor vehicle and driver status, and performs functions of historical track, electronic fence, abnormal alarms, etc.

Hardware

Cellular	LTE CAT1, CAT4
Antennas	LTE FPC built-in antenna, GNSS ceramic built-in antenna
GNSS	GPS/A-GNSS
Inertial Sensors	Built-in six-axis 3D gyroscope
Bluetooth	Bluetooth 4.1
Vehicle Features	2*CAN Bus, 1*J1708
I/O	1*RS232, 4*DI, 3*DO, 1*AI
Operating Voltage	9~48VDC
Power Consumption	0.55W
Battery	Lithium-ion battery 1200mA
Operating Environment	-40°C~85°C (mains powered), -20°C ~ 60°C (battery powered)
Dimensions	141*82*35mm
IP Rating	IP66

Software

Network Access	APN, VPDN
Cloud Platforms	AWS IoT, Azure IoT, Wialon, Traccar, GPSWox, WhiteLable Tracking, Thingsboard, Customer Private Cloud
Transport Protocol	TCP, UDP, HTTP, MQTT, JT/T 808
Encrypted Communications	SSL/TLS
Vehicle Diagnostic Protocol	OBD-II, J1939, J1708, CAN bus and ELD data transparent transmission
Serial Port Protocol	Transparent, Modbus RTU
Event Alarm	Collision detection, Motion detection, Overspeed, IO change, ignition signal detection, etc.
Configuration	Serial Port or Bluetooth
Certification	CE, FCC, IC, PTCRB, E-Mark



VT200

Vehicle Telematics Gateway

Accurate Positioning

Supports all satellite augmentation systems: GPS, Galileo, GLONASS, BeiDou

Multiple Interfaces

RS232, RS485, CAN, I/O

Major IoT Cloud Platforms

AWS, Azure, Wialon, ThingsBoard

Various Application Scenarios

Fleet management, asset location, and telematics

The InVehicle T200 integrates LTE, GNSS, gyroscope and inertial sensors with a multi-tasking system to precisely locate vehicle position in real time, record mileage, monitor accidents such as emergency braking, acceleration and collision, maintain transportation safety, locally record and analyze driving behavior.

Hardware

Cellular	LTE CAT1, CATM, CAT4
Antennas	LTE FPC built-in antenna, GNSS ceramic built-in antenna or external SMA interface antenna
GNSS	GPS, GLONASS, Galileo, Beidou
Inertial Sensors	Built-in six-axis 3D gyroscope
Vehicle Features	1*CAN Bus
I/O	1*RS232, 1*RS485, 4 *DO/AI
Operating Voltage	9~36VDC
Battery	Lithium-ion battery 1000mA
Operating Environment	-40°C~85°C (mains powered), -20°C~ 60°C (battery powered)
Dimensions	98.6*62*23.5mm
IP Rating	IP40

Software

Network Access	APN, VPDN
Cloud Platforms	AWS IoT, Azure IoT, Wialon, Traccar, GPSWox, WhiteLable Tracking, Thingsboard, Customer Private Cloud
Transport protocol	TCP, UDP, HTTP, MQTT, JT/T 808
Encrypted Communications	SSL/TLS
Vehicle Diagnostic Protocol	OBD-II, J1939, CAN bus and ELD data transparent transmission
Serial Port Protocol	Transparent, Modbus RTU
Event Alarm	Collision detection, Motion detection, Overspeed, IO change, ignition signal detection, etc.
Configuration	USB Type-C
Certification	CE, FCC, IC, PTCRB, E-Mark

Selection Guide

	Model	VT320	VT310	VT200
System	CPU	ARM Cortex -M4	ARM Cortex -M4	ARM Cortex -M4
	RAM	320KB SRAM	320KB SRAM	512KB SRAM
	Storage	4MB/32MB NOR Flash	4MB/32MB NOR Flash	4MB NOR Flash
Interfaces	Ethernet	-	-	-
	Serial	1*3PIN RS232, 1*2PIN RS485	1*3PIN RS232 , 1*2PIN RS485 multiplexed with J7108	1*3PIN RS232, 1*2PIN RS485
	4G	NAMC LTE CATM1, built-in antenna	APAC/EMEA/NAMC CAT1/CAT4, built in antenna	CAT1/CANTM, built-in antenna / external
	5G	-	-	-
	GNSS	Beidou, GPS, GLONASS, Galileo Inertial navigation	GPS/A-GNSS / Beidou, GPS, GLONASS, Galileo Inertial navigation	Beidou, GPS, GLONASS, Galileo Inertial navigation
	Wi-Fi	Build-in antenna / external 1*SMA	Build-in antenna / external 1*SMA	Build-in antenna / external 1*SMA
	Bluetooth	Bluetooth 4.1	Bluetooth 4.1, built-in antenna	-
	SIM Card	1*SIM 2FF (push-in slot)	1*SIM (push-in slot)	1*SIM 4FF (push-in slot)
	IO	1*AI, 3 x DO, 4 x DI	1*AI, 3*DO, 4*DI	2*DO, 4*AI/DI
	Audio and Mic	-	-	-
	1-Wire	1*2PIN 1-Wire	1*2PIN 1-Wire	1*2PIN 1-Wire
	CAN/LINE/J1708	2*2PIN CAN 2.0B, 1*2PIN J1708	2*2PIN CAN 2.0B 1*2PIN J1708	1*2PIN CAN 2.0B
	IGT/ACC	1*IGT/ACC	1*IGT/ACC	1*IGT/ACC
	USB	-	-	USB Type-C
	Reset	YES	YES	YES
	Grounding	YES	YES	YES
Operating Temperature	Operating Humidity	5 ~ 95% (non-condensing)	5 ~ 95% (non-condensing)	5 ~ 95% (non-condensing)
	Storage Temperature	-40℃ ~ 85℃	-40℃ ~ 85℃	-40℃ ~ 85℃
	Operating Temperature	-20℃ ~ 60℃ (with 1000mAh lithium battery)	-20℃ ~ 60℃ (with 1200mAh lithium battery)	-20℃ ~ 60℃ (with 1000mAh lithium battery)
	Temperature	-30℃ ~ 70℃ (without battery)	-30℃ ~ 70℃ (without battery)	-30℃ ~ 70℃ (without battery)
Power Supply	Power Input	9-48VDC	9-48VDC	9-36VDC
	Power Connector	20PIN terminal block	26PIN automative connector	20PIN terminal block
	Reverse Polarity Protection	YES	YES	YES
	Overcurrent protection	YES	YES	YES
Physical Characteristics	Installation	Wall	Wall 1	Tie bundle
	Dimensions(L*D*H mm)	158*100*44 mm	41*82*35 mm	108.3*62*23.5 mm
	Enclosure	PC, ABS	PC, ABS	PC, ABS
	IP Rating	IP66	IP66	IP40
	Weight	120g	152g	120g
	Vibration	ISO16750-3	ISO16750-3	ISO16750-3
EMC	EMC Level	Level 2	Level 3	Level 2
Vehicle	Road Vehicle Standard Rail	-	-	-
Standard	Vehicle Standard	-	-	-
Certification		FCC, IC, PTCRB, AT&T, Verizon	CE, E-Mark, FCC, IC, PTCRB, RoHS	CE, E-Mark, FCC, IC, PTCRB, RoHS

InVision ADAS Solution

Smarter vision, safer journeys

Automated drive
Destination: 50° 43' 50.34" N 6° 10' 55.294" E
Arrival: 08:55 pm - Distance 783 miles
TCP/IP: 192.56.327.684.1
SYNC: enabled | Sensors: active | Cameras: active

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InVision ADAS Solution

InVision ADAS with edge AI and intuitive driver interaction, built to protect drivers and empower fleets.

AI-enabled ADAS



AI ADAS with real-time alerts



Smart MDT for drivers & Fleets



Fleet management & Training tools



HD video for driver protection



Instant event alerts & Coaching



Vehicle telematics & Gateway functions



FCW Forward Collision Warning



LDW Lane Departure Warning



BSD Blind Spot Detection

AI-enabled ADAS



MDT



CPU ARM A72+A53 8Core, NPU, 6 TOPS



Cellular 5G



8GB RAM, 256GB Storage



Wi-Fi 6 & BLE



Linux or Android



IP65,-30~70 °C

AI Dashcams



DMS Camera

- 1/3" CMOS sensor with Full HD 1080p clarity
- 0.01 Lux low-light performance
- Auto shutter, exposure, and white balance
- 6 mm lens field of view
- 940 nm infrared night vision
- Easy in-vehicle mounting



ADAS Camera

- 1/2.9" CMOS sensor with AHD 1080p resolution
- 0.1 Lux low-light performance for clear visibility
- Auto white balance and wide dynamic range
- 6 mm lens with 50° horizontal view
- Waterproof M12 aviation connector
- 12 V DC power supply for stable operation



Surround-view Camera

- 1MP AHD sensor with HD 720p clarity
- 210° ultra-wide field of view
- 0.01 Lux low-light performance
- Auto white balance and WDR
- 1.6 mm lens, waterproof M12 connector
- Stable 12 V DC power supply



Smart Fleet

Smart Fleet

The intelligent fleet management system delivers unparalleled value with real-time tracking, historical playback, and timely safety alerts. Geofencing controls regional activities, and vehicle health monitoring supports preventive maintenance. Its open, customizable platform adapts to diverse needs, ensuring long-term scalability. These features enhance efficiency, safety, and user experience, providing a sustainable tech foundation for future growth.



Smart Fleet

Vehicle management

GPS tracking
real-time monitoring
of vehicle location and
information

Alerts

The Smart Fleet provides instant
notifications, including support for
push notifications, emails,
and other methods

Devices

The platform can manage
and OTA upgrade the
hardware of the in vehicle
gateway

Private deployment

The software provides private
deployment, install and run systems
on their own servers, providing highly
customized solutions

The intelligent fleet management system delivers exceptional value to customers by offering real-time tracking, historical trajectory playback, and proactive safety alerts through alarms and notifications. The system's customizability and scalability cater to diverse needs, ensuring long-term adaptability and a robust technological foundation for future growth, enhancing operational efficiency and user experience.

The **Smart Fleet system** is a highly integrated system that provides comprehensive services and monitoring through various functional modules.



Real-time Location Tracking

The system can monitor and display the vehicle's location in real-time, supporting various map services



Historical Trajectory Playback

The system records and allows users to replay the vehicle's historical driving trajectory, offering time selection and speed control



Alarms and Notifications

The system supports various types of alarms and can send notifications in real-time through different channels.



Geofencing

Creates virtual geofences to monitor the vehicle's entry and exit of specific areas, providing notifications and reports.



Vehicle Status Monitoring

Monitors the vehicle's engine status, fuel consumption, and other information, supporting protocols such as J1939 and OBD



Vehicle Health Monitoring

Monitors the vehicle's condition in real-time to assist with preventive maintenance.



Device and Protocol Support

Compatible with various devices and protocols, supporting OTA and batch upgrades.



Custom Reports

Provides predefined reports and allows users to customize reports based on specific monitoring needs.



Access Control and Permissions

Supports multi-level user permissions to ensure appropriate access rights and data security and privacy



Openness and Customizability

Provides APIs to allow users to customize and extend system functions.



Platform Access Capability

Supports more than 50,000 concurrent connections, compatible with MQTT or TCP protocols.



Application Module Expansion

Supports the integration of new modules, such as the integration and display of sensor and video information

Applied to various sectors



5 Major R&D Centers

Rapid Response to Market Demands



2 Major Manufacturing Centers

Supply Chain: Ensured Production Capacity and Quality



2 Manufacturing Centers
Jiaxing (China)
Toronto (Canada)

15 high-efficiency
production lines

11w+ monthly capacity

4 Major Warehousing and Technical Support Centers

Multi-location Warehousing and Technical Support



Used worldwide. Proven worldwide.



Canada
Management of
Hydropower Station



Germany
Smart
EV Charging Kiosks



China
Predictive Maintenance
of Air Compressors



US
Predictive Maintenance
of Generators



Switzerland
Predictive Maintenance
of Textile Machines



Thailand
Flood Early Warning



Australia
Wireless Water Metering