InHand Networks

High-performance, Powerful, Programmable

VG710 Vehicle Gateway

· 5G/LTE · Wi-Fi 5 · GNSS · M12 Connector



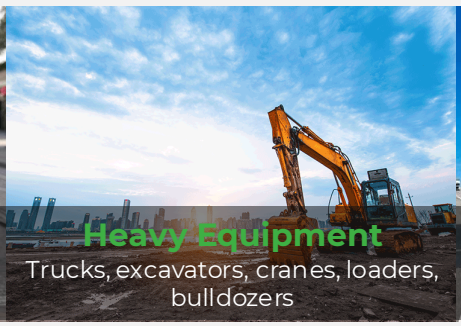
VG710 seamlessly blends beauty and functionality, providing swift, secure network access for diverse vehicles and transportation services. From heavy equipment to law enforcement and ambulances, it caters to various needs while complying with ITxPT regulations through its M12 Ethernet interface.

The InVehicle G710 has industrial grade hardware platform, high-speed Wi-Fi and 5G/LTE WAN to provide fast, reliable and secure network access for vehicles and vehicle mounted devices. It supports CAN bus for real-time collection of vehicle data; built-in advanced satellite navigation system for continuous accurate positioning; combining with remote analysis software, it supports monitoring of dangerous driving behaviors.

The gateway is embedded with powerful edge computing capability and supports fast custom development by Python and C/C++. It also supports MS Azure and AWS IoT clouds.



Public Transport
Buses, long-distance coaches



Heavy Equipment
Trucks, excavators, cranes, loaders, bulldozers



Logistics
Asset tracking, cold chain



Public Safety
Law enforcement vehicles, fire trucks, waste collection vehicles

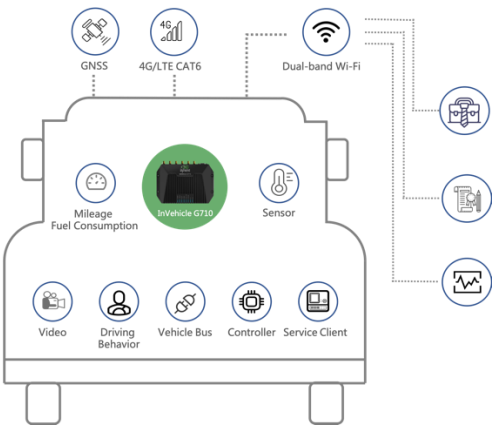


First Aid
Ambulances, Tele-health Vehicles



Special Goods
Hazardous goods, vaccines, livestock

Solution





Features and Advantages

Global satellite positioning

72-channel high-precision high-sensitivity global satellite positioning system, tracks vehicle locations precisely at any time anywhere..

Global satellite position

GPS L1 and L5, multi-constellation mode supports simultaneous reception of GPS, BDS, Galileo, QZSS, and GLONASS satellite signals. Capability allows for tracking multiple visible satellites, significantly reducing multi-path effects in urban canyons, reducing signal acquisition time, and improving positioning accuracy.

Inertial navigation

Integrates inertial navigation system. When GNSS positioning becomes inaccurate due to weak signal, no signal or multi-path effect, the gateway will still provide excellent positioning accuracy, enabling continuous accurate tracking of the vehicle.

Driving behavior monitoring

Integrated 3D accelerometer and gyroscope can help to monitor in real time dangerous driving behaviors like rapid acceleration, sudden braking and sharp turns, as well as collision events. This will help to reduce accidents, protect personnels and cargoes safe with preventive measures, and finally reduce operation losses and improve customer satisfaction.

Vehicle diagnostics collection

Integrates multiple interfaces including OBD-II and J1939 to collect vehicles diagnostics, and API interface to upload the data to the application platform in real time. By analyzing the diagnostic data, the application platform can timely detect health issues of vehicles, shorten response duration.

Edge computing

Outstanding edge computing capabilities extend analytical calculation to the network edge within the vehicle, improving the efficiency of data processing, which meets the basic need for real-time business and application intelligence in the Internet of Vehicles (IoV) industry. Supports Node-RED Low-code edge computing solutions.

Fleet management platform

Supports access to InHand or a 3rd-party fleet management platform to perform: task assignment, route planning, vehicle tracking, real-time messaging, geofencing, etc.

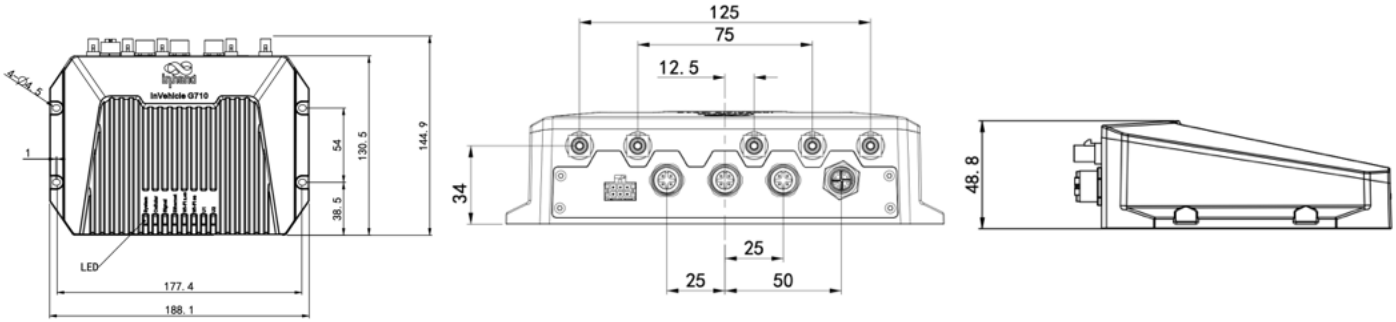
Developer features

The comprehensive secondary development platform opens key system resources to users, facilitating fast development and deployment of custom applications. Integrating cloud-end IoT SDK, enables quick building of AWS, Azure and other mainstream clouds based applications.

Designed for vehicles

Designed for challenging operating environments in vehicles. Industrial-grade processor chip ensures continuous operation on-board vehicles. IP64 protection, resistant to challenging conditions like water splash, dust, shock, vibration, damp heat and high and low temperatures.

Dimensions (mm)



Product Specifications

VG710 Hardware Specifications			
Hardware Platform			
CPU	ARM Cortex A7	RAM	1 GB DDR3
FLASH	8GB eMMC	Main Frequency	717 MHz
Satellite Navigation			
GNSS Receiver	GPS L1 C/A+L5, BDS, Galileo, GLONASS, QZSS		
Built-in Sensor	IMU, Three axis gyroscope and three-axis accelerometer, DR		
Positioning Deviation	CPE 50% 1m	SBAS	WAAS、EGNOS、MSAS、GAGAN
Tracking Sensitivity	Capture: -145 dBm Tracking: -165 dBm Recapture: -157 dBm	Location Update Rate	GNSS :1 Hz IMU :100 Hz
Interfaces			
Cellular	5G、LTE CAT6 、LTE CAT4		
Ethernet	3 x M12 D-coded 10/100 Mbps		
	1 x M12 X-coded 10/100/1000 Mbps		
Antenna	Cellular 4 or 2 x FAKRA D-coded, Wi-Fi 2 x FAKRA I-coded GNSS 1 x FAKRA C-coded		
Indicator	System, Cellular, Signal, GNSS, Wi-Fi 2.4G, Wi-Fi 5G, U1, U2		
Wi-Fi			
Frequency	2.4 / 5GHz dual-band	Protocol	Wi-Fi 5
Maximum Output	2.4G: 17dBm; 5G:17dBm	Mode	AP / Client
Other Interfaces			
Automotive Interfaces	CAN Bus [2 pins], CAN2.0	I/O	1 x AI/DI
Power Supply			
PIN Definition	V+, V- , IGT (8pins)		
Input Voltage	9-36VDC [configurable to 7-36VDC]		
Protection	Built-in voltage transient protection, with delayed ignition induction		
Operating Power	6.44W - average when RF module not running at full load		
Mechanical Features			
Installation	Wall-mounting	Protection Rating	IP64
Cooling	Radiation cooling	Housing	Die-cast aluminum
Dimensions (W*D*H)	188.1*104.5*48.8 (mm)	Real Time Clock	Supported
SIM Card Slot	Dual SIM	SIM Card Spec.	2FF
Weight	974g		
Environment			
Operating Temp.	-30 °C ~ +70 °C -22 °F ~ +158 °F	Storage Temp.	-40 °C ~ +85 °C -40 °F ~ +185 °F
Humidity	95% RH @ 60°C		
Vehicle			
Vehicle Standard	ECE-R118, IEC60068-2-31	Rail Standard	EN50155, EN50121 EN61373, EN45545
EMC	Level 3 (EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-18)		
Physical			
Shock	IEC60068-2-27	Vibration	IEC60068-2-6
Free Fall	IEC60068-2-32		
Certification			
Certification	CE, E-Mark, ITxPT, FCC, IC, PTCRB, RoHS, VZW, AT&T, TMO		

VG710 Software Specifications			
Network Connection			
Network Access	APN, VPDN	LAN Protocol	ARP, Ethernet
Access Authentication	CHAP/PAP/MS-CHAP/MS-CHAP V2		
Network Protocols			
IP Application	IPv6,Ping, Traceroute, DHCP server/relay/client, DNS relay, DDNS, Telnet, SSH, HTTP, HTTPS, TFTP, FTP, SFTP, Portal		
IP Routing	Static routing, RIP, OSPF, BGP, IGMP Proxy		
Network Security			
Firewall	SPI, DoS attack defense, multicast/Ping probe filter, ACLs, Supports NAT, PAT, DMZ, port mapping, virtual server		
User Level	2 levels: administrator; read-only user		
AAA	Local authentication, Radius, Tacacs+, LDAP		
CA Certificate	PEM, PKCS12, SCEP		
VPN	IPSec VPN, L2TP, GRE, OPENVPN, CA		
Reliability			
Backup	Floating routing, VRRP, interface backup		
Link Detection	Sends heartbeat packet to detect, auto redial when disconnected		
Watchdog	Runs self-detection and auto-repairing of device faults		
Offline Storage	Built-in cache, records key data when network unavailable		
Ports			
VLAN Partition	Supported	Port Mirroring	Supported
WLAN			
Protocol	IEEE802.11 b/g/n/a/ac		
Security	Shared key, WPA/WPA2 authentication, WEP/TKIP/AES encryptions		
Network Management			
Configuration	Local or remote HTPP, HTTPS, Telnet, SSH		
Upgrade	Local or remote WEB, DM, TFTP, FTP, SFTP server		
AAA	Local / Radius / TACACS +		
Network Diagnostics	Ping, Traceroute, Sniffer (network packet capturing tool)		
Edge Computing Framework			
Edge Computing Platform	An edge computing platform integrating network, computing, storage and applications		
Programmable	Python, C/C++ & Docker		
SDK	Python 3 SDK, Docker SDK and Azure IoT Edge SDK		
IDE	Visual Studio Code		
IoT Architecture	Supports MQTT, DDS, AMQP, XMPP, JMS, REST, CoAP		
3rd Party Cloud	MS Azure, SmartFleet and development APIs for other third-party platforms		
Docker Images	Node-RED, Ubuntu, Docker for ARM 32, etc.		
Application Services			
Fleet Management Cloud	InHand SmartFleet cloud platform: task allocation, route planning, vehicle tracking, real-time messaging, geofencing, batch firmware upgrade, batch configuration backup, application upgrade		
Vehicle Telemetry	Rich interfaces for vehicle telemetry and asset tracking devices		
Event Alarm	Customizable event alarms: digital input, network, service status, power supply, temperature, voltage, etc.		
Message Push	SMS, Email, App, device digital output		

Ordering Guide

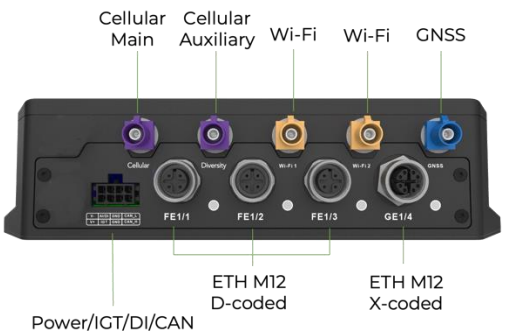
Model	Model code: VG710-<M/NA>-<WMNN> <WMNN>: Cellular Type & Module	UE Category	Region
VG710-M-FQ58	LTE-FDD Band 1/3/7/8/20/28A LTE-TDD: B38/B40/B41 WCDMA: B1/B8 GSM: B3/8	LTE CAT4	EMEA , APAC
VG710-M-FQ09	LTE-FDD B1/ 2/ 3/ 4/ 5/7/ 8/ 12/ 13/ 14/ 17/ 18/19/ 20/ 25/ 26/ 28/ 29/ 30/ 32/ 66/ 71 LTE-TDD B34/ 38/ 39/ 40/ 41/ 42/ 43/46 (LAA)/ 48 (CBRS) WCDMA B1/ 2/ 3/ 4/ 5/ 6/ 8/ 19	LTE CAT6	Global
VG710-M-NRQ5	5G NSA n1/2/3/5/7/8/12/13/14/18/20/25/26/28/29/30/38/40/41/48/66/70/71/75/76/77/78/79 5G SA n1/2/3/5/7/8/12/13/14/18/20/25/26/28/29/30/38/40/41/48/66/70/71/75/76/77/78/79 LTE-FDD B1/2/3/4/5/7/8/12/13/14/17/18/19/20/25/26/28/29/30/32/66/71 LTE-TDD B34/38/39/40/41/42/43/48 LAA 46 WCDMA B1/2/4/5/8/19	5G	Global
VG710-M-EN00	NONE	-	Global

Accessories

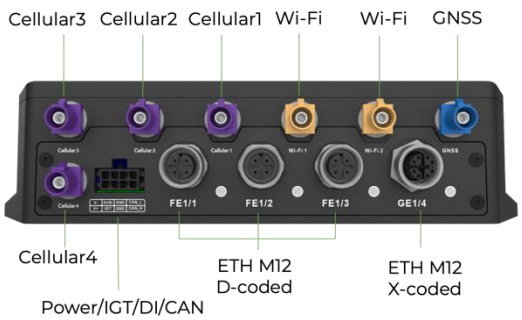
Antenna	Order Code	Specifications
4G FAKRA Antenna	AANT090038	4G Antenna Adhesive Patch FAKRA Purple connector, Cable length 2000mm.
5G FAKRA Antenna	AANT110017	5G Antenna Adhesive Patch FAKRA Purple connector, Cable length 2000mm
Wi-Fi FAKRA Antenna	AANT060024	Wi-Fi/BLE 2.4-2.5GHz 5-5.8GHz Antenna FAKRA Beige connector. Cable length 2000mm.
GNSS FAKRA Antenna	AANT040013	GPS L1 1575.42MHZ & BD 1561.098MHz &GLONASS 1602MHz. Cable length 2000mm.

Cable	Order Code	Specifications
VG710-M12 Version Power Cable	SCAB000564	VG710-M12 Version Power Cable, 8PIN, 2000mm.
Network Cable M12 X to RJ45	AETH050002	Network Cable M12 X to RJ45 , Cable length 1000mm

Connector Pin



4G Version VG710-M-FQ09



5G Version VG710-M-NRQ5

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.

InHand Networks

3650 Concorde Pkwy, Suite 200
Chantilly, VA 20151, USA

T: +1 (703) 348-2988
E: info@inhand.com
www.inhand.com

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