InHand Networks

High-performance, All in one, Hardened

InVehicle G810 Series

Cellular Gateway for Railway

The InVehicle G810 cellular gateway provides high-speed and secure network access for public transportation, including bus, tram, metro, light rail and train.

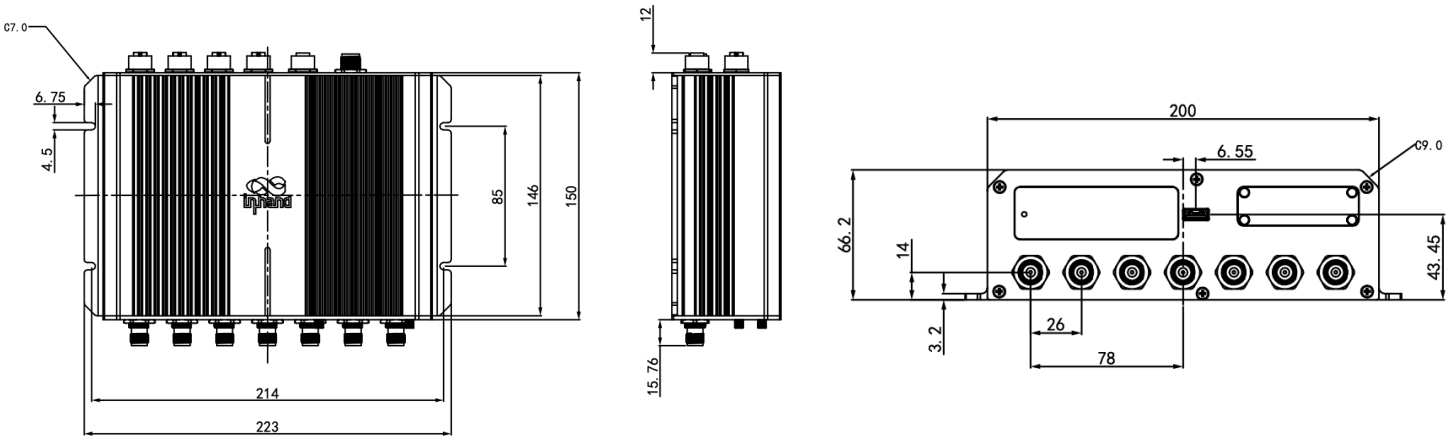
Its all in one design integrates high-speed Wi-Fi, LTE Advanced, Gigabit Ethernet and CANBus to provide fast, reliable and secure network access for in-vehicle networking and Internet connectivity.

The gateway is embedded with powerful edge computing capability and supports fast custom application development by using Python or Docker. It also supports Microsoft Azure and AWS IoT cloud platform integration.

The TNC RF connectors and M12 connectors are specially designed for rail environment.

Applications

- Fleet Management & Telematics
- Passenger Wi-Fi
- Passenger Infotainment
- Public Transport ITS



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Product Specifications

InVehicle G814 Hardware Specifications			
Core			
CPU	ARM Cortex A7 (quad-core)	Frequency	717MHz
RAM	1GB DDR3L	FLASH	8GB eMMC
Cellular			
UE Category	LTE CAT6/CAT4	SIM	2 x Mini SIM 2FF
MIMO	2 x 2	Antenna Connector	TNC
GNSS			
GNSS Receiver	GPS, GLONASS, Galileo, Beidou	Antenna Connector	TNC
Dead Reckoning	Supported with builtin sensors (accelerometer and gyroscope)		
Accuracy	2.5m CEP		
Sensitivity	-160dBm	Location Update Rate	MAX 10Hz
Wi-Fi			
Frequency	2.4G / 5GHz dual-band	Protocol	Wi-Fi 5
Maximum Output	2.4G: 17dBm 5G: 17dBm	Working Mode	AP / Client
MIMO	2 x 2	Antenna Connector	TNC
Ethernet			
Ports	4 x Gigabit Ethernet	Connector	M12 X-Coded female
CANBus			
Standard	1 x CAN 2.0B	Connector	M12 A-Coded female
USB			
Standard	1 x USB 3.0	Connector	Type A
IO			
DI	11 x digital input		
DO	7 x digital output		
Additional Interfaces			
CANBus	1 x CAN 2.0B		
RS485	1	RS232	2
LED			
Indicator	System, Cellular, Signal, GNSS, Wi-Fi 2.4G, Wi-Fi 5G		
Power Supply			
Power Connector	M12 A-Coded male		
Pin Definition	V+, V-, NC (4 pins)		
Input Voltage	9-36VDC		
Mechanical			
Mounting	Wall mounting	Ingress Protection	IP40
Cooling	Fanless cooling	Enclosure	Aluminum
Dimensions (W x H x D)	223 x 178 x 66.2 mm	Weight	TBD
Environmental			
Operating Temperature	-30 °C ~ +70 °C	Storage Temperature	-40 °C ~ +85 °C
Humidity	95% RH @ 40°C		
Compliance			
Rail Standard	EN50155, EN45545-2, EN50121-3-2, EN61373 （In progress）		
Certification	CE, RoHS, E-Mark （In progress）		

InVehicle G814 Software Specifications			
Network Connection			
Network Access	APN, VPDN	LAN Protocol	ARP, Ethernet
Access Authentication	CHAP/PAP/MS-CHAP/MS-CHAP V2	VLAN	Supported VIDs: 1-127
Network Protocols			
IP Application	Ping, Traceroute, DHCP server/relay/client, DNS relay, DDNS, Telnet, SSH, HTTP, HTTPS, MQTT		
IP Routing	Static routing, RIP, OSPF, BGP		
Network Security			
Firewall	SPI, DoS attack defense, multicast/Ping probe filter, ACLs Supports NAT, NAPT, DMZ, port mapping		
User Level	2 levels: administrator; read-only user		
AAA	Local authentication, Radius, TACACS+, LDAP		
Certificate	PEM, PKCS12, SCEP, CRL		
VPN	IPsec VPN, OpenVPN, L2TP, GRE		
Reliability			
Redundancy	Floating Static Routes, VRRP, interface backup		
Link Detection	Configurable target reachability detection to aid failover		
Watchdog	Auto recovery from device faults		
Offline Storage	Records key data to built-in storage when network is unavailable		
WLAN			
Protocol	IEEE802.11 a/b/g/n/ac		
Security	Shared key, WPA/WPA2 Personal/Enterprise authentication WEP/TKIP/AES encryption		
Network Management			
Configuration	HTPP, HTTPS, Telnet, SSH		
Upgrade	WebUI, Device Manager		
Network Diagnostic	ping, traceroute, tcpdump, speed test		
Edge Computing Framework			
Computing Platform	Integrates network, computing, storage, runtime and application hosting		
Computing Engine	Python & Docker		
SDK	Python 3 SDK, Docker SDK and Azure IoT Edge SDK		
IDE	Visual Studio Code for APP development and debugging		
Application Programming Interface	FlexAPI over MQTT/HTTP/TCP		
Cloud Integration	Microsoft Azure, AWS IoT and other third-party platforms supported		
Applications			
Fleet Management	All in one design yet programmable with open interfaces. It's one stop hardware & software solution for your Fleet Management		
Vehicle Telematics	Rich interfaces and data such as GNSS, OBD-II, J1939, Modbus, IO for vehicle telematics and asset tracking		
Passenger Wi-Fi & Infotainment	Increase passenger satisfaction by high speed and stable Internet connectivity for content delivery, along with seamless Wi-Fi experience		
Public Transport ITS	Ensure passenger and driver safety, improve operational efficiency and emission reduction to form a green, safe and sustainable society		

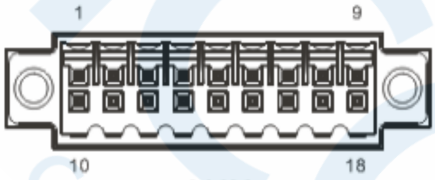
Connector Pin Assignment

PWR	PIN	Signal
	1	VIN+
	2	NC
	3	VIN–
	4	NC

FMS	PIN	Signal
	1	CAN_H
	2	CAN_L
	3	GND
	4	NC

EXT

PIN	1	2	3	4	5	6	7	8	9	10
Signal	GND	DO2	DO4	DO6	GND	RS232_RX1	RS232_RX2	GND	CAN_L	RS485_A
PIN	11	12	13	14	15	16	17	18	19	20
Signal	GND	DO3	DO5	DO7	GND	RS232_TX1	RS232_TX2	GND	CAN_H	RS485_B



AUX

PIN	1	2	3	4	5	6	7	8	9
Signal	DI1	DI2	DI3	DI4	DI5	DI6	DI7	DI8	GND
PIN	10	11	12	13	14	15	16	17	18
Signal	GND	GND	GND	GND	DI9	DO1	DI10	DI11	GND

Ordering Guide

Model	Cellular Type	UE Category	CANBUS	GNSS	Wi-Fi	Antenna Connector	Region
VG814-FS59-W-G-R	LTE-FDD Band 2/4/5/12/13/17/29 UMTS/HSPA+ Band 2/4/5 GSM/GPRS/EDGE 850/900/1800/1900MHz	Cat 6	2	√	√	TNC	Europe Africa APAC Ocenia
VG814-FS59-W-G-V	LTE-FDD Band 2/4/5/12/13/17/29 UMTS/HSPA+ Band 2/4/5 GSM/GPRS/EDGE 850/900/1800/1900MHz	Cat 6	2	√	√	FAKRA	Europe Africa APAC Ocenia
Example:	VG814-FS59-W-R contain Wi-Fi 5, 4GE-M12, 1FMS, EXT:2*RS232, 1*RS485, 6*DO 1*CAN2.0B AUX :11*DI 1*DO，ITxPT，TNC Antenna Connector						

About Us

InHand Networks is a global leader of Industrial IoT, with a record of tremendous success following groundbreaking innovation since our inception in 2001.

InHand serves world-class partners and customers with industrial M2M routers, gateways, industrial Ethernet switches, rugged computers and IoT management platforms. We provide IoT solutions for various vertical markets including Smart Grid, Industrial Automation, Remote Machine Monitoring, Smart Vending, Smart City, Retail and more.

Proudly bearing the marks of both Rockwell Automation Encompass Product Partner in Asia-Pacific and Schneider Electric CAPP Technology Partner, InHand Networks defines industrial innovation and reliability.

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