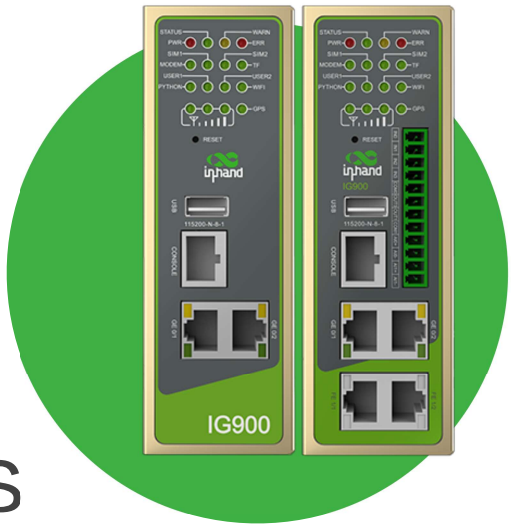
InHand Networks



High Performance, Multiple Industrial Protocols,
Fast Custom Development

InGateway902 Series

Industrial Edge Computing Gateway

The new IIoT edge computing gateway provides uninterrupted Internet access for machines over ubiquitous 3G/4G wireless networks and multiple broadband services. With powerful edge computing capabilities, comprehensive security protection and wireless services, InGateway902 can support device networking of up to 10,000 levels, providing high-speed data channels in the true sense of device informatization.

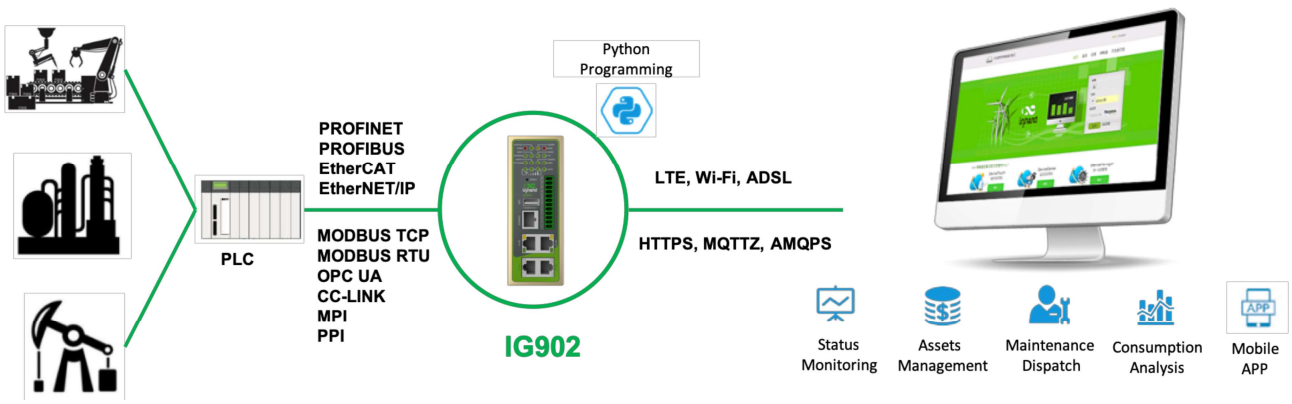
InGateway902 features powerful edge computing capabilities. It realizes data optimization, real-time response, agile connection and intelligent analysis on the IoT edge, significantly reduces the data flow between field sites and data center, and avoid bottlenecks of cloud-end computing.

The edge computing gateway IG902 will help customers to optimize network architecture, enable more secure, responsive, and intelligent services on manufacturing sites.

IG902 edge computing gateway is ideal for networking machines on distributed IIoT sites and aggregating data to cloud-end applications, e.g.:

- Industrial equipment intelligence
- Industrial robot
- CNC machine
- Air compressor
- HVAC system
- Packaging, food, medicine manufacturing machineries
- Automated production line
- Energy: Oil & Gas, distributed PV, wind turbine
- Public utilities: heating, water, natural gas
- Smart agriculture, etc.

Application Case

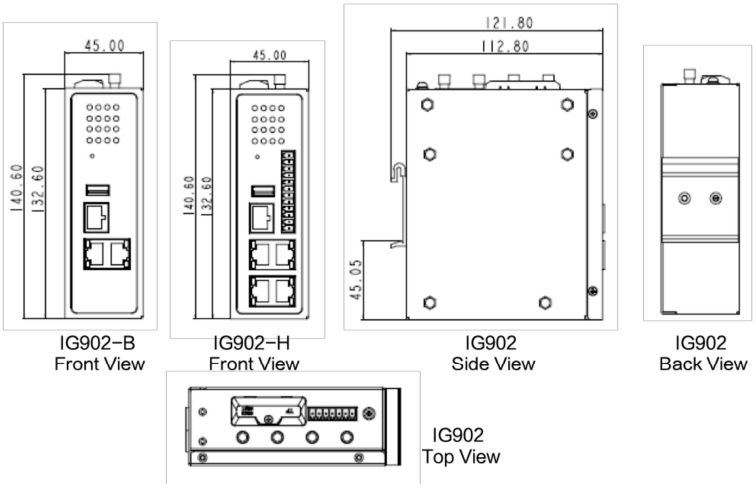


Features and Advantages

+ Support 4G LTE CAT4 & CAT1
+ Built-in redundancies: dual SIM card, link backup, VRRP hot standby, ensuring uninterrupted network communications
+ Powerful computing performance, providing high-performance processing resources for edge computing
+ Supports a variety of industrial real-time Ethernet protocols and field bus protocols, compatible with a wide range of industrial equipment
+ Support Python development, for developing user custom applications
+ Support industrial cloud platforms: Microsoft Azure, Amazon AWS
+ Easy for management and large-scale deployment, support SNMP protocol and InHand Device Manager cloud platform for efficient remote central management
+ Fully industrial-grade design, ready for challenging conditions

- **Uninterrupted Internet access from anywhere**
  Multiple WAN links: fast Ethernet, 3G/4G, multiple DSLs. Wherever the device is, it can be connected easily. Customers can choose LTE CAT4 (downlink/uplink: 150Mbps/50Mbps) or CAT1 (downlink/uplink: 10Mbps/5Mbps) standard network service.
- **Powerful edge computing, adapting intelligent edge processing of different industries**
  ARM Cortex-A8 processor, 1GHz CPU, up to 1GB DDR3 RAM and 8GB eMMC FLASH, the gateway owns powerful computing capabilities for data optimization, real-time response, agile connection, intelligent analysis and other data processing on the IoT edge.
- **Multiple industrial real-time Ethernet protocols and fieldbuses**
  In order to be compatible with the broadly diversified industrial controllers in the market, the edge gateway supports these protocols: Modbus TCP, Modbus RTU, OPC UA, PROFINET, PROFIBUS-DP, EtherCAT, EtherNET/IP, CC-LINK, PPI, etc.
- **Python customization development platform**
  InGateway900 is embedded with the Python development platform, customers may custom develop applications to meet own service requirements. While with the integrated SDK and APPs provided by InHand, customer may access the system APIs and other resources easily, completing custom development with shorter time to market.
- **Multiple industrial cloud ecosystems**
  InHand has become the partner of Microsoft and Amazon. The edge gateway supports Microsoft AZURE, Amazon AWS and Schneider EcoStruxure industrial cloud platforms. InHand will keep working for the development of IIoT cloud ecosystem.
- **Complete security protection**
  Complete security protection, covering user authorization and authentication, network security, and data transmission security.
- **High reliability design**
  - Link redundancy: dual-SIM, link backup, VRRP, for continuous transmission during network failure
  - Link detection: multiple detection mechanisms, auto redial to maintain persistent connection
  - Fault recovery: Soft & hardware watchdog, self recover from faults for high device availability
- **Support large-scale deployment**
  In large-scale IIoT applications, tens of thousands of gateways are to be deployed for the networking of machines. The gateway supports SNMP and DeviceManager network management to help with effective device management and deployment.
- **Fully industrial-grade design**
  From processor chip, memory chip to communication module and power terminal, the product adopts strict industrial grade standards, meeting industrial grade on indexes like EMC 3, IP30, and wide operating temperatures. Solid and durable, ready for the challenging conditions of industrial sites.

Dimensions (mm)



7PIN Industrial Terminal Interface Definition

Pin	Definition	Description
1	V+	Positive electrode
2	V-	Negative electrode
3	TXD	Serial RS232 send
4	RXD	Serial RS232 receive
5	GND	Serial RS232 signal ground
6	A	Serial RS485+
7	B	Serial RS485-

Product Specifications

IG902 Hardware Specifications

Item	IG902-B (Basic Version)	IG902-H (High-config Version)	
Hardware Platform			
CPU	ARM Cortex-A8 1GHz		
RAM	512MB DDR3	1GB DDR3	
FLASH	8GB eMMC		
Interface			
Real-time Ethernet Protocol Port	No	2 * 100Mbps real-time industrial Ethernet protocol ports	
I/O	No	4-channel digital input DI 2-channel digital output DO 2-channel analog input AI	
Ethernet Port	2*10/100/1000Mbps fast Ethernet ports, WAN/LAN or 2*LAN		
Industrial Serial Port	RS-232 x 1, RS-485 x 1;		
	RS-232 signal: TXD, RXD, GND; RS-485 signal: A, B, GND		
	ESD protection: 15KV		
Console Port	RS-232 x 1, RJ-45 interface	Wi-Fi (Optional)	2.4G or 5G (802.11 ac/a/b/g/n)
USB	1 x USB 2.0 port	Reset Button	Pinhole button
SIM card Slot	1.8V/3V, drawer-type slot x 2	MircoSD Expansion	Up to 128GB
GPS (Optional)	Satellite positioning GPS: SMA x 1		
Mechanical Feature			
Installation	DIN-rail, wall mounting	Protection Rating	IP30
Housing	Metallic structure	Cooling	Fan-less cooling
Power Supply			
Power Input	DC12-48V	Polarity Reverse & Overcurrent Protection	Support
Power Terminal	Unpluggable industrial terminal connection		
Ambient Temperature and Humidity			
Storage Temperature	-40 ~ 85℃	Working Temperature	-25 ~ 75℃
Ambient Humidity	5 ~ 95% (non-condensing)		
Others			
Real-time Clock (Optional)	Embedded real time clock (RTC), powered by super capacitor		
Indicators			
LED	POWER, STATUS, WARN, ERROR, MODEM, SIM1, SIM2, TF (card), PYTHON, USER1, USER2, WIFI, GPS, SIGNAL		
EMC Index			
Static	EN61000-4-2, level 3	Surge	EN61000-4-5, level 3
Radiation Electric Field	EN61000-4-3, level 3	Conducted Disturbance	EN61000-4-6, level 3
Pulse Electric Field	EN61000-4-4, level 3	Shockwave Immunity	EN61000-4-12, level 3
Power Frequency Magnetic Field	EN61000-4-8, horizontal / vertical 400A/m (>level 3)		
Physical Feature			
Shockproof	IEC60068-2-27	Vibration	IEC60068-2-6
Free Fall	IEC60068-2-32		
Certification			

IG902 Software Specifications

Item	IG902
Network Interconnection	
Network Access	APN, VPDN
Access Authentication	CHAP/PAP/MS-CHAP/MS-CHAPV2
Network Type	LTE, WCDMA(HSPA+), EVDO, EDGE, GPRS, CDMA
LAN Protocol	ARP, Ethernet
Network Protocol	
IP Application	Ping, Traceroute, DHCP Server/Relay/Client, DNS Relay, DDNS, Telnet, SSH, HTTP, HTTPS, TFTP, FTP, SFTP
IP Routing	Static Routing
Network Security	
Firewalls	Stateful packet inspection (SPI), anti-DoS attack
	Multicast/Ping filter, Access Control List (ACL)
	NAT, PAT, DMZ, port mapping, virtual server
User Levels	Multi-level user authorization
AAA	Local authentication, Radius, Tacacs+, LDAP
Data Security	IPsec VPN, OPENVPN, CA (may auto apply)
Reliability	
Backup	VRRP, interface backup, dual-SIM backup
Link Detection	Heartbeat packet detection, auto-recovery of disconnection
Embedded Watchdog	Device self-diagnosing, auto-recover operation faults
WLAN (Optional)	
Standard	IEEE 802.11ac/a/b/g/n
Security	Open System, Shared Key, WPA/WPA2 certification, WEP/TKIP/AES encryption
Mode	AP, Client modes
Network Management	
Configuration Method	Local or remote HTTP, HTTPS, Telnet, SSH
Upgrade Method	Local or remote WEB, DM, TFTP, FTP, SFTP server
Log	Local or remote log export, power-down log saving
SMS	Status enquiry, configuration, and reboot
Dial On-demand	Activate by data, activate by SMS, scheduled online/offline
Network Management	SNMP v1/v2c/v3, InHand MIBs
InHand DM	Centralized management, batch configuration
Network Disgnostics	Ping, Traceroute, Sniffer (network packet capture tool)
Development Platform	
Development Platforms	Python customization development; Microsoft Azure, Amazon AWS, Schneider EcoStruxure, InHand DN cloud platform
Industrial Protocol	
Protocols (Basic Version)	Modbus RTU, Modbus TCP, OPC UA Client, OPC UA Server, PPI , CC-LINK
Protocols (High-config Version)	Modbus RTU, Modbus TCP, OPC UA Client, OPC UA Server, PPI, Profinet, Profibus, EtherCAT, CC-LINK, EtherNET/IP