InHand Networks

Powerful Computing, Multiple Industrial Protocols, Fast Python Customization

InGateway902 Series

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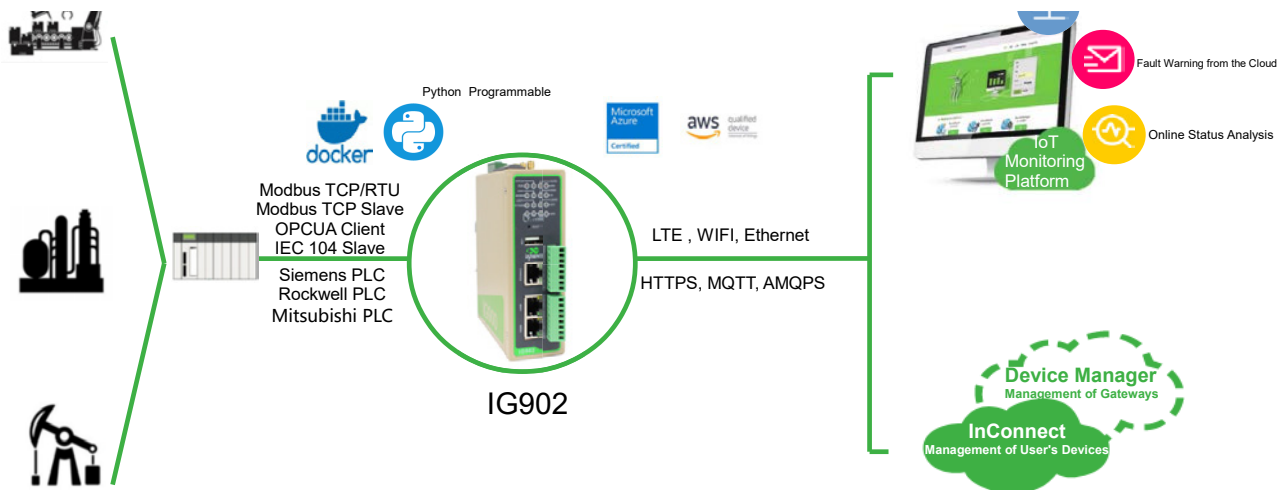
InGateway902 features powerful edge computing capabilities. It realizes data optimization, real-time response, agile connection and intelligent analysis on the IoT edge, significantly reduces the data flow between field sites and data center, and avoid bottlenecks of cloud-end computing.

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

Python Programmable

Modbus TCP/RTU
Modbus TCP Slave
OPCUA Client
IEC 104 Slave
Siemens PLC
Rockwell PLC
Mitsubishi PLC

IG902

LTE , WIFI, Ethernet

HTTPS, MQTT, AMQPS

Fault Warning from the Cloud

Online Status Analysis

IoT Monitoring Platform

Device Manager
Management of Gateways

InConnect
Management of User's Devices

Features and Advantages

- Supports 4G LTE CAT4 and CAT6
- 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
- Supports Python development, for developing user custom applications
- Supports Docker container technology
- Supports industrial cloud platforms: Microsoft Azure, Amazon AWS
- Easy for management and large-scale deployment, supports 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 CAT6 (downlink/uplink: 300Mbps/50Mbps) standard network services.

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 protocols supported
In order to be compatible with the diversified industrial controllers in the market, the edge gateway supports these protocols: Modbus TCP, Modbus RTU, OPC UA Client, EtherNet/IP, ISO on TCP, Modbus TCP Slave, Mitsubishi MC 3C, Mitsubishi programming port (serial port) protocol, etc.

Python customization development platform
The InGateway900 is embedded with the Python development platform, so that customers can custom develop applications to meet own service requirements. While with the integrated SDK and APPs provided by InHand, customers can access the system APIs and other resources easily, completing custom development in 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 covers 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 recovers from faults for high device availability

Supports 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 Device Manager 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 level 3, IP30, and wide operating temperatures. Solid and durable, ready for the challenging conditions of industrial sites.
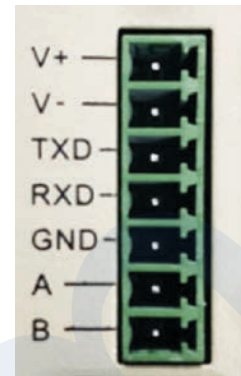
Dimensions (mm)
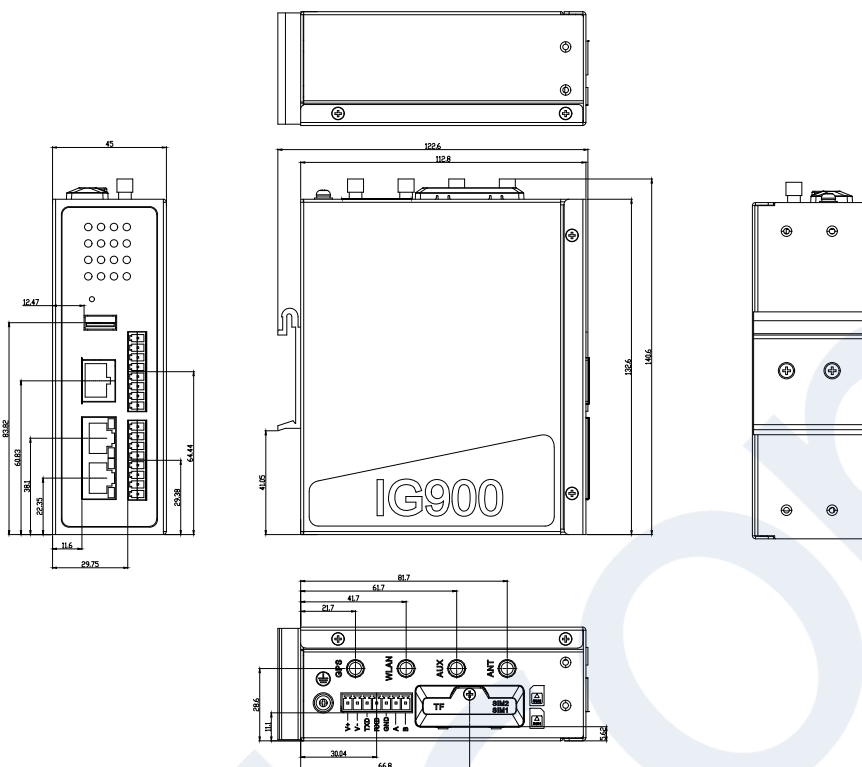
For DIN-rail Mounting
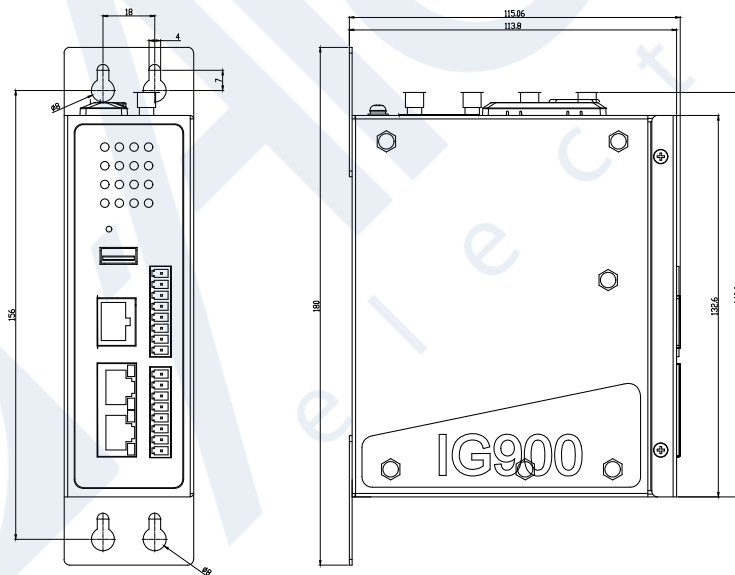
For Wall Mounting

Interface Definitions

7PIN 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-

Power/Serial Port Terminal

I/O Definition		
PIN	Definition	Description
1	PCOM	Dry contact access point
2	DGND	Dry contact ground point
3	DICOM	Input common port
4	DI0	Digital/pulse input port 0
5	DI1	Digital/pulse input port 1
6	DI2	Digital/pulse input port 2
7	DI3	Digital/pulse input port 3
8	NC	None
9	DO0	Digital/pulse output port 0
10	DGND	Ground
11	DO1	Digital/pulse output port 1
12	DGND	Ground
13	DO2	Digital/pulse output port 2
14	DGND	Ground
15	DO3	Digital/pulse output port 3
16	DGND	Ground

Description for rows 1–8:
4*Digital/pulse input DI,
2*Dry contact control port,
Dry contact status "1": closed
Dry contact status "0": disconnected
Wet contact status "1": +10~+30V/-30~-10VDC
Wet contact status "0": 0~+3V/-3~0V
Isolation 3000VDC
Pulse signal counter supported
Supports up to 100Hz pulse signal (32-bit counter + 1-bit overflow mark)

Description for rows 9–16:
3*Digital/pulse output DO,
1*Digital output,
Isolation 3000VDC

I/O Terminal

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		
Interfaces			
Ethernet Port	2*10/100/1000Mbps fast Ethernet ports, WAN/LAN or 2*LAN		
Industrial Serial Port	1*RS-232, 1*RS-485		
	RS-232 signal: TXD, RXD, GND; RS-485 signal: A, B, GND		
	ESD protection: 15KV		
I/O	No	4*digital input DI 2*dry contact control port 3*digital/pulse output DO 1*digital output DO	
Console Port	1*RS-232, RJ-45 interface	Wi-Fi (Optional)	Support 2.4G&5G (802.11 ac/a/b/g/n)
USB	1*USB 2.0 port	Reset Button	Pinhole button
SIM Card Slot	1.8V/3V, 2*drawer-type slot	MircoSD Expansion	Up to 32GB
GPS (Optional)	Support GPS and BeiDou		
Mechanical Features			
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	Supported
Power Terminal	Unpluggable industrial terminal connection		
Ambient Temperature and Humidity			
Storage Temp.	-40 ~ 85°C	Working Temp.	-25 ~ 70°C
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	Power Frequency Magnetic Field	EN61000-4-8, horizontal / vertical 400A/m (>level 3)
Physical Features			
Shock	IEC60068-2-27	Vibration	IEC60068-2-6
Free Fall	IEC60068-2-32		
Certification			
CE, FCC, PTCRB, RoHS, RCM, IC, IMDA, AT&T, MIC&JATE, MSIP,ANATEL, UKCA			

IG902 Software Specifications	
Item	IG902
Network Interconnection	
Network Access	APN, VPDN
Access Authentication	CHAP/PAP/MS-CHAP/MS-CHAPV2
Network Type	LTE, WCDMA(HSPA+) EDGE, GPRS, CDMA
LAN Protocol	ARP, EtherNet
Network Protocols	
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-diagnosis, auto-recovery from operation faults
WLAN (Optional)	
Standard	IEEE 802.11 ac/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	Activated by data, activated 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 Protocols	
Protocols	Modbus RTU, Modbus TCP, OPC UA Client, EtherNET/IP, ISO on TCP, Mitsubishi MC 3C, Mitsubishi programming port (serial port), Modbus TCP Slave, IEC 104 Slave

InHand Networks

Ordering Guide

Model	Version	Region (Operator)	Network Type	Cellular Type & Module / Band & Frequency	I/O Interface: (H version only)	WLAN	GPS
Model code: IG902-<B/H>-<WMNN>-<IO/NA>(H version only)-<W/NA>-<G/NA>							
IG902-B-LQA8	Basic	China	LTE CAT4	LTE-FDD Band 1/3/5/8 LTE-TDD Band 34/38/39/40/41 TD-SCDMA Band 34/39 WCDMA Band 1/8 CDMA BC0 GSM 900/1800MHz	No I/O	No Wi-Fi	No GPS
IG902-B-LQA8-WLAN-G	Basic				No I/O	Wi-Fi	GPS
IG902-H-LQA8-IO	High-config				I/O	No Wi-Fi	No GPS
IG902-H-LQA8-IO-WLAN-G	High-config				I/O	Wi-Fi	GPS
IG902-B-FQ58	Basic	Europe & APAC	LTE CAT4	LTE-FDD Band 1/2/3/5/7/8/20 LTE-TDD Band 38/40/41 UMTS(DC-HSPA+) Band1/5/8 GSM Band 3/8	No I/O	No Wi-Fi	No GPS
IG902-B-FQ58-WLAN-G	Basic				No I/O	Wi-Fi	GPS
IG902-H-FQ58-IO	High-config				I/O	No Wi-Fi	No GPS
IG902-H-FQ58-IO-WLAN-G	High-config				I/O	Wi-Fi	GPS
IG902-B-FS39	Basic	North America (Verizon, AT&T)	LTE CAT6	LTE-FDD Band 2/4/5/13/17 UMTS(DC-HSPA+) Band 2/5 EDGE/GPRS/GSM 850/900/1800/1900MHz	No I/O	No Wi-Fi	No GPS
IG902-B-FS39-WLAN-G	Basic				No I/O	Wi-Fi	GPS
IG902-H-FS39-IO	High-config				I/O	No Wi-Fi	No GPS
IG902-H-FS39-IO-WLAN-G	High-config				I/O	Wi-Fi	GPS
IG902-B-FQ78	Basic	Australia, New Zealand and Latin America	LTE CAT4	LTE-FDD Band 1/2/3/4/5/7/8/28 LTE-TDD B40 UMTS(DC-HSPA+) Band1/2/5/8 EDGE/GPRS/GSM 850/900/1800/1900MHz	No I/O	No Wi-Fi	No GPS
IG902-B-FQ78-WLAN-G	Basic				No I/O	Wi-Fi	GPS
IG902-H-FQ78-IO	High-config				I/O	No Wi-Fi	No GPS
IG902-H-FQ78-IO-WLAN-G	High-config				I/O	Wi-Fi	GPS
IG902-B-FQ88	Basic	Japan	LTE CAT4	LTE FDD Band 1/3/8/18/19/26 LTE TDD Band 41 WCDMA Band 1/6/8/19	No I/O	No Wi-Fi	No GPS
IG902-B-FQ88-WLAN-G	Basic				No I/O	Wi-Fi	GPS
IG902-H-FQ88-IO	High-config				I/O	No Wi-Fi	No GPS
IG902-H-FQ88-IO-WLAN-G	High-config				I/O	Wi-Fi	GPS
IG902-B-FQ98	Basic	South Korea	LTE CAT4	LTE FDD Band 1/3/5/7/8/20 LTE TDD Band 38/40/41 WCDMA Band 1/5/8 EDGE/GSM Band 3/8	No I/O	No Wi-Fi	No GPS
IG902-B-FQ98-WLAN-G	Basic				No I/O	Wi-Fi	GPS
IG902-H-FQ98-IO	High-config				I/O	No Wi-Fi	No GPS
IG902-H-FQ98-IO-WLAN-G	High-config				I/O	Wi-Fi	GPS
IG902-B-EN00	Basic	Global	-	No 3G/4G communication module	No I/O	No Wi-Fi	No GPS
IG902-B-EN00-WLAN-G	Basic				No I/O	Wi-Fi	GPS
IG902-H-EN00-IO	High-config				I/O	No Wi-Fi	No GPS
IG902-H-EN00-IO-WLAN-G	High-config				I/O	Wi-Fi	GPS
Example:	IG902-H-FQ58-IO-WLAN-G: IG902 high-config. version, supports Europe and Asia-Pacific LTE CAT4 networks, supports I/O interface, supports Wi-Fi and GPS						

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 Technology Partner in Asia-Pacific and Schneider Electric Technology Partner, InHand Networks defines industrial innovation and reliability.

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