Industrial-grade, Secure & Reliable

InGateway502 Series

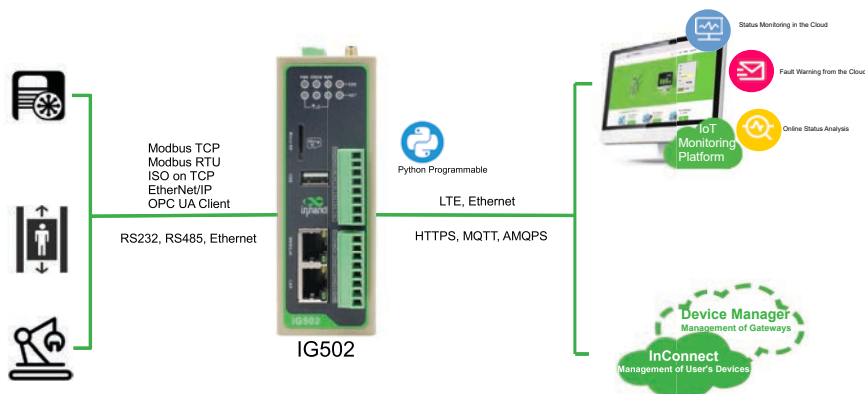## Economical IoT Edge Gateway

The InGateway502 (IG502) series IoT edge gateway is a small-sized, economical IoT edge gateway developed for industrial IoT applications. It provides uninterrupted Internet access over globally ubiquitous LTE cellular network and multiple broadband services. With powerful edge computing capabilities, comprehensive security protection and wireless services, the IG502 can support networking of up to tens of thousands of devices, providing high-speed data channels for device informatization.

The IG502 supports mainstream industrial protocols such as Modbus TCP/RTU. With support for major IoT cloud platforms including AWS and Microsoft Azure, it enables onsite devices to be connected to the cloud with ease. Featuring open edge computing platforms, the IG502 is capable of data optimization, real-time response, agile connection and intelligent analysis on the IoT edge, thus significantly reducing data flow between field sites and data center, cutting users' operation costs and relieving pressure on the cloud. Excellent performance, ease for deployment and perfect functions for remote management make the IG502 stand out in the information construction of devices.

The IG502 series is ideal for data collection and monitoring of equipment on distributed unattended sites for a wide range of industries, e.g.:

- Industrial automation
- Smart grid
- Smart building
- Green energy
- Utilities: heating, water, natural gas
- Environment, etc.

Application Case

Modbus TCP
Modbus RTU
ISO on TCP
EtherNet/IP
OPC UA Client

RS232, RS485, Ethernet

Python Programmable

LTE, Ethernet

HTTPS, MQTT, AMQPS

IG502

Status Monitoring in the Cloud

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 LTE CAT4, CAT1 and Ethernet
+ Supports multiple industrial protocols, compatible with various industrial devices
+ Supports major IoT cloud platforms including Microsoft Azure and AWS
+ Supports Python-based platform for secondary development, edge smart
+ Multi-layer link detection mechanism, ensuring high device availability and reliability
+ Fully industrial-grade, ready for challenging conditions
+ Multiple management methods, fast, flexible and efficient deployment

● Industrial-grade, ready for harsh industrial environments

Industrial-grade design, with operating temperatures up to -25 °C~ 70 °C, supports +12 ~ 48VDC wide voltage power inputs, protection rating IP30, providing stable and secure network communications for demanding unattended industrial sites.

● Easily collects data from devices, uploads data to the cloud and conducts remote maintenance
- Supports major industrial protocols including Modbus TCP/RTU, EtherNet/IP, ISO on TCP, OPC UA Client, etc., eases industrial data collection
- Supports major IoT cloud platforms such as AWS and Microsoft Azure
- Embedded with secondary development platform, and Python programmable, helps you complete special business operation with ease, custom functions and services supported
- Supports InConnect service, transparent channel for data transmission, easy for remote maintenance

● Powerful Edge computing capabilities, intelligent data processing

Equipped with ARM Cortex-A8 processor, 600MHz frequency, 512MB RAM and 8GB eMMC, the IG502 offers strong edge computing capabilities, providing computing resources for data optimization, real-time response, agile connection, and intelligent analysis on edge nodes.

● Highly reliable design, ensuring continuous data transmission
- Device auto recovery: embedded watchdog, self recovers from faults, ensuring high device availability
- Link detection: application layer link detection, auto redials when disconnected, maintain continuous data transmission
- PPP-layer detection: maintains connection to operator network, prevents forced hibernation, can detect stability of dial-up connections

● Easy for use and management, support for mass deployment
- Supports configuration through Web interface, easy for use
- In large-scale IIoT applications, tens of thousands of machines are to be networked. The InGateway supports Device Manager to enable efficient large-scale deployment and management
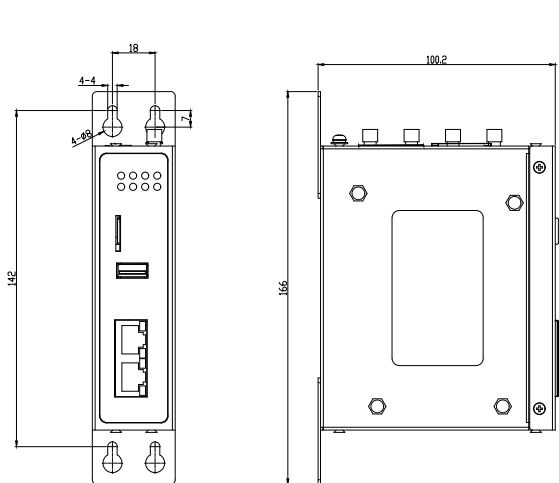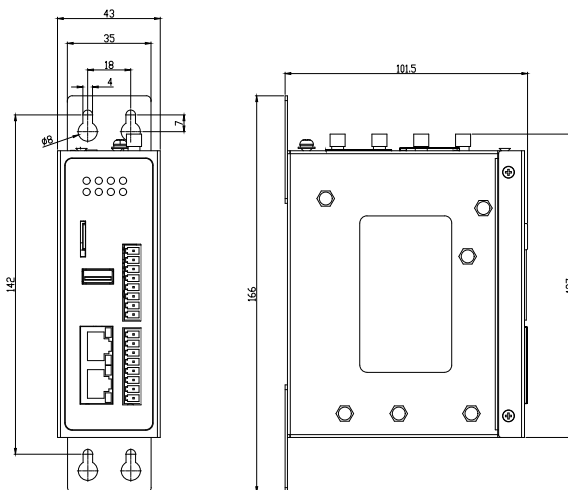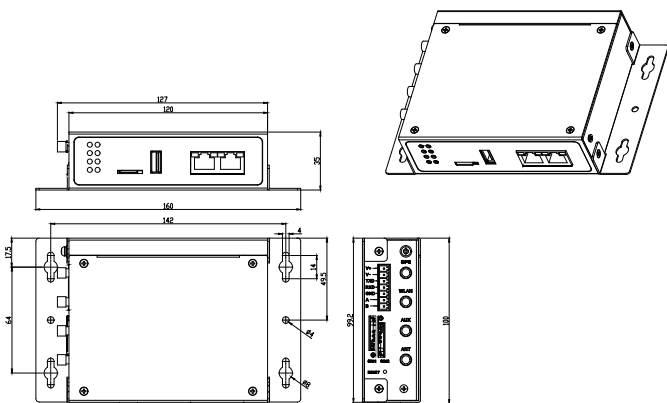
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Dimensions (mm)
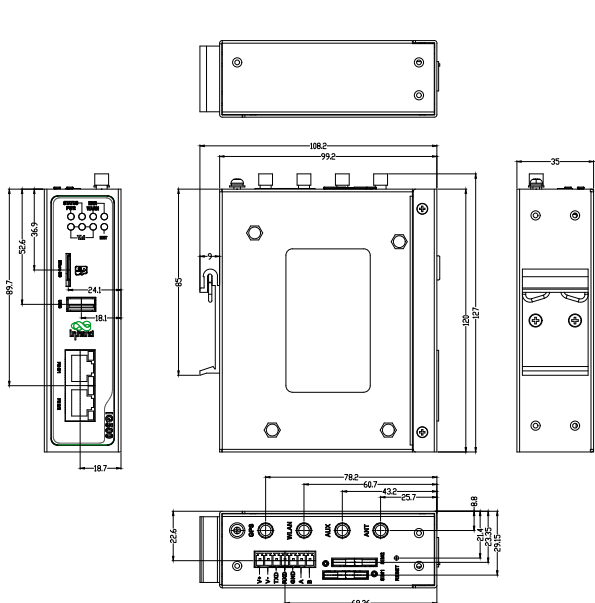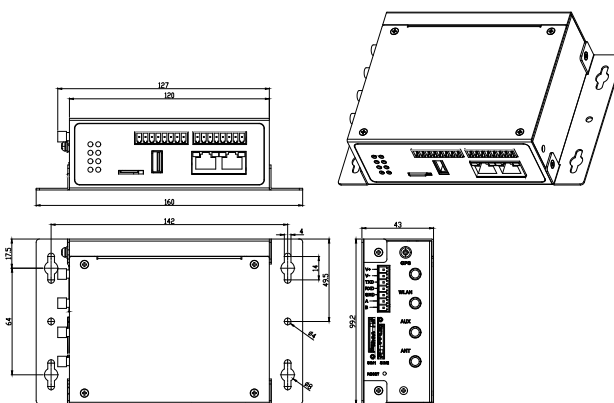

IG502
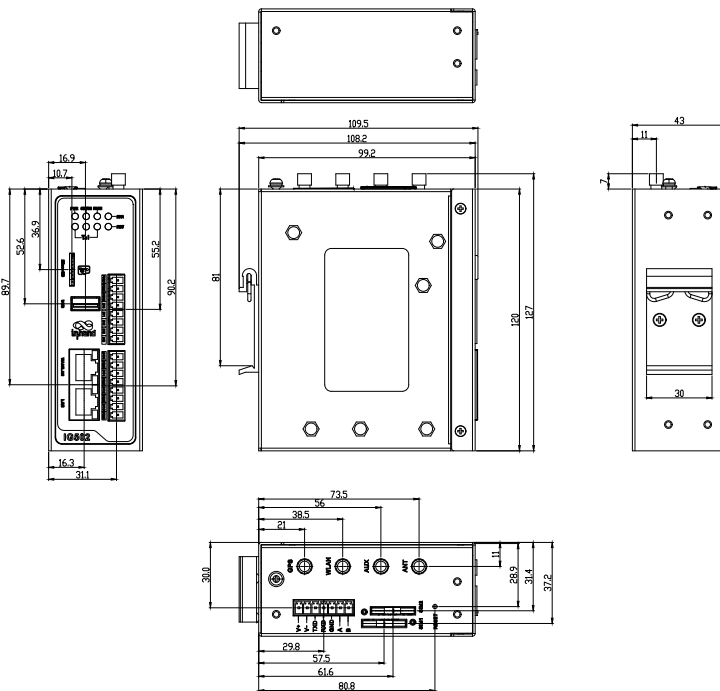
IG502-IO

IG502 Wall Mounting (A)

IG502-IO Wall Mounting (A)

IG502 Wall Mounting (B)

IG502-IO Wall Mounting (B)

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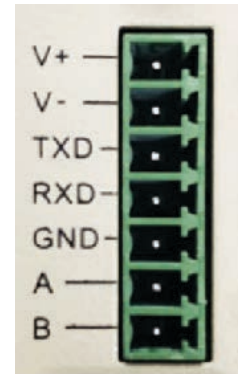
Product Specifications

IG502 Hardware Specifications	
Item	InGateway502
Hardware Platform	
CPU	ARM Cortex-A8
RAM	512MB
FLASH	8GB eMMC
Interfaces	

EtherNet Port	2*10/100Mbps fast Ethernet port, 1*WAN + 1*LAN or 2*LAN		
Serial Port	RS232 *1, RS485*1, industrial terminal block	IO Interface (Optional)	4*DI, 4*DO
Wi-Fi (Optional)	AP/STA, 2.4G	Reset Button	Pinhole reset button
GPS (Optional)	Satellite location GPS, SMA*1	TF Card	Supports Micro SD
USB	USB 2.0*1	Bluetooth (Optional)	BLE 4.0
SIM Card	1.8V/3V, drawer-type slot*2	Antenna	SMA*1
Mechanical Feature			
Installation	DIN-rail, wall mounting	Housing	Metal housing
Dimensions (mm)	127*108.2*35	Weight (g)	420
Cooling	Fanless cooling	Protection Rating	IP30
Power Supply			
Power Input	DC 12-48V, polarity reverse protection	Power Interface	Industrial terminal block
Standby Power	200mA@12V	Working Power	250mA@12V
Peak Power	500mA@12V		
Ambient Temperature and Humidity			
Working Temperature	-20 ~ 70°C	Storage Temperature	-40 ~ 85°C
Ambient Humidity	5 ~ 95% (non-condensing)		
Indicator			
LED	PWR, STATUS, WARN, ERR, Signal Strength (3), LTE		
EMC Index			
Static	EN61000-4-2, level 3		
Radiation Electric Field	EN61000-4-3, level 3		
Pulse Electric Field	EN61000-4-4, level 3		
Surge	EN61000-4-5, level 3		
Conducted Disturbance	EN61000-4-6, level 3		
Power Frequency Magnetic Field	EN61000-4-8, horizontal/vertical 400A/m (>level 3)		
Shockwave Immunity	EN61000-4-12, level 3		
Physical Features			
Shock	IEC60068-2-27	Vibration	IEC60068-2-6
Free Fall	IEC60068-2-32		
Certification			

CE, FCC, PTCRB, Verizon Wireless, AT&T

IG502 Software Specifications	
Item	InGateway502
Operation System	
Operation System	Custom Linux
Network Interconnection	
Network Type	LTE CAT4, LTE CAT1
Network Access	APN, VPDN
Access Authentication	CHAP/PAP/MS-CHAP/MS-CHAPV2
LAN Protocol	ARP, Ethernet
WAN Protocol	Static IP, DHCP, PPPoE
Dial On-demand	Data / SMS / Call activation, scheduled on/offline
Network Protocols	
IP Application	ICMP, DNS, TCP/UDP, TCP server, DHCP
IP Routing	Static routing
Network Security	
User Level	Multi-level user authorization
Data Security	OpenVPN
Reliability	
Backup	Dual SIM
Link Detection	Heartbeat packet detection, auto-redials once disconnected
Embedded Watchdog	Device self-diagnosing, auto-recovers from operation faults
Open Platform	
Open Platform	Python development platform
Accessible Cloud Platform	Microsoft Azure, Amazon AWS, etc.
Protocol Type	
Protocol Type	Modbus RTU/TCP, EtherNet/IP, ISO on TCP, OPC UA Client
Maintenance and Management	
Configuration Method	Web
Configuration Backup	Supports import & export of configuration files
Upgrade Method	Supports patent upgrade mechanism, local or remote firmware upgrade
Log	Local system logs, remote logs, serial port log output, power-down saving of important logs
Remote Management	InHand Device Manager Platform; HTTP, HTTPS, Telnet, SSH, etc. InConnect

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Definition of Interfaces

7 PIN 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	4*Digital/pulse input DI, 2*Dry contact control port, 1*Common port, 1*Idle, 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)
2	DGND	Dry contact ground point	
3	DICOM	Digital 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	3*Digital/pulse output DO, 1*Digital output, 4*Digital ground, Isolation 3000VDC
10	DGND	Digital ground	
11	DO1	Digital/pulse output port 1	
12	DGND	Digital ground	
13	DO2	Digital/pulse output port 2	
14	DGND	Digital ground	
15	DO3	Digital/pulse output port 3	
16	DGND	Digital ground	

I/O Terminal

InHand Networks

Ordering Guide

Model	Region (Operator)	Network Type	Cellular Type & Frequency Band: \<WMNN>		Ethernet Port	Serial Port	\<IO/NA>: I/O	\<W/NA>: WLAN&BLE	\<G/NA>: GPS
			Model code: IG502-\<WMNN>-\<W/NA>-\<G/NA>						
IG502-LQA3	China	LTE CAT1	LTE-FDD LTE-TDD GSM	Band 1/3/5/8 Band 34/38/39/40/41 900/1800/MHz	2*10/100Mbps	1*RS232, 1*RS485	No	No	No
IG502-LQA3-IO	China	LTE CAT1	LTE-FDD LTE-TDD GSM	Band 1/3/5/8 Band 34/38/39/40/41 900/1800/MHz	2*10/100Mbps	1*RS232, 1*RS485	4*DI, 4*DO	No	No
IG502-LQA3-W-G	China	LTE CAT1	LTE-FDD LTE-TDD GSM	Band 1/3/5/8 Band 34/38/39/40/41 900/1800/MHz	2*10/100Mbps	1*RS232, 1*RS485	No	Supported	Supported
IG502-LQA3-IO-W-G	China	LTE CAT1	LTE-FDD LTE-TDD GSM	Band 1/3/5/8 Band 34/38/39/40/41 900/1800/MHz	2*10/100Mbps	1*RS232, 1*RS485	4*DI, 4*DO	Supported	Supported
IG502-FQ33	North America	LTE CAT1	LTE-FDD WCDMA	Band 2/4/5/12/13/25/26 Band 2/4/5	2*10/100Mbps	1*RS232, 1*RS485	No	No	No
IG502-FQ33-IO	North America	LTE CAT1	LTE-FDD WCDMA	Band 2/4/5/12/13/25/26 Band 2/4/5	2*10/100Mbps	1*RS232, 1*RS485	4*DI, 4*DO	No	No
IG502-FQ33-W-G	North America	LTE CAT1	LTE-FDD WCDMA	Band 2/4/5/12/13/25/26 Band 2/4/5	2*10/100Mbps	1*RS232, 1*RS485	No	Supported	Supported
IG502-FQ33-IO-W-G	North America	LTE CAT1	LTE-FDD WCDMA	Band 2/4/5/12/13/25/26 Band 2/4/5	2*10/100Mbps	1*RS232, 1*RS485	4*DI, 4*DO	Supported	Supported
IG502-FQ58	Europe & APAC	LTE CAT4	LTE-FDD WCDMA GSM	Band 1/3/7/8/20/28A Band 1/8 Band 3/8	2*10/100Mbps	1*RS232, 1*RS485	No	No	No
IG502-FQ58-IO	Europe & APAC	LTE CAT4	LTE-FDD WCDMA GSM	Band 1/3/7/8/20/28A Band 1/8 Band 3/8	2*10/100Mbps	1*RS232, 1*RS485	4*DI, 4*DO	No	No
IG502-FQ58-W-G	Europe & APAC	LTE CAT4	LTE-FDD WCDMA GSM	Band 1/3/7/8/20/28A Band 1/8 Band 3/8	2*10/100Mbps	1*RS232, 1*RS485	No	Supported	Supported
IG502-FQ58-IO-W-G	Europe & APAC	LTE CAT4	LTE-FDD WCDMA GSM	Band 1/3/7/8/20/28A Band 1/8 Band 3/8	2*10/100Mbps	1*RS232, 1*RS485	4*DI, 4*DO	Supported	Supported
IG502-FQ58-TH	Thailand	LTE CAT4	LTE-FDD WCDMA GSM	Band 1/3/7/8/20 Band 1/8 Band 3/8	2*10/100Mbps	1*RS232, 1*RS485	No	No	No
IG502-FQ58-TH-IO	Thailand	LTE CAT4	LTE-FDD WCDMA GSM	Band 1/3/7/8/20 Band 1/8 Band 3/8	2*10/100Mbps	1*RS232, 1*RS485	4*DI, 4*DO	No	No
IG502-FQ58-TH-W-G	Thailand	LTE CAT4	LTE-FDD WCDMA GSM	Band 1/3/7/8/20 Band 1/8 Band 3/8	2*10/100Mbps	1*RS232, 1*RS485	No	Supported	Supported
IG502-FQ58-TH-IO-W-G	Thailand	LTE CAT4	LTE-FDD WCDMA GSM	Band 1/3/7/8/20 Band 1/8 Band 3/8	2*10/100Mbps	1*RS232, 1*RS485	4*DI, 4*DO	Supported	Supported
IG502-FQ78	Oceania & Latin America	LTE CAT4	LTE-FDD Band 1/2/3/4/5/7/8/28 LTE-TDD Band 40 UMTS(DC-HSPA+) Band1/2/5/8 EDGE/GPRS/GSM 850/900/1800/1900MHz		2*10/100Mbps	1*RS232, 1*RS485	No	No	No
IG502-FQ78-IO	Oceania & Latin America	LTE CAT4	LTE-FDD Band 1/2/3/4/5/7/8/28 LTE-TDD Band 40 UMTS(DC-HSPA+) Band1/2/5/8 EDGE/GPRS/GSM 850/900/1800/1900MHz		2*10/100Mbps	1*RS232, 1*RS485	4*DI, 4*DO	No	No
IG502-FQ78-W-G	Oceania & Latin America	LTE CAT4	LTE-FDD Band 1/2/3/4/5/7/8/28 LTE-TDD Band 40 UMTS(DC-HSPA+) Band1/2/5/8 EDGE/GPRS/GSM 850/900/1800/1900MHz		2*10/100Mbps	1*RS232, 1*RS485	No	Supported	Supported
IG502-FQ78-IO-W-G	Oceania & Latin America	LTE CAT4	LTE-FDD Band 1/2/3/4/5/7/8/28 LTE-TDD Band 40 UMTS(DC-HSPA+) Band1/2/5/8 EDGE/GPRS/GSM 850/900/1800/1900MHz		2*10/100Mbps	1*RS232, 1*RS485	4*DI, 4*DO	Supported	Supported
IG502-EN00	Global		No module		2*10/100Mbps	1*RS232, 1*RS485	No	No	No
IG502-EN00-IO	Global		No module		2*10/100Mbps	1*RS232, 1*RS485	4*DI, 4*DO	No	No
IG502-EN00-W-G	Global		No module		2*10/100Mbps	1*RS232, 1*RS485	No	Supported	Supported
IG502-EN00-IO-W-G	Global		No module		2*10/100Mbps	1*RS232, 1*RS485	4*DI, 4*DO	Supported	Supported