



Edge-to-cloud Data Acquisition Configured in Minutes

InGateway502 Series

IoT Edge Gateway

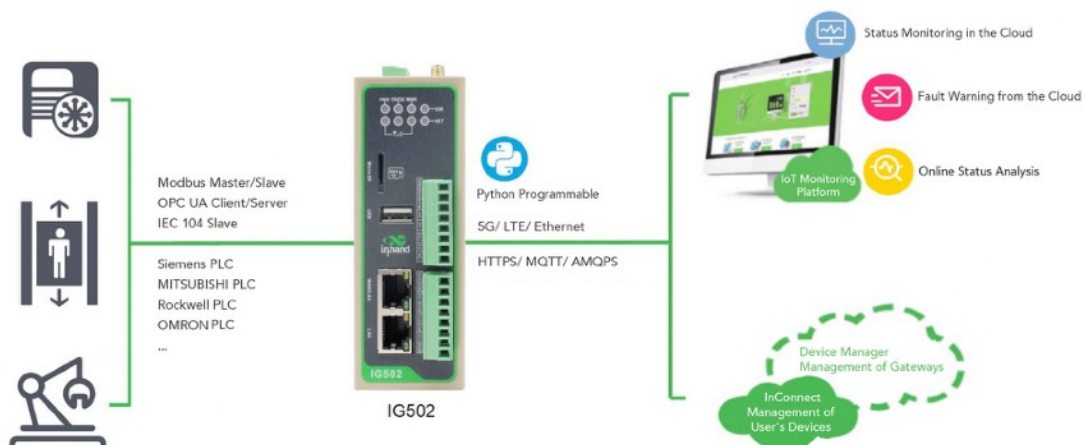
The InGateway502 (IG502) series IoT edge gateway is a small-sized IoT edge gateway developed for industrial IoT applications. It provides uninterrupted Internet access over globally ubiquitous 5G/LTE cellular network and multiple broadband services. With powerful edge computing capabilities, comprehensive 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



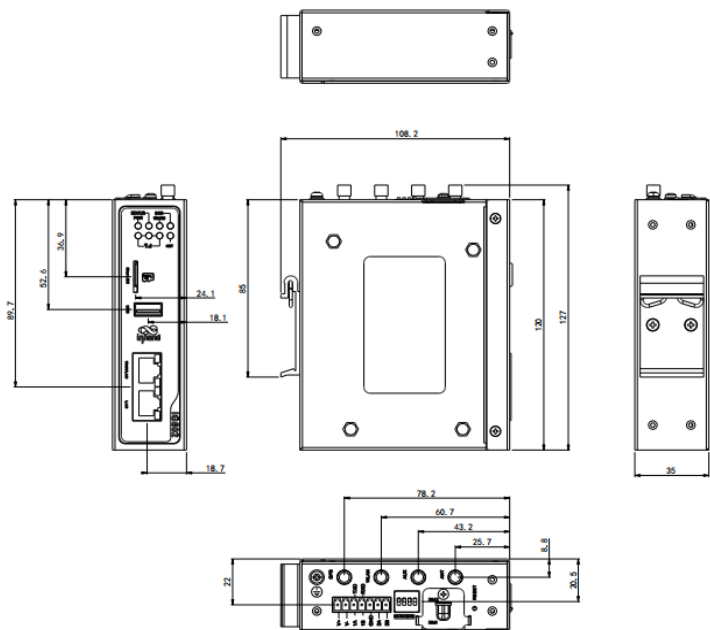
Features and Advantages

- + Supports 5G, 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**

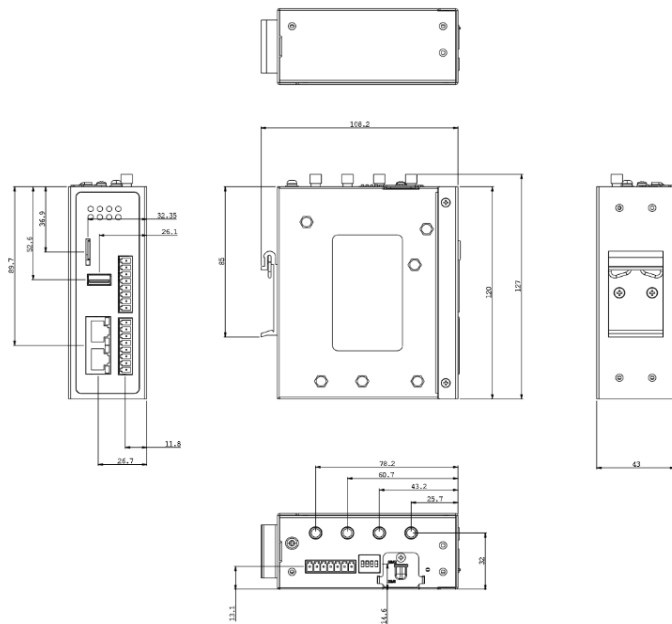
Industrial-grade design, with operating temperatures up to -20 °C~ 70 °C, supports +12 ~ 48VDC wide voltage power inputs, protection rating IP30, providing stable and secure network communications for demanding unattended industrial sites.
 - **Easily collects data from devices, uploads data to the cloud 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
 - Resume from breakpoint: automatically saves data that fail to be uploaded in case of an error in the transmission channel, and resumes uploading when transmission recovers, ensuring reliable data transmission and freeing you from data loss concerns
 - **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

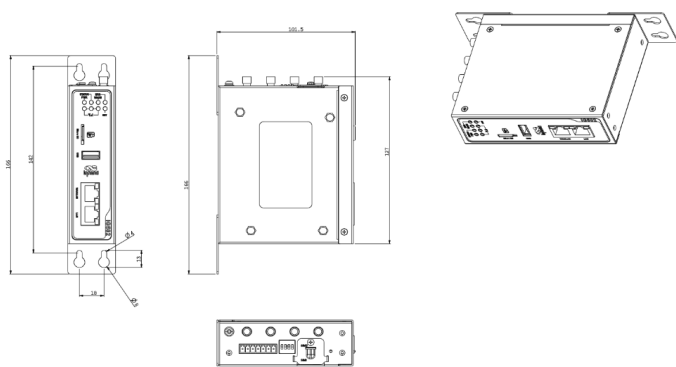
Dimensions (mm)



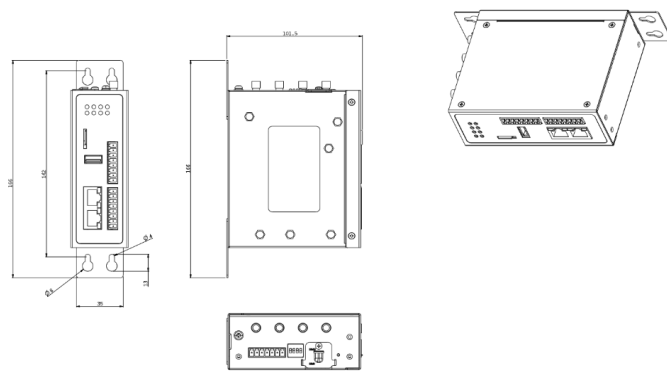
IG502



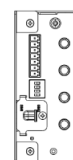
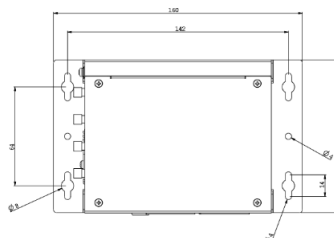
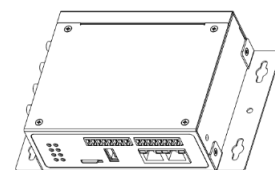
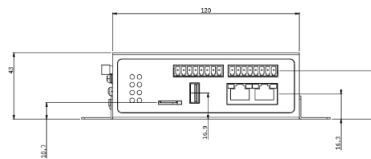
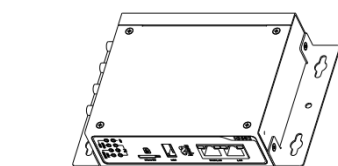
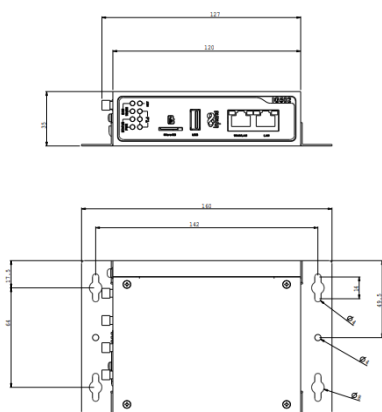
IG502-IO



IG502 Wall Mounting (A)

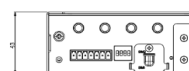
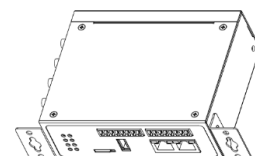
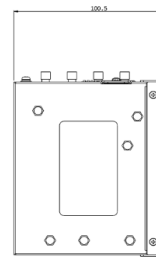
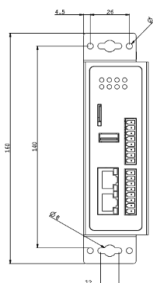
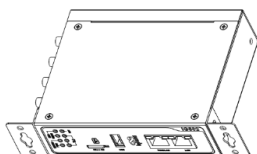
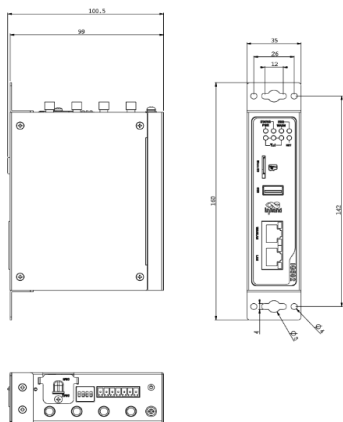


IG502-IO Wall Mounting (A)



IG502 Wall Mounting (B)

IG502-IO Wall Mounting (B)



IG502 Wall Mounting (C)

IG502-IO Wall Mounting (C)

- * Wall mounting (A) - accessory code: AFIX990001
- * Wall mounting (B) - accessory code: AFIX000090
- * Wall mounting (C) - accessory code: AFIX000091

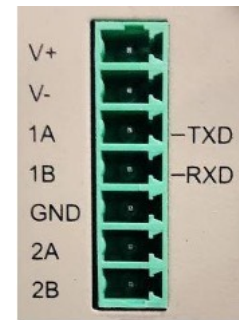
Product Specifications

| 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*1orRS485 *2, industrial terminal block, ordering guide for details | IO Interface (Optional) | 4*DI, 4*DO |
| Wi-Fi (Optional) | 2.4G (802.11 b/g/n) | Reset Button | Pinhole reset button |
| GPS (Optional) | Satellite location GPS, SMA*1 | TF Card | Supports Micro SD |
| USB | USB 2.0, Type A*2, Type C*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, UL, C1D2(Class 1 Division 2), Verizon Wireless, AT&T, IC, RCM, NBTC, UKCA, ANATEL | | | |

| IG502 Software Specifications | |
|-------------------------------|---|
| Item | InGateway502 |
| Operation System | |
| Operation System | Custom Linux |
| Network Interconnection | |
| Network Type | 5G, LTE CAT4, LTE CAT1 |
| Network Access | APN, VPDN |
| Access Authentication | CHAP/PAP/MS-CHAP/MS-CHAP V2 |
| LAN Protocol | ARP, Ethernet |
| WAN Protocol | Static IP, DHCP |
| 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, IPsec VPN |
| 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 Master/Slave, Modbus TCP Master/Slave, EtherNet/IP, ISO on TCP, OPC UA Client/Server, Mitsubishi MC 3C/3E/3C Over TCP, Mitsubishi CPU Port, FINS UDP, HostLink, PPI, DLT645-2007, IEC 104 Server, etc. |
| 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; InHand Connet Service; InHand iSCADA Cloud; HTTP, HTTPS, Telnet, SSH, etc. |

Definition of Interfaces

| 7 PIN Definition | | |
|------------------|------------|--------------------------------|
| PIN | Definition | Description |
| 1 | V+ | Positive electrode |
| 2 | V- | Negative electrode |
| 3 | TXD or 1A | Serial RS232 send or RS485+ |
| 4 | RXD or 1B | Serial RS232 receive or RS485- |
| 5 | GND | Serial RS232 signal ground |
| 6 | A or 2A | Serial RS485+ |
| 7 | B or 2B | 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 | Digital input common port | 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) |
| 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 | Digital ground | 3*Digital/pulse output DO, 1*Digital output, 4*Digital ground, Isolation 3000VDC |
| 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

Ordering Guide

| Model code: IG502-<WMNN>-<D485/NA>-<IO/NA>-<W/NA>-<G/NA> | | | | | | | | | |
|--|-------------------|--------------|--|--|---------------|---------------------|--------------|------------------|-------------|
| 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 |
| 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-LQA3-D485 | 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 | 2*RS485 | No | No | No |
| IG502-LQA3-D485-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 | 2*RS485 | 4*DI, 4*DO | No | No |
| IG502-LQA3-D485-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 | 2*RS485 | No | Supported | Supported |
| IG502-LQA3-D485-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 | 2*RS485 | 4*DI, 4*DO | Supported | Supported |
| IG502-NRQ1 | China | 5G | 5G NR NSA 5G NR SA LTE-FDD LTE-TDD WCDMA MIMO: NR downlink 4 x 4 Downlink 2x2 Uplink 2x2 LTE downlink: 2x2 | n41/n78/n79 n1/n28/n41/n77/n78/n79 Band 1/3/5/8 Band 34/38/39/40/41 Band 1/5/8 | 2*10/100Mbps | 1*RS232, 1*RS485 | No | No | No |
| IG502-NRQ1-D485 | China | 5G | 5G NR NSA 5G NR SA LTE-FDD LTE-TDD WCDMA MIMO: NR downlink 4 x 4 Downlink 2x2 Uplink 2x2 LTE downlink: 2x2 | n41/n78/n79 n1/n28/n41/n77/n78/n79 Band 1/3/5/8 Band 34/38/39/40/41 Band 1/5/8 | 2*10/100Mbps | 2*RS485 | No | No | No |
| 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-FQ33-D485-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 | 2*RS485 | 4*DI, 4*DO | Supported | Supported |
| IG502-FF53 | Europe & APAC | LTE CAT1 | LTE-FDD GSM/GPRS/EDGE | Band 1/3/7/8/20/28 Band 3/8 | 2*10/100Mbps | 1*RS232, 1*RS485 | No | No | No |
| IG502-FF53-IO | Europe & APAC | LTE CAT1 | LTE-FDD GSM/GPRS/EDGE | Band 1/3/7/8/20/28 Band 3/8 | 2*10/100Mbps | 1*RS232, 1*RS485 | 4*DI, 4*DO | No | No |
| IG502-FF53-W-G | Europe & APAC | LTE CAT1 | LTE-FDD GSM/GPRS/EDGE | Band 1/3/7/8/20/28 Band 3/8 | 2*10/100Mbps | 1*RS232, 1*RS485 | No | Supported | Supported |
| IG502-FF53-IO-W-G | Europe & APAC | LTE CAT1 | LTE-FDD GSM/GPRS/EDGE | Band 1/3/7/8/20/28 Band 3/8 | 2*10/100Mbps | 1*RS232, 1*RS485 | 4*DI, 4*DO | Supported | Supported |
| IG502-FF53-D485-IO-W-G | Europe & APAC | LTE CAT1 | LTE-FDD GSM/GPRS/EDGE | Band 1/3/7/8/20/28 Band 3/8 | 2*10/100Mbps | 2*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 |

Ordering Guide (Continued)

| Model | Region (Operator) | Network Type | Model code: IG502-<WMNN>-<D485/NA>-<IO/NA>-<W/NA>-<G/NA> | | | | | | |
|---------------------------|---------------------------|--------------|--|---|---------------|---------------------|--------------|------------------|-------------|
| | | | Cellular Type & Frequency Band: <WMNN> | | Ethernet Port | Serial Port | <IO/NA>: I/O | <W/NA>: WLAN&BLE | <G/NA>: GPS |
| 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-D485-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 | 2*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-W-G-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 | Supported | Supported |
| IG502-FQ58-IO-W-G-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 | 4*DI, 4*DO | Supported | Supported |
| IG502-FQ58-D485-IO-W-G-TH | Thailand | LTE CAT4 | LTE-FDD WCDMA GSM | Band 1/3/7/8/20 Band 1/8 Band 3/8 | 2*10/100Mbps | 2*RS485 | 4*DI, 4*DO | Supported | Supported |
| IG502-FQ78 | Australia & Latin America | LTE CAT4 | LTE-FDD LTE-TDD UMTS(DC-HSPA+) EDGE/GPRS/GSM | Band 1/2/3/4/5/7/8/28 Band 40 Band1/2/5/8 850/900/1800/1900MHz | 2*10/100Mbps | 1*RS232, 1*RS485 | No | No | No |
| IG502-FQ78-IO | Australia & Latin America | LTE CAT4 | LTE-FDD LTE-TDD UMTS(DC-HSPA+) EDGE/GPRS/GSM | Band 1/2/3/4/5/7/8/28 Band 40 Band1/2/5/8 850/900/1800/1900MHz | 2*10/100Mbps | 1*RS232, 1*RS485 | 4*DI, 4*DO | No | No |
| IG502-FQ78-W-G | Australia & Latin America | LTE CAT4 | LTE-FDD LTE-TDD UMTS(DC-HSPA+) EDGE/GPRS/GSM | Band 1/2/3/4/5/7/8/28 Band 40 Band1/2/5/8 850/900/1800/1900MHz | 2*10/100Mbps | 1*RS232, 1*RS485 | No | Supported | Supported |
| IG502-FQ78-IO-W-G | Australia & Latin America | LTE CAT4 | LTE-FDD LTE-TDD UMTS(DC-HSPA+) EDGE/GPRS/GSM | Band 1/2/3/4/5/7/8/28 Band 40 Band1/2/5/8 850/900/1800/1900MHz | 2*10/100Mbps | 1*RS232, 1*RS485 | 4*DI, 4*DO | Supported | Supported |
| IG502-FQ78-D485-IO-W-G | Australia & Latin America | LTE CAT4 | LTE-FDD LTE-TDD UMTS(DC-HSPA+) EDGE/GPRS/GSM | Band 1/2/3/4/5/7/8/28 Band 40 Band1/2/5/8 850/900/1800/1900MHz | 2*10/100Mbps | 2*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 |
| IG502-EN00-D485-IO-W-G | Global | | No module | | 2*10/100Mbps | 2*RS485 | 4*DI, 4*DO | Supported | Supported |

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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