# InHand Networks

Compact Industrial Router

4G LTE, Five Ethernet Ports, Dual SIM, Cloud Management, GNSS

# InRouter305

## Industrial LTE Router

- Facing the ever-increasing digitalization of the Internet of Things, both the application scenarios of the Internet of Things and the terminal equipment of the Internet of Things, there is an urgent need to realize the Internet to promote the digital transformation of enterprise business, and more economical and more efficient Internet solutions are needed. InHand launches IR305 series products combined with DeviceManager cloud management service. It is suitable for various industries of the IoT, making your digital IoT more convenient, more economical and more efficient!

- The InRouter305 (IR305) is an IoT cellular router that integrates 4G LTE, Wi-Fi, and VPN technologies to provide an easy, reliable, and secure Internet connectivity. With technologies such as 4G wireless wide area network and Wi-Fi wireless local area network, it provides uninterrupted multiple network access capabilities, and with its comprehensive security and intelligent software services, efficient and secure network can be realized and it can also provide safe and reliable data links for enterprises to realize digital networking.

- This product is suitable for the networking of unattended devices and sites. It is embedded with watchdog and multi-layer link detection mechanisms to ensure reliable and stable communications. Meanwhile, combined with the InHand Device Manager cloud platform, it is easy for enterprise users to conduct unified cloud management centrally, grasp status of devices effortlessly, save deployment costs and improve management efficiency, providing one-stop solutions for your large-scale IoT deployment.

Key industries：

| | |
|---|---|
| Smart Commerce | – ATM ,POS<br>– Unattended kiosk<br>– Digital signage<br>– Retail Stand |
| Smart Energy | – EV Charging<br>– Power distribution , Meter reading |
| Smart City | – Heat, Water & air supply<br>– Gas supply security; Traffic management、<br>– E－police<br>– Smart parking |
| Smart Manufacturing | – Networking machines robots<br>– Industrial automatic factories & productions lines |
| Smart medical care | – Medical device networking and other applications |

## Application Case
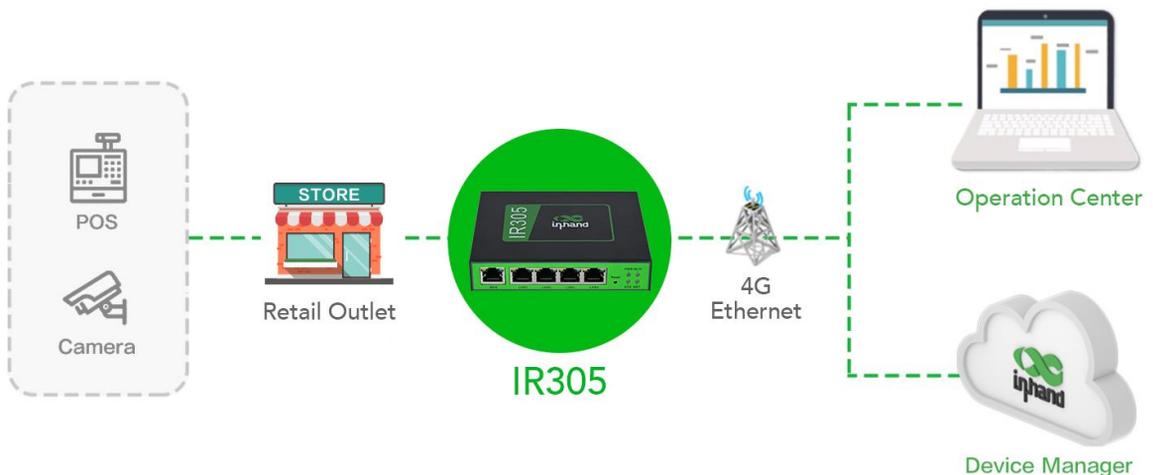
# Features and Advantages

## ● Uninterrupted network access

IR305 has a variety of network access capabilities (cellular, Wi-Fi and wired), serving for different network environments. It provides network access at different rates for different business demands. Even for on-site IoT devices, convenient and efficient network access services are provided.

- Supports 4G cellular access, LTE CAT1/CAT4/CAT6 standard, compatible with 2G/3G network.

- Supports Wi-Fi, both AP & STA modes, for users to easily set up secure wireless networks. Supports 802.11b/g/n, transmission rate up to 300Mbps; WEP/WPA/WPA2 encryption. Failover between 4G and Wi-Fi, effectively ensuring uninterrupted data transmission.

## ● Concise and convenient cloud management

IR305 connects to the InHand DeviceManager remote device management cloud platform to manage tens of thousands of distributed site devices in real time and grasp device status anytime and anywhere, making management more economical and more efficient! Build remote connections for efficient operation and maintenance.

## ● "Always online", ensuring uninterrupted network

Provides high quality network services that are always online, ensuring the stability of business network, reducing the risk of network malfunction, saving network investment cost.

- Link-backup : enabling wired, cellular and Wi-Fi to make backup mutually；

- Dual SIM failover, automatically switches to the more stable carrier networks；

- VRRP hot backup mechanism : redundant backups.

- Multi-layer detection mechanism : detects link status , realizing automatic re-pull and fault self-recovery

## ● Strong security protection

Security protection is critical in a complex network environment. Multi-level security policies protect sensitive data and key service networks from attacks and threats, providing a secure network to protect digital assets while business advances rapidly.

- Data transmission: IPsec VPN, L2TP, PPTP, OPEN VPN, WireGuard, ZeroTier, DMVPN, GRE and CA certificate.

- Network protection: supports SPI (Stateful Packet Inspection), SSH (Secure Shell), intrusion protection (forbidden ping), DDoS defense, attack defense, IP-MAC binding, etc., protecting the network against external attacks.

- Device access: supports user hierarchical authorization (CLI only), implementing secure access management by providing different roles and different permissions.

## ● Build remote connections for efficient operation and maintenance

IR305 with InHand InConnect cloud connection service, users can quickly and conveniently realize remote maintenance and remote monitoring onsite devices. Diagnose, debug, program and respond to on-site faults and locate problems for distributed devices through remote connections to reduce loss.

## ● Abundant industrial ports, covering IoT scenarios

With rich industrial interfaces, the IR305 can be widely used in highly integrated and diversified IoT scenarios to provide cost effective networking deployment solutions.

- 5* 100Mbit/s network port: WAN/LAN/VLAN

- Wireless Wi-Fi: supports AP and STA modes with a maximum bandwidth of 300Mbps

- Industrial serial ports: RS232 & RS485

- Industrial IO: 4-channel digital IO (DI and DO can be configured).

- GNSS: support GPS/ GLONASS /BeiDou /Galileo/ QZSS (positioning accuracy is 2.5 meter)

## ● Industrial-grade design

Metal shell, IP30 protection. EMC level 3. Wide operating temperature: -20℃~70℃. IR305 is compact, which effectively reduces the space of installation and deployment. It supports DIN rail mounting, lug mounting and wall mounting, which is suitable for a variety of IoT deployment sites.

# Dimensions(mm)
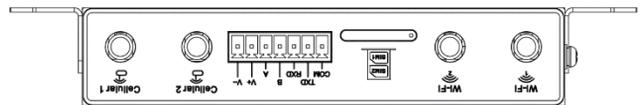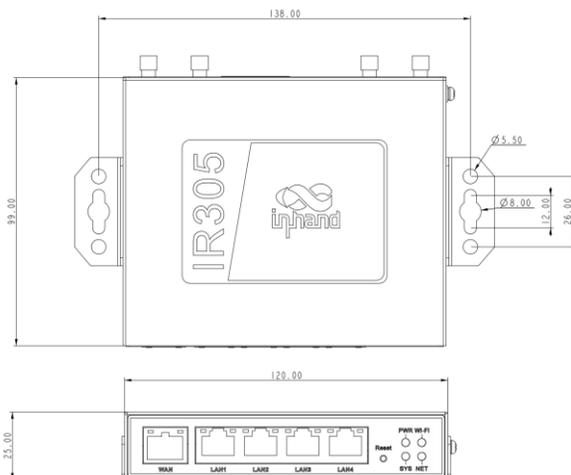


| Industrial Terminal | | | | | | |
|---|---|---|---|---|---|---|
| IR305 | | | | | | |
| COM | DIO4 | DIO3 | DIO2 | DIO1 | V+ | V- |
| IO | | | | | Power supply | |
| IR305-S | | | | | | |
| GND | TXD | RXD | B | A | V+ | V- |
| RS232 | | | RS485 | | Power supply | |

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# Production Specifications

## InRouter305 Hardware Specifications

### Hardware Platform

| | |
|---|---|
| CPU | 580MHz |
| RAM | 128MB DDR2 |
| FLASH | 64MB SPI |

### Interface

| | |
|---|---|
| Ethernet Port | 5*10/100Mbps fast Ethernet port, RJ45，WAN/LAN/VLAN port，1.5KV network isolation transformer protection |
| Power Supply | DC9–36V, over–current protection, anti–reverse connection, 2 PIN industrial terminal |
| IO.（Optional） | Support 4*IO (DO or IO can be configured) |
| Serial port (*Optional) | 1*RS232 + 1*RS485 |
| *Alternatives for I/O or Serial port | |
| Reset | Pinhole reset button |
| SIM Card | Drawer–type slot*1, support dual–NANO SIM |
| Wi–Fi （Optional） | IEEE 802.11b/g/n，300Mbps |
| GNSS (Optional) | Support GPS/ GLONASS /BeiDou /Galileo/ QZSS Positioning accuracy is 2.5 meter |
| Antenna Connector | 4G： SMA x 1; Wi–Fi：RP–SMA x 2; GPS(Optional): SMA x 1 Note：North America models: 2 x SMA 4G antenna connectors GPS models：1 x RP–SMA Wi–Fi antenna connector, 1 x SMA GPS antenna connector |
| Ground Terminal | Supports |

### Mechanical Specs

| | | | |
|---|---|---|---|
| Dimensions | 120x99x25mm | Weight | 354g |
| Installation | Panel mounting, rail mounting | Protection Rating | IP30 |
| Housing | Metal | Cooling | Fanless |

### Power rate

| | |
|---|---|
| Standby power | 120mA–200mA@12V |
| Working power | 150mA–320mA@12V |
| Peak power | 320mA@12V |

### Wi–Fi Transmit Power

| | |
|---|---|
| Transmit Power | 802.11b:16dBm+/–2dBm(11Mbps) 802.11g:16dBm+/–2dBm(54Mbps) 802.11n@2.4GHz:16dBm +/–2dBm(HT20MCS7) 802.11n@2.4GHz:16dBm +/–2dBm(HT40MCS7) |

### Ambient Environment

| | | | |
|---|---|---|---|
| Storage Temperature | –40～85℃ | Operating Temperature | –20～70℃ |
| Ambient Humidity | 5~95% (no condensing) | | |

### Indicator

| | |
|---|---|
| LED | Power, Status, Cellular, Wi–Fi |

### EMC

| | |
|---|---|
| Static | EN61000–4–2, level 3 |
| Radiation Electric Field | EN61000–4–3, level 3 |
| Pulsed Electric Field | EN61000–4–4, level 3 |
| Surge | EN61000–4–5, level 3 |
| Conducted Disturbance Immunity | EN61000–4–6 ,level 3 |
| Shock Wave Resistance | EN61000–4–12,level 3 |
| Power Frequency Magnetic Field Resistance | EN61000–4–8, horizontal / vertical 400A/m (>level 2) |

### Physical Specs

| | | | |
|---|---|---|---|
| Shockproof | IEC60068–2–27 | Vibration Resistance | IEC60068–2–6 |
| Free Fall | IEC60068–2–32 | | |

### Certificate

CE, FCC, CB, E–MARK, PTCRB, IC, E–Mark, VZW, RCM, AT&T, T–Mobile

## InRouter305 Software Specifications

### Network Connection

| | |
|---|---|
| Network Access | APN, VPDN |
| Access Authentication | CHAP/PAP |
| Network Type | GSM/GPRS/EDGE, UMTS/HSPA+/EVDO/TD–SCDMA/, TDD LTE/FDD LTE (Please refer to the Ordering Guide for frequencies) |
| LAN protocol | ARP |
| WAN protocol | PPP, PPPoE, DHCP |

### Network Protocol

| | |
|---|---|
| IP Application | Ping, Trace, DHCP Server, DHCP Relay, DHCP Client, DNS relay, DDNS, Telnet, IP Passthrough |
| IP Routing | Static routing, OSPF dynamic routing |
| NAT | Supports network address translation |

### Security

| | |
|---|---|
| Network Security | Stateful Packet Inspection (SPI), DoS attack defense; Multicast filter/Ping probe packet, Access Control List (ACL); Content URL filter, port mapping, virtual IP mapping, IP–MAC binding |
| Data Security | Supports PPTP, L2TP, GRE, IPSEC VPN (IKEv1, IKEv2), OPENVPN，DMVPN，WireGuard，ZeroTier Supports CA digital certificate |

### Reliability

| | |
|---|---|
| Hot Backup | VRRP hot backup |
| Link Detection | Sends heartbeat packets to detect, auto redials when disconnected |
| Dual SIM Failover | Supports dual SIM failover |
| Embedded Watchdog | Device runs self–detection, auto recovers from malfunctions |

### WLAN (Optional)

| | |
|---|---|
| Protocol | IEEE 802.11b/g/n |
| Rate | Up to 300Mbps |
| Security | Open system, shared key, WPA/WPA2 certification WEP/TKIP/AES encryption |
| Transmission Distance | 80 meters by line of sight (Actual transmission distance depends on environment of the site.) |

### Intelligence

| | |
|---|---|
| Integrated DTU Functions | TCP, UDP transparent transmission mode, TCP Server mode Supports conversion of Modbus RTU to Modbus TCP bridge Supports DCUDP, DCTCP mode |

### Network Management

| | |
|---|---|
| QoS Management | Bandwidth limit, IP speed limit |
| Configuration | Telnet, web, ssh and console |
| Update | Web, DeviceManager |
| Log | Local system log, remote log, and serial export of log. Power down saving of important logs. |
| SMS Functions | Status query, restart |
| Dial–on–demand | Dial–on–demand, data / SMS activation |
| Network management | Supports InHand DeviceManager, batch management Add the user experience plan to access The InHand Networks cloud platform to enjoy efficient and convenient services |
| SNMP | SNMP v1/v2c/v3，supports SNMP TRAP |
| Traffic Management | Supports data traffic threshold, traffic statistics and traffic alarm |
| Alarm | System restart alarm, LAN port online/offline alarm, data traffic alarm, SIM card failure alarm ,etc. |
| Maintenance Tools | Ping, route tracking, network speed test |
| Status Query | System status, modem status, network connection status, and routing status |

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# Ordering Guide

| Model code: IR305–<WMNN>–<WLAN/NA>–<S/NA>–<G/NA> | | | | |
|---|---|---|---|---|
| Model | <WMNN>: Cellular Type & Module | <WLAN/NA>: Wi-Fi | <S/NA>: Serial/IO | <G/NA>: GNSS |
| IR305–NRQ2–<WLAN/NA>–<S/NA> | (For China 5G)<br>5G NR NSA: n41/n78/n79<br>5G NR SA: n1/n28*/n41/n77/n78/n79<br>LTE–FDD: B1/B3/B5/B8<br>LTE–TDD: B34/B38/B39/B40/B41<br>WCDMA: B1/B5/B8 | WLAN: Wi-Fi<br><NA>: no Wi-Fi | S: 1*RS232+1*RS485<br><NA>: 4*IO | |
| IR305–LQ20–<WLAN/NA>–<S/NA> | (For China CAT4)<br>FDD: B1/B3/B5/B8<br>TDD: B34/B38/B39/B40/B41<br>WADMA: B1/B5/B8<br>GSM: B3/B8 | WLAN: Wi-Fi<br><NA>: no Wi-Fi | S: 1*RS232+1*RS485<br><NA>: 4*IO | |
| IR305–FQ58–< WLAN /NA>–<S/NA>–<G/NA> | (For Europe & APAC, CAT 4)<br>FDD: B1/B3/B7/B8/B20/B28A<br>TDD: B38/B40/B41<br>WADMA: B1/ B8<br>GSM: B3/ B8 | WLAN: Wi-Fi<br><NA>: no Wi-Fi | S: 1*RS232+1*RS485<br><NA>: 4*IO | G: GNSS<br><NA>: no GNSS |
| IR305–FQ53–< WLAN /NA>–<S/NA> | (For Europe & APAC, CAT 1)<br>FDD: B1/B3/B7/B8/B20/B28A<br>WCDMA: B1/B8 | WLAN: Wi-Fi<br><NA>: no Wi-Fi | S: 1*RS232+1*RS485<br><NA>: 4*IO | |
| IR305–FQ39–<WLAN/NA>–<S/NA>–<G/NA> | (For North America, AT&T, VzW, T–Mobile, LTE CAT 6)<br>FDD: B2/B4/B5/B7/B12/B13/B25/B26/B29/B30/B66<br>WCDMA: B2/B4/B5 | WLAN: Wi-Fi<br><NA>: no Wi-Fi | S: 1*RS232+1*RS485<br><NA>: 4*IO | G: GNSS<br><NA>: no GNSS |
| IR305–FF38–<WLAN/NA>–<S/NA>–<G/NA> | (For North America, AT&T, VzW, LTE CAT4)<br>FDD: B2/B4/B5/B12/B13/B17/B66/B71<br>WCDMA: B2/B4/B5 | WLAN: Wi-Fi<br><NA>: no Wi-Fi | S: 1*RS232+1*RS485<br><NA>: 4*IO | G: GNSS<br><NA>: no GNSS |
| IR305–FQ33–<WLAN/NA>–<S/NA> | (For North America, AT&T, VzW, LTE CAT1)<br>FDD: B2/ B4/ B5/ B12/B13/ B25/ B26<br>WCDMA: B2/B4/B5 | WLAN: Wi-Fi<br><NA>: no Wi-Fi | S: 1*RS232+1*RS485<br><NA>: 4*IO | |
| IR305–FQ78–<WLAN/NA>–<S/NA> | (For Australia, Latin America)<br>FDD: B1/B2/B3/B4/B5/B7/B8/B28<br>TDD: B40<br>WCDMA: B1/B2/B5/B8<br>GSM: B2/B3/B5/B8 | WLAN: Wi-Fi<br><NA>: no Wi-Fi | S: 1*RS232+1*RS485<br><NA>: 4*IO | |
| IR305–EN00–<WLAN/NA>–<S/NA> | NA | WLAN: Wi-Fi<br><NA>: no Wi-Fi | S: 1*RS232+1*RS485<br><NA>: 4*IO | |

**Example: IR305–LQ20–WLAN: Five Ethernet ports IR305 series cellular router, support IPSec / PPTP / L2TP / OPEN VPN.**

Note: Users are asked to join InHand User Experience Plan at first time login. If user agreed to join, the router will connect to InHand DeviceManager portal. If users want to disable it, please go to Services–>User Experience Plan to change the setting.

# 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.

**InHand Networks**

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