



**InHand Networks**  
A Global Leader in Industrial IoT

# M2M PRODUCT CATALOGUE

[www.inhandnetworks.com](http://www.inhandnetworks.com)

# About Us

Founded in 2001 as a technology startup, InHand Networks has been dedicated to the research and development of M2M communications solutions and products. With advanced technologies and quality products, InHand Networks is well regarded by the technology world. In 2012, InHand Networks became Rockwell Automation Encompass Product Partner in Asia-Pacific and Schneider Electric CAPP Technology Partner.

Throughout the years, InHand Networks has been providing advanced, reliable and intelligent communications solutions for customers around the globe and across a wide range of industries, including electric power, oil & gas, water & wastewater, industrial automation, transportation, smart city, smart vending, finance, healthcare, etc.



Smart Grid



Industrial Automation



Smart Transportation



Healthcare



Vending & Kiosks



Finance



Smart City



Environmental Monitoring

# Contents

## ■ WAN Networking

InRouter900 Series Industrial LTE Router	1
InRouter901L Embedded Industrial Cat1 LTE Router	5
InRouter700 Series Industrial 3G Router	8
InRouter600-S Series Entry-level Industrial LTE Router	11
InGateway601 Series Industrial Intelligent Gateway	15
InDTU Series Industrial Cellular Modem	19

## ■ Device Networks Cloud

Device Networks Cloud Remote Management & Maintenance Platform	23
--	----

## ■ LAN Networking

ISM Series Managed Industrial Ethernet Switch	27
ISF Series Ring-type Industrial Ethernet Switch	31
ISE Series Unmanaged Industrial Ethernet Switch	34
IMC Series Industrial Fiber Media Converter	37

## ■ Industrial Computing

InBox300 & 310 Series Android Industrial Computer	39
InPad070 Series 7" Touchscreen All-in-One	43
InPortal3012 Series Wi-Fi Media Hub	46

## ■ Power Line Monitoring

InHand Wireless Overhead-line System	49
--------------------------------------	----



# InRouter900 Series

## Industrial LTE Router

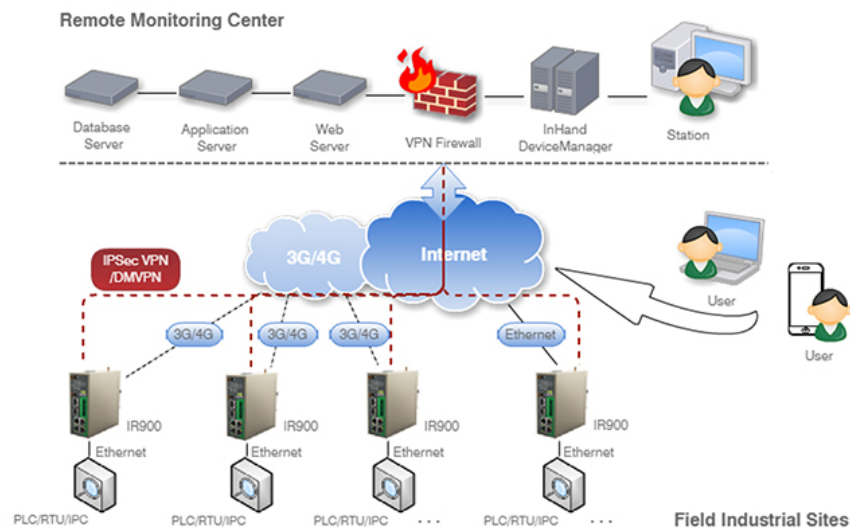


Throughout the years, the reliable and intelligent features, highly rugged build and great efficiency of use of the InRouters have supported customers globally and across industries to upgrade to a new generation M2M network systems.

As a full-featured InRouter series, the InRouter900 provides highly-reliable, high-speed and secure communications for distributed remote devices, and features intelligent software functions including OSPF dynamic routing and DMVPN to support high-efficiency large-scale network deployment and management. With embedded support of InHand OpenDevice platform, the InRouter900 can greatly facilitate custom development of Python programs, meeting specialized requirements with shortened time to deployment. Among a wide range of applications, the InRouter900 can be used in electric power distribution automation, remote automation, oil & gas, digital manufacturing, industrial robots, smart transportation, etc.



## FEATURES AND ADVANTAGES



### Highly Reliable Communication Networks

With fast Ethernet, 3G/4G and xDSL technologies and multiple built-in redundancies, the InRouter900 provides easy, uninterrupted Internet access for remote devices. The multi-level link detection and recovery mechanism and watchdog function further safeguard continuous communications between remote devices and data centers.

- + Fast Ethernet, 3G/4G, xDSL technologies provide easy, diversified Internet access for field devices
- + Dual-redundancy between WAN links, including Ethernet, 3G/4G and Wi-Fi
- + Dual-redundancy of operator networks with support of two SIM cards
- + Support floating static route and VRRP
- + Multi-layer auto link detection and recovery: PPP layer, network layer and VPN tunnel
- + Hardware watchdog, auto recovers from device faults to maintain high availability
- + Wi-Fi 802.11b/g/n, transmission rate up to 300Mbps, AP and client modes, WEP/WPA/WPA2 encryption

### InHand OpenDevice Platform

The InRouter900 is embedded with support of InHand OpenDevice platform. With pre-installed InHand Python SDK, user may access the system APIs and other resources to develop own Python programs that extend the functions of InRouter900 for specialized requirements. The OpenDevice platform will greatly simplify InRouter900's custom development and shorten the time to deployment.

- + Provide integrated development environment for easy access of system APIs and resources
- + Support Python (2.7), 70MB memory available

## High Efficiency Large-scale Deployment and Management

The InRouter900 supports fast deployment of large-scale networks with intelligent software functions including OSPF dynamic routing, DMVPN, etc. Working with InHand Device Manager, the product allows highly efficient central network management of widely distributed cellular routers.

- + Web and CLI tools for efficient configuration of large numbers of routers
- + RIP, and OSPF dynamic routing that enables scalable network deployment with dynamic learning and computing of network routes
- + DMVPN for fast building of large mesh VPNs
- + Support standard SNMP for 3rd party SNMP network management platforms, and InHand's proprietary Device Manager for highly efficient central management of widely distributed routers
- + Support configuration with handheld devices through Wi-Fi, to facilitate field operations e.g. with pole-mounted routers
- + High performance Cortex-A8 processor, 128MB memory, meeting the needs of demanding applications

### IPv6 (\* Only on FW00 models.)

- + Support IPv6, compatible with IPv4 networks
- + New security features that simplify network design and network deployment

## Comprehensive Data Security

The InRouter900 provides comprehensive security protections for business data, including secure VPN transmission, firewalls against network attacks and multi-level authorization access control.

- + Support IPsec VPN, DMVPN, L2TP, OPEN VPN and CA to safeguard data transmission security
- + Stateful Packet Inspection (SPI), Access Control List (ACL), DoS defense, intrusion protection (Ping blocking), attack defense, IP/MAC binding and other firewall protections
- + AAA (TACACS, Radius, local authentication) and multi-level user authorization to establish central authentication and authorization control

## Rugged Hardware Platform

From processor, communication module to electronic parts, the InRouter900 is built thoroughly to the industrial grade to ensure long hours of reliable operation under the harsh industrial conditions.

- + EMC Level 4/3
- + Wide operating temperature: -25°C~70°C
- + Wide voltage input: DC 12-48V
- + Metal housing with fan-less cooling, IP30

## InRouter912 / 915



PTCRB





Visit [www.inhandnetworks.com](http://www.inhandnetworks.com) to find IoT solutions using InRouter900:

- Transformer Monitoring
- GOOSE Messaging over Substation Network
- CT/MRI Remote Monitoring

## MODEL SELECTION GUIDE

MODEL	InRouter912	InRouter915
Part Number	IR91 <N1><N2>-<WMNN>-<W>-<S>-<GPS>	
N1 - No. of Eth Ports	2 x 100Mbps ETH ports	5 x 100Mbps ETH ports
N2 - Cellular Type	P - 3G or no cellular module; L - 4G LTE module	
WMNN - Cellular Network	PS08: UMTS(HSPA+) Band 1/2/5/8 EDGE/GPRS/GSM 850/900/1800/1900 VZ16 (For China): EVDO 800/1900MHz CDMA 1x 800/1900MHz VS08 (For Verizon Wireless USA): EVDO and CDMA 1x VW00: EVDO (450MHz) Receiver: 462.5~467.475MHz Transmitter: 452.5~457.475MHz TL00 (For China): LTE-FDD Band 1/3/8 LTE-TDD Band 38/39/40/41 TD-SCDMA Band 34/39 UMTS(DC-HSPA+) Band 1/5/8/9 EDGE/GPRS/GSM 900/1800MHz FS08 (For Europe): LTE-FDD Band 1/3/7/8/20 UMTS(HSPA+) Band 1/3/8 EDGE/GPRS/GSM 900/1800MHz FS18 (For AT&T USA and North&South America): LTE-FDD Band 2/4/5/17 UMTS(HSPA+) Band 2/4/5 EDGE/GPRS/GSM 850/900/1800/1900MHz FS28 (For Verizon Wireless in USA): LTE-FDD Band 4/13 FH20 (For Europe): LTE-FDD Band 1/2/3/4/5/7/8/20 UMTS(DC-HSPA+) Band 1/2/5/8 EDGE/GPRS/GSM 850/900/1800/1900MHz FA41: LTE-FDD Band 3/7/20/31 (Band 31 for 450MHz LTE, DL: 461~468MHz UL: 451~458MHz) FW00 (For Europe): FDD-LTE Band 3/7/20 EN00=No cellular module	
W - WLAN	NA	W: Wi-Fi, AP & Client modes <NA>: No WLAN(Wi-Fi)
S - Serial Port and IO	NA	S: RS232*1 & RS485*1, support I/O
GPS	NA	GPS: Support GPS <NA>: No GPS
Example	IR912L-TL00: 2*ETH ports, support 4G LTE/TD-SCDMA/HSPA+/WCDMA/GPRS networks IR915P-PS08-W-S: 5*ETH ports, support HSPA+, WLAN (AP&client), RS232&RS485, I/O	



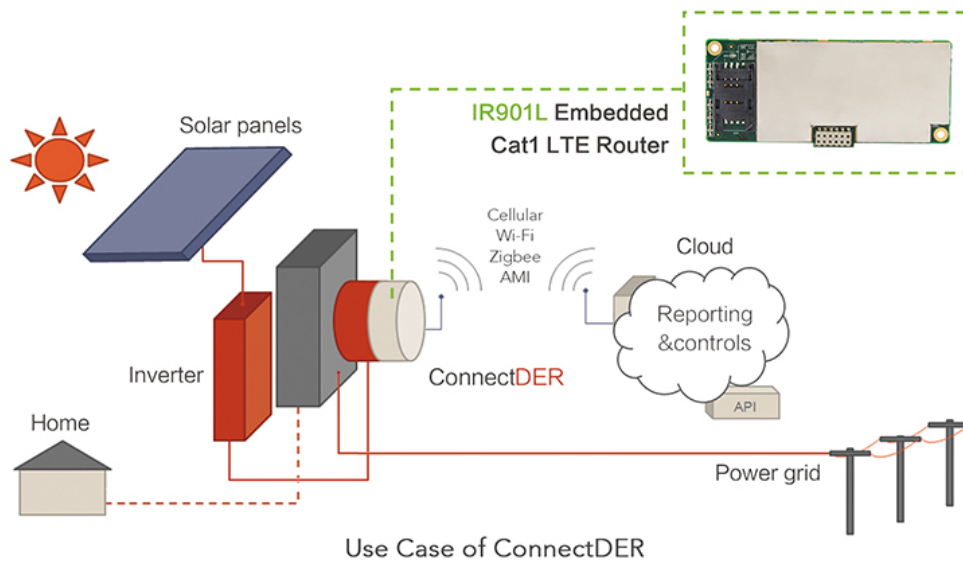
# InRouter901L

## Embedded Industrial Cat1 LTE Router



The InRouter901L is an embedded industrial router developed with the latest 4G LTE Category 1 technology, which provides low-power, low-bandwidth communications that can enable a wide range of devices to be connected over the LTE cellular networks, e.g. meters, on-battery sensors, etc. With downlink and uplink peak rates of 10Mbps and 5Mbps, the Cat1 LTE router can afford high performance, low-power communications for many industrial IoT applications.

## FEATURES AND ADVANTAGES



### High-performance, Low-power IoT Applications

With downlink and uplink peak rates of 10Mbps and 5Mbps, the Cat1 LTE router can afford high performance, low-power communications for a wide range of IoT applications.

- + 4G LTE Cat 1 technology, 10Mbps and 5Mbps downlink and uplink peak rates, enabling low-power, high-performance communications
- + 4G cellular module plus 1 Ethernet port, to safeguard always-on connection
- + Cortex-A8 processor and 128MB memory, meeting for demanding applications

### Easy Integration of Cellular Connectivity

The InRouter901L embedded router features a compact form factor, meaning easy integration and a short time-to-market to embed cellular connectivity in customer devices.

- + Compact easy-to-embed form factor, dimensions are 45.2 x 106.9 x 11.9mm
- + A low-cost and easy-to-deploy solution for OEMs

### High-reliability Communications

Like the other InRouters, the new InRouter901L provides highly-reliable communications. The high-reliability multi-layer link detection and recovery mechanism can maintain continuous connection between remote devices and data center.

- + High-reliability multi-layer link detection & recovery: PPP layer, network layer and VPN tunnel
- + Hardware watchdog, auto recovers from device failures to ensure highest level of availability

## Fast Large-scale Deployment

Advanced software functions like OSPF dynamic routing and DMVPN will greatly facilitate device networking in large-scale IoT applications.

- + Dynamic routing of RIP, OSPF, automatically update whole network routes, enabling fast large-scale deployment
- + Dynamic Multipoint VPN (DMVPN) for easy building of large mesh VPNs
- + Standard SNMP, and InHand DeviceManager platform of enhanced management of cellular network devices
- + CLI and user-friendly Web configuration

## Data Security

Comprehensive protections of data security include VPN, firewalls and multi-level user authorization.

- + Support GRE, L2TP, IPsec VPN, DMVPN, OpenVPN and CA to protect data transmission security
- + SPI, ACL, DoS defense, Ping blocking, attack defense, IP/MAC binding and other firewall protections
- + AAA, TACACS, Radius, LDAP, local authentication, and multi-level user authorization for access security

## MODEL SELECTION GUIDE

MODELS	InRouter901L
Part Number	IR901L-<WMNN>
WMNN W=cellular networks MNN=cellular module	FS31: LTE-Band 4, 13 (1700/2100 AWS, 700MHz)
Example	IR901L-FS31: support LTE band 4 and 13

InRouter901L





# InRouter700 Series

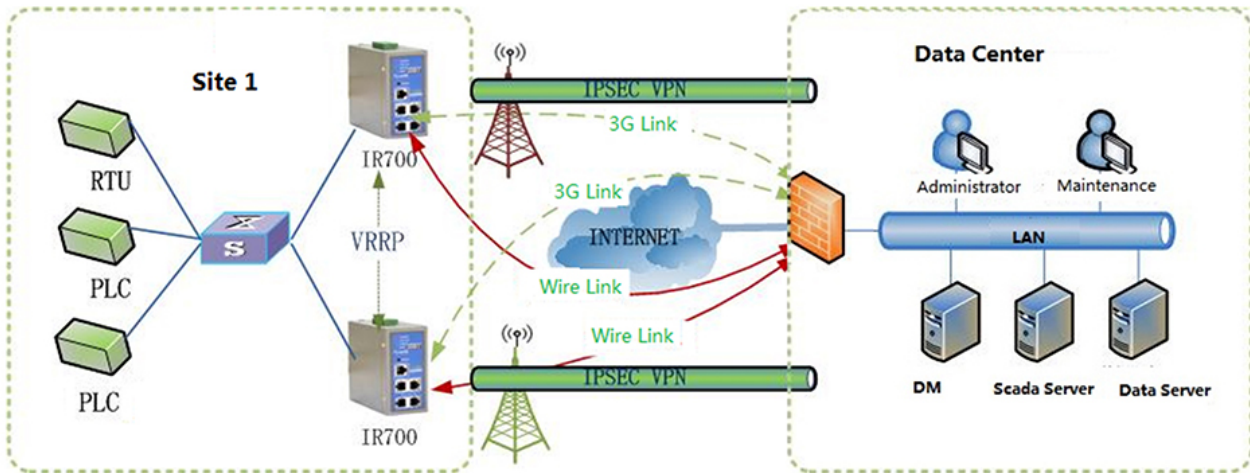
## Industrial 3G Router



The InRouter700 is a series of rugged, compact-sized 3G routers. As a heritage InRouter series, the InRouter700 is built thoroughly for industrial grade needs.

The product can provide robust communications under severely challenging industrial conditions, such as strong electromagnetic interferences, extreme temperatures, voltage input fluctuations, vibrations and dusty conditions. With multiple link redundancies and intelligent link detection & recovery mechanisms, the InRouter700 maintains reliable connections between widely distributed remote sites and the monitoring centers. For years, the robustness and reliability of the InRouter700 Series Industrial Router are proved in many projects across industries.

## FEATURES AND ADVANTAGES



### Fully Industrial-grade Build

The InRouter700 is robustly rugged to withstand challenging industrial environments. It supports standard DIN rail and is compact-sized to fit into racks and cabinets.

- + Compact-sized, support standard industrial DIN rail
- + Metal housing, IP30 protection
- + Class 4/3 EMC certification
- + Wide operating temperature: -25°C~+70°C
- + Wide voltage input: 9~48VDC
- + Ethernet port supports 1.5KV isolation protection; serial port supports 15KV ESD protection
- + Industrial-grade power terminal with reverse connection and over-current protection

### Highly-reliable Communications

The InRouter700 is designed with auto link detection and recovery mechanism on multiple network layers to safeguard reliable communications. It is also embedded with dual link backup solutions. When the main link fails, it will automatically switch to the backup link to maintain communication.

- + Support VRRP for redundant backup with dual routers
- + Dual-redundancy between wired and wireless links or two wireless links
- + Link layer detection, ICMP detection on network layer, VPN tunnel detection and auto recovery mechanisms

### Intelligent Protocol Conversion

Intelligent protocol conversion helps to simplify the infrastructure building when networking devices using different communication protocols.

- + Support conversion between Modbus TCP, Modbus RTU industrial protocols
- + Support conversion between IEC101, IEC104 electric power protocols

## Comprehensive Security Protection

The InRouter700 takes comprehensive security measures to protect communications between field sites and monitoring centers, including VPN transmission, network firewalls and multi-level access control.

- + IPsec VPN, L2TP, SSL VPN, CA certificates to safeguard data transmission security
- + Firewall protections including SPI statefull inspection, Secure Shell (SSH), intrusion protection (ping blocking), DoS defense, detection prevention, IP-MAC binding, etc.
- + Multi-level user authorization mechanism for access security

## Easy, Efficient Deployment and Management

Network deployment and management with InRouter700 can be very efficient and easy.

- + User-friendly Web and CLI configuration tools
- + Support InHand Device Manager for efficient network management, especially large-scale networks

## MODEL SELECTION GUIDE

MODEL	InRouter700*
Part Number	IR7<X><N1><N2><S>
X - Network Security	9: VPN, support CA, SSL and OpenVPN
N1 - Number of Ports	1: 1 port 4: 4 ports
N2 - Cellular Network	VZ16: CDMA2000 EVDO, 1x TZ05: TD-SCDMA/EDGE/GPRS PH09: UMTS(HSPA+) 850/900/1900/2100MHz GSM 850/900/1800/1900MHz
S - Serial Port	<NA>: RS232 485 : RS485
Example	IR791PH09-485: 1-port wireless router, HSPA+, RS485 serial port

Note: \*The InRouter700 Series has reached end-of-life status, which means InHand Networks has stopped R&D development of it.

InRouter791 / 794





# InRouter600-S Series

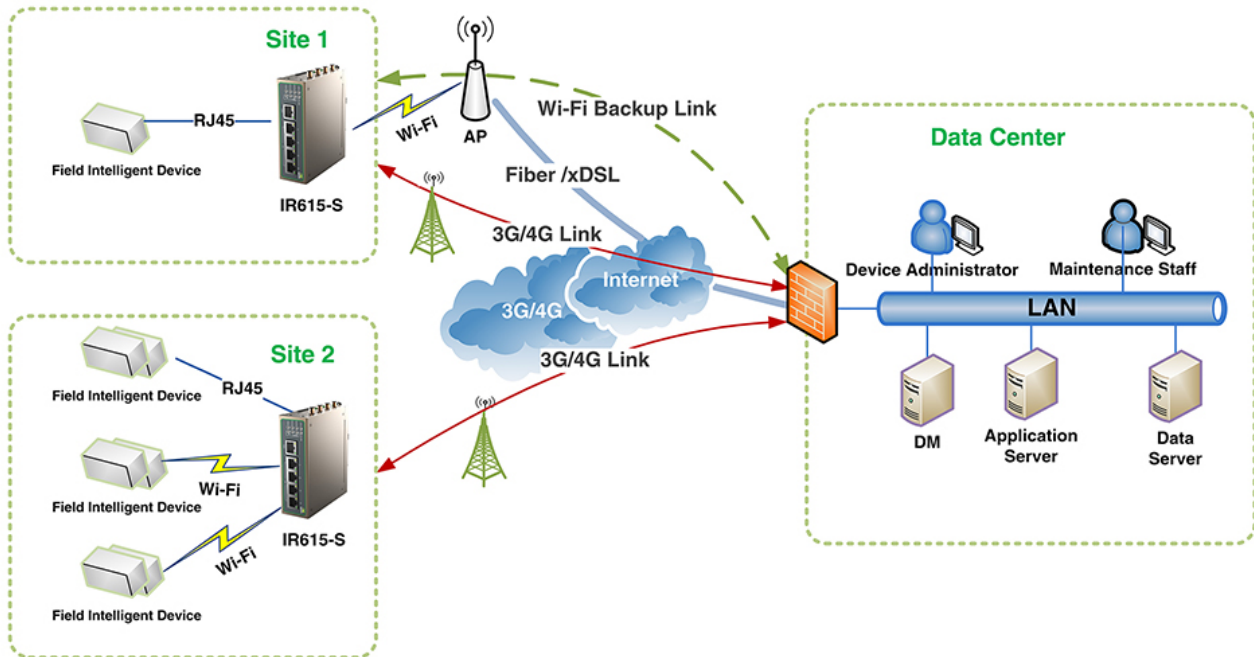
## Entry-level Industrial LTE Router



Integrating 3G/4G cellular routing and VPN technologies, the InRouter600-S is a series of entry-level industrial IoT routers that provide uninterrupted network access, easy deployment and comprehensive remote device management for light industrial applications.

With support of 3G/4G, fast Ethernet and Wi-Fi, the router provides easy, diversified network access for field devices. It can fully meet communication requirements of unattended sites, with soft and hardware watchdogs and multi-layer link detection mechanism safeguarding continuous availability. The product provides a robust security protection for business data, including encrypted VPN transmission, firewall protections and multi-level authorization access control. Working with InHand Device Manager, the InRouter600-S series allows easy and comprehensive management of large-scale device networks, for example, of digital signage, electric vehicle chargers, self-service express cabinets, vending machines, multimedia advertisement machines, smart medical devices, etc.

## FEATURES AND ADVANTAGES



### Reliable High-speed Communications

Reliable networks provide uninterrupted communications that improve operation efficiency. The InRouter600-S series features multiple link redundancies and auto link detection mechanism to provide industrial-grade communication reliability.

- + Support major 3G & 4G LTE networks globally, certified by major carriers
- + Support fast Ethernet and multiple DSL
- + Soft and hardware watchdogs to auto recover from device faults
- + Multi-layer link detection mechanism to auto recover from link faults without human intervention
- + Multiple link backup mechanisms to maintain continuous network connection

### Comprehensive Security Solution

The InRouters are designed with a comprehensive security solution to protect business data, including encrypted VPN transmission, firewall protections and multi-level authorization control.

- + Secure critical business data with encrypted VPN transmission, support multiple VPN encryption modes: IPSec VPN, L2TP, PPTP, SSL VPN and CA
- + Firewall protections against cyber threat vectors: SPI (Stateful Packet Inspection), SSH (Secure Shell), intrusion protection (Ping blocking), DoS defense, attack defense, IP-MAC binding, etc.
- + Multi-level user authorization for access security

## Compact Rugged Frame

The industrial-grade build of the product ensures it can withstand extreme temperatures, voltage fluctuations, electromagnetic interferences, etc., to maintain continuous communications even under harsh operating conditions.

- + Compact easy-to-fit aluminum alloy frame, IP30 protection
- + Wide operating temperature: -20°C~+70°C
- + Wide voltage input: DC9~26V
- + High EMC level
- + 1.5KV isolation protection on Ethernet port

## Easy to Deploy and Manage

Customers often find the user-friendly management tools of InRouters make network deployment and management efficient and easy.

- + Multiple ways of installation: DIN rail mounting, lug hanging, wall mounting, etc.
- + Support APN auto-negotiation, requiring no user configuration on simple public network connections
- + CLI and user-friendly Web configuration
- + Support InHand Device Manager for efficient central network management

## Wi-Fi

- + Support Wi-Fi 802.11b/g/n, transmission rate up to 300Mbps
- + Support AP and client modes



Visit [www.inhandnetworks.com](http://www.inhandnetworks.com) to find IoT solutions using InRouter600-S:

- Wireless ATM Solution
- Unattended Digital Signage
- Cellular Backup for Outlets & Branches

## InRouter611-S / 615-S



## MODEL SELECTION GUIDE

MODEL	InRouter611-S	InRouter615-S
	IR611-S-<N>-<WLAN>-<S>	IR615-S-<N>-<WLAN>
N - Cellular Network	PS08 (For global): UMTS(HSPA+) Band1/2/5/8 EDGE/GPRS/GSM 850/900/1800/1900 VH09 (For China): EVDO 800MHz CDMA 1x 800MHz	U/30108: UMTS(HSPA+) Band1/2/5/8 EDGE/GPRS/GSM 850/900/1800/1900 U/30207: UMTS(HSPA) Band1/8 EDGE/GPRS/GSM 850/900/1800/1900 V/40115 (For Verizon Wireless USA): EVDO 800MHz CDMA 1x 800MHz
	TL00 (For China): LTE-FDD Band 1/3/8 LTE-TDD Band 38/39/40/41 TD-SCDMA Band 34/39 UMTS(DC-HSPA+) Band 1/5/8/9 EDGE/GPRS/GSM 900/1800MHz FS08 (For Europe): LTE-FDD Band1/3/7/8/20 UMTS(DC-HSPA+) Band1/3/8 EDGE/GPRS/GSM 900/1800MHz FS18 (For North & South America): LTE-FDD Band2/4/5/17 UMTS(DC-HSPA+) Band2/4/5 EDGE/GPRS/GSM 850/900/1800/1900MHz FS28 (For Verizon Wireless): LTE-FDD Band2/4/13	L5/60218 (For China): LTE-FDD Band 1/3/8 LTE-TDD Band 38/39/40/41 TD-SCDMA Band 34/39 UMTS (DC-HSPA+) Band 1/5/8/9 EDGE/GPRS/GSM 900/1800MHz L3/60123 (For Europe): LTE-FDD Band 1/3/7/8/20 UMTS(HSPA+) Band 1/3/8 EDGE/GPRS/GSM 900/1800MHz L3/60124 (For AT&T USA, North & South America): LTE-FDD Band 2/4/5/17 UMTS(HSPA+) Band 2/4/5 EDGE/GPRS/GSM 850/900/1800/1900 L/60625 (For Verizon Wireless USA): LTE-FDD Band 4/13 L3/60220 (For Europe): LTE-FDD Band 1/2/3/4/5/7/8/20 UMTS (DC-HSPA+) Band1/2/5/8 EDGE/GPRS/GSM 850/900/1800/1900
	EN00=No cellular module	EN00=No cellular module
WLAN - Wi-Fi	<NA>: no Wi-Fi WLAN: Wi-Fi, AP & Client modes	<NA>: no Wi-Fi WLAN: Wi-Fi, AP & Client modes
S – Serial Port	<NA>: RS232; 485: RS485	
Example	IR611-S-TL00-WLAN: 1*ETH port, support IPSec/PPTP/L2TP/OPEN VPN, support 4G LTE, Wi-Fi AP & Client, RS232	IR615-S-L5-WLAN: 5*ETH ports, support IPSec/PPTP/L2TP/OPEN VPN, support 4G LTE (five modes), Wi-Fi AP & client, RS-232 or 485 serial port



# InGateway601 Series

## Industrial Intelligent Gateway

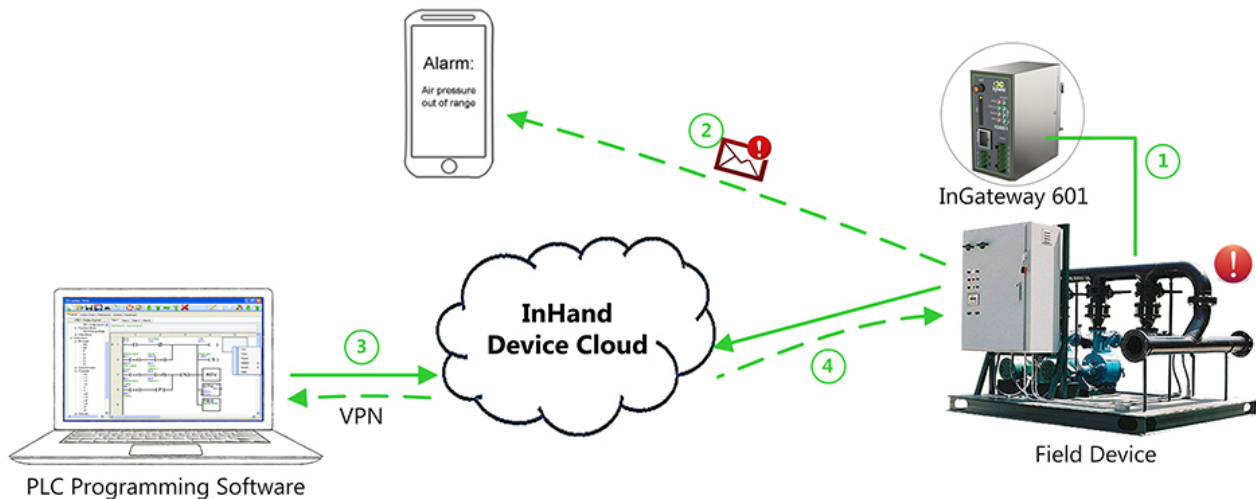


With the prevailing of automated devices, manufacturers, system integrators and end-users are facing ever greater challenge in device management and maintenance. Integrating 3G cellular routing, Modbus data acquisition, SMS alarming and VPN technologies, the InGateway601 intelligent gateway is a networking product designed for remote maintenance and management of field industrial devices.

On industrial sites, InGateway601 polls operation variables of the field controller and builds secure VPN tunnels to monitoring centers. Administrators may log in the monitoring center to check real-time status, set alarming criteria, etc. It keeps engineers updated with the real-time variable monitoring and auto SMS alarming when triggered by predefined criteria. Through on-demand VPN tunnels, engineers can remote debug, diagnose and program the field controllers, completing maintenance securely from anywhere over the ubiquitous cellular networks.

The product can also be used as the communication gateway for collaborative operation of devices.

## FEATURES AND ADVANTAGES



### Remote Monitoring and Auto SMS Alarming

On field sites, InGateway601 polls operation variables of PLCs and submit to the monitoring center periodically over GPRS/3G networks. Engineers may log in the monitoring center at any time to check real-time status and alarms of field devices.

According to predefined criteria, e.g. an operation variable exceeds a certain limit, the InGateway601 will send out automatic alarms via predefined methods: Web and/or SMS text message.

- + Modbus acquisition of operation variables
- + Remote monitoring of real-time status
- + Auto alarming by Web and/or SMS when triggered by predefined criteria
- + Support 3G networks: HSPA+, EV-DO

### Remote Maintenance via PLC Programming

The InGateway601 supports programming through the Ethernet or serial port of PLCs or other controllers. When an alarm occurs, the engineer can log in InHand Device Touch to remote debug and program the field PLC through a secure VPN tunnel. Thus, the InGateway601 can help engineers maintain field devices securely from anywhere over the ubiquitous cellular networks.

- + Login through native client of InHand Device Touch to remote debug, diagnose and program field PLCs or other controllers
- + Communicate with the field device through a secure, on-demand VPN tunnel that provides all the security of a VPN without any complex VPN configuration

## Robust Security Protection

The product provides a robust security protection for remote communications.

- + Data transmission protection with multiple VPN encryption modes: GRE, L2TP, PPTP, IPSec, OpenVPN, Certificates
- + SMS White List set field devices to respond to users in the white list only, shielding from malicious messages
- + Stateful firewalls against network attacks
- + Multi-level user authorization for access security

## Easy to Manage

The product can be managed easily, whether for single installation or large systems.

- + User-friendly Web configuration interface
- + SMS inquiry and control. By SMS messaging, the administrator may remote inquire variables or control PLCs via Modbus over serial or Ethernet port, or reboot the IG601
- + Support SNMPv3, v2, and v1 for integration with enterprise network management applications
- + Work with InHand Device Manager for efficient network management of cellular devices

## Ruggedized for Industrial Environments

Extending the ruggedness of InRouter series, the InGateway601 is built to withstand unforgiving industrial conditions.

- + Passed EMC Level 3
- + Wide operating temperature: -30°C~+70°C
- + Wide voltage input: 12~24VDC
- + Metal housing with fan-less cooling, IP30
- + 1.5KV isolation protection against voltage fluctuation on Ethernet port; 15KV ESD protection on serial port

## Serial Port Networking

- + Protocol conversion between serial and Ethernet ports: Modbus RTU&TCP, DC protocol, IEC101 & 104
- + Multiple virtual serial links



Visit [www.inhandnetworks.com](http://www.inhandnetworks.com) to find IoT solutions using InGateway601:

- Gas Pipeline Remote Monitoring
- Wastewater Treatment

## InGateway601



## MODEL SELECTION GUIDE

MODEL	InGateway601
Part Number	IG601-<NW>
NW - Cellular Network	PS08: UMTS(HSPA+) Band1/2/5/8 EDGE/GPRS/GSM 850/900/1800/1900 VS08 (For Verizon Wireless, USA): EVDO and CDMA 1x
Example	IG601-PS08: support VPN, HSPA+ network, RS-232 or RS-485 serial port
Accessory	Includes standard antenna. External power supply or adapter is not included.



# InDTU Series

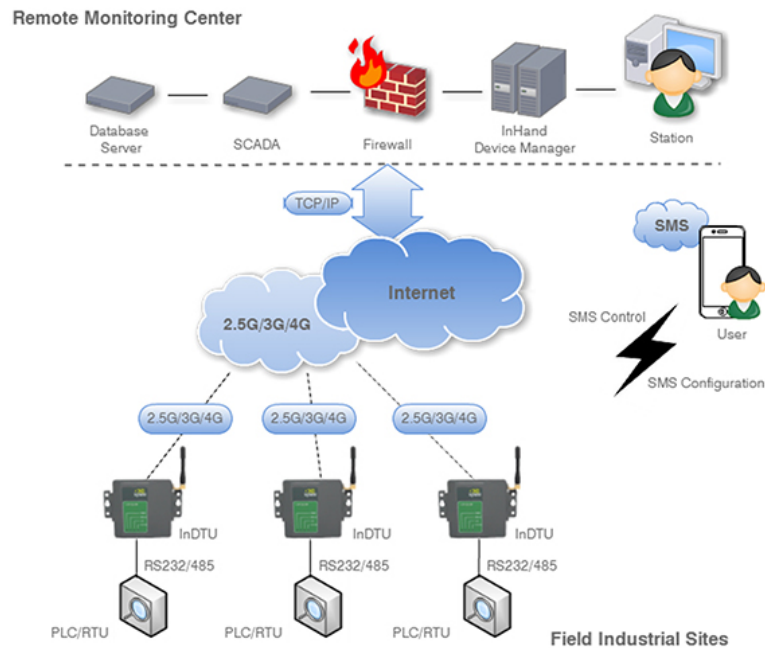
## Industrial Cellular Modem



The InDTU builds TCP/IP based wireless transmission channels over 2G/3G/4G networks to carry out data communication between serial devices at remote stations and central controlling systems, to enable remote control of field devices. With a high-reliability communication module, robust PPP, TCP/IP and application layer protocol suite and optimized network specs, especially narrow band link specs, the InDTU series sports outstanding performance on wireless communications.

With technical specs reaching both industrial and electric power distribution automation standards, the InDTU Series Industrial Cellular Modem has been a key component of remote automation across industries.

## FEATURES AND ADVANTAGES



### Highly-reliable Wireless Communications

With a high-reliability communication module, robust PPP, TCP/IP and application layer protocol suite, and optimized network specs especially narrow band link specs, the InDTU series sports outstanding performance on wireless communications.

- + Built-in watchdog, self-recover from hardware faults
- + Link redundancy mechanism to maintain continuous data transmission
- + PPP layer heartbeat detection to maintain network connection
- + TCP layer heartbeat detection to maintain the connection to application server

### Rugged Industrial Modem

Rugged, industrial-grade design of the product ensures it can withstand harsh conditions like extreme temperatures, dusty conditions, voltage fluctuations, etc. as required by its applications.

- + Industrial-grade chip of ultra-low power consumption, adaptable to various power supply modes
- + Wide operating temperature:  $-40^{\circ}\text{C}\sim 70^{\circ}\text{C}$
- + Wide voltage input: 5~35VDC
- + Solid housing, IP30 protection
- + Compact-sized, easy to fit and integrate

## Easy and Flexible to Manage

The InDTU supports multiple configuration methods, is very easy and flexible to manage with.

- + Local configuration through serial port
- + Local configuration with handheld device
- + Support SMS configuration
- + Support configuration through remote TCP/IP access
- + Support InHand Device Manager platform for central remote management

## Functions for Intelligent Solutions

- + Support protocol conversion between Modbus RTU and Modbus TCP
- + Support protocol conversion between IEC 101 and IEC 104
- + Support transmission optimization (DC protocol)
- + Support multiple (1~5) centers

## Support Custom Development

- + ARM 180MHZ processor, support multi-tasking and multi-processing
- + 4MB RAM and 128MB/64MB flash optional to store and execute applications

Visit [www.inhandnetworks.com](http://www.inhandnetworks.com) to find IoT solutions using InDTU:  
• Distribution Automation

InDTU332 / 732

CEFC



## MODEL SELECTION GUIDE

MODEL	InDTU300 (Standard Model & Embedded Model)
	InDTU3<F><X><M>-<S><I>
F - Function	1: Industrial grade 3: Electric power grade
X - Installation	1: Embedded model 2: Standard model
M - Module	G552: GPRS network WS05: WCDMA network LH09: LTE network
S - Interface	232: RS-232 485: RS-485
I - Connector	D: DB9 NA: blank, industrial terminal block
Example	InDTU332LH09-232: electric power grade, standard model, support 4G LTE network, RS232, terminal block interface

MODEL	InDTU700 (Standard Model & Embedded Model)
Part Number	InDTU73<X><M>-<S><I>
F - Function	1: Industrial grade 3: Electric power grade
X - Installation	1: Embedded model 2: Standard model
M - Module	G: GPRS WH09: WCDMA
S - Interface	232: RS-232 485: RS-485
I - Connector	D: DB9 NA: industrial terminal block
Example	InDTU732WH09-232D: standard model, electric power grade, WCDMA, RS-232, DB9



# Device Networks Cloud

## Remote Management & Maintenance Platform



In the wave of IoT, more and more distributed industrial devices need to be centrally managed, monitored and maintained. The InHand Device Networks Cloud is the next step of M2M networking. Device manufacturers, system integrators and end-users can manage their distributed devices, from tens up to hundreds of thousands or even millions, with great efficiency on this highly scalable, high performance and secure remote management and maintenance platform.

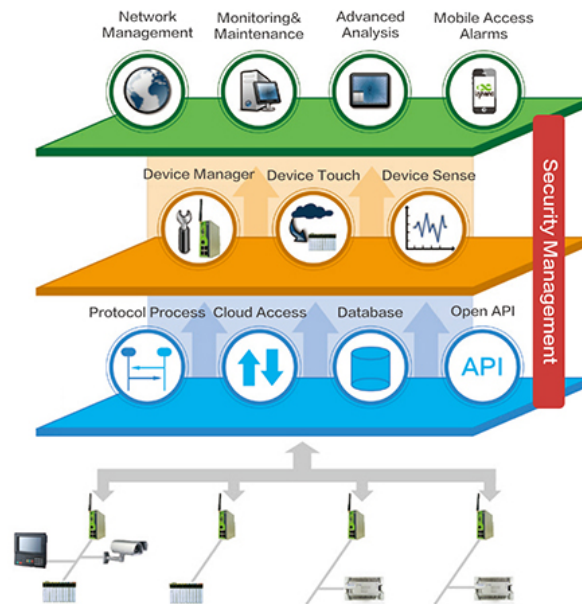
Benefits of Device Networks Cloud include:

- Central management of widely distributed devices, either in small or large scales, with great efficiency
- Real-time monitoring of field operations, and regular production reports
- Real-time alarming of device faults for prompt response and reduced down time
- Instant remote maintenance through remote debugging and programming with Device Touch
- Central asset management with GIS-based system, incl. device, customer and location information
- Values of operation data: predictive maintenance, operation optimization and new service possibilities
- Deployment with minimum cost and effort, no change to on-site communication infrastructure



**DEVICE NETWORKS CLOUD:**  
g.inhandnetworks.com

# FEATURES AND ADVANTAGES



## High Performance System of Great Scalability

- + High performance system with elastic scalable virtual infrastructure, allows access of up to hundreds of thousands, or even millions of devices without affecting system performance
- + Backed by massive storage of Device Cloud
- + Innovative on-demand connection mechanism, effectively improves system efficiency while saving data costs
- + Front-end intelligent processing logic

## Usability

- + Completely B/S architecture based, friendly web browser interface
- + GIS-based dynamic display
- + Uniform access of diversified communication protocols, support all major brands of PLCs, HMIs, etc.

## Security

- + Secure VPN connection with transmission data completely SSL encrypted
- + Network firewalls
- + Multi-level user authorization mechanism
- + OAuth2.0
- + Database isolation
- + VPC

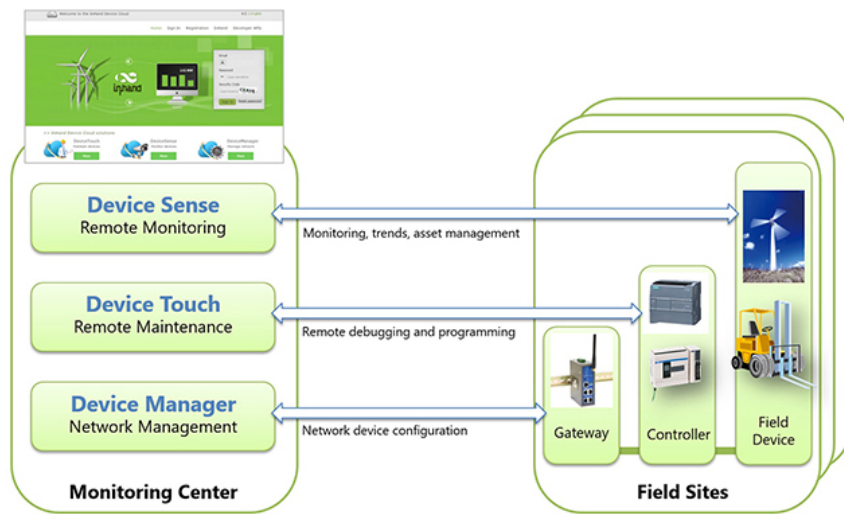
## Openness

- + Open APIs for custom UI, 3rd-party systems and applications
- + Open gateway SDK

## Availability

- + Amazon AWS global cloud hosting for the best possible availability and access service around the globe
- + Support server clustering

## DEVICE NETWORKS SUITE



### Device Manager



Remote monitoring, tracking and configuration of InHand networking devices. It tracks and monitors network devices in a simple browser interface that is B/S based and requires no software installation.

- + Network management: batch configuration/upgrade, background update without intervening
- + Monitor real-time location and connection status of InHand networking devices
- + Network performance tracking, incl. connection status, connection quality
- + Asset management by GIS location, incl. device and customer information
- + Data usage tracking, threshold setting and email alarming
- + Multi-level user authorization control
- + Logs of configuration changes

### Device Touch



Engineers can remote debug, program field PLCs or other controllers with native Device Touch client through a secure, on-demand VPN tunnel.

- + Remote maintenance by remote debugging, diagnosing and programming field PLCs or other controllers
- + On-demand VPN connection
- + HTTPS for login security
- + Firewall protection
- + Access PLCs through Ethernet or serial port, support all Ethernet and most RS-232/485 devices, including all major brand PLCs and controllers
- + Logs of usage record and task status
- + Easy-to-install client

## Device Sense



Remote monitoring and tracking of operation variables of field devices, for proactive monitoring, data tracking, data analysis and operation optimization.

- + WebSCADA, real-time monitoring of device operation
- + Rich selections of operation variables
- + User-defined web alarms, push to phone APP alarms, email alarms of data usage exceeding predefined limit
- + Alarm acknowledgement mechanism, alarming stops until acknowledged
- + Regular customized reports in tables and graphs
- + Big data aggregation and trend analysis, support 3rd party analysis application
- + Support all major communication protocols: Modbus RTU, Modbus TCP, PPI, MPI, etc.

## PRODUCT SELECTION GUIDE

	Item	Description	Notes
Device Networks Software Clients	Device Manager	Software client to remote configure, monitor and track InHand networking products	
	Device Touch	Software client for engineers to remote debug, program field PLCs or other controllers	To be used with Device Manager.
	Device Sense	Software client to remote monitor and track operation variables of field devices	To be used with Device Manager and Device Touch.
Device Networks Cloud Services	Device Manager	Cloud service to remote configure, monitor and track InHand networking products	
	Device Touch	Cloud service for engineers to remote debug, program field PLCs or other controllers	To be used with Device Manager.
	Device Sense	Cloud service to remote monitor and track operation variables of field devices	To be used with Device Manager and Device Touch.



# ISM Series

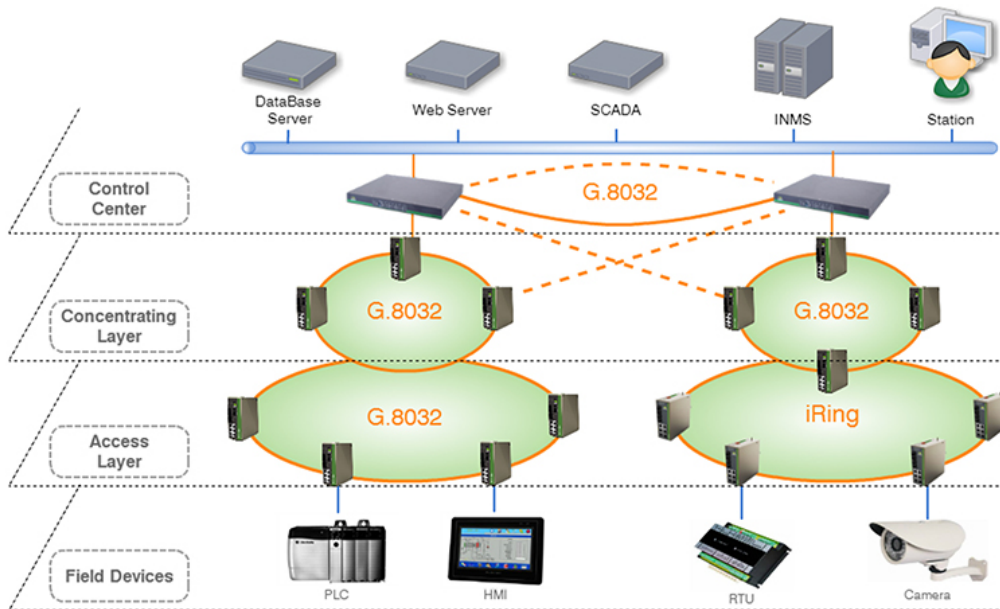
## Managed Industrial Ethernet Switch



Featuring advanced network functions and highly rugged build, the ISM Managed Industrial Ethernet Switch can build highly-reliable, advanced and complicated network systems.

Industrial systems often require complicated communication networks, whereas advanced functions are needed to safeguard reliable high-speed communications. The ISM series Ethernet switch features an industry-leading ring recovery of <math><5\text{ms}</math> with open standard protocol ITU-T G.8032, protecting the core network of complicated systems ultimately with seamlessly self-healing redundant ring. It also supports ring protocols STP, RSTP, iRing, and the optimized RSTP (DRSTP). The highly rugged design ensures the ISM switch can build robust and durable communication systems to operate in the most unforgiving industrial environments.

## FEATURES AND ADVANTAGES



### Highly-reliable Advanced Communication Systems

The ISM series features an industry-leading ring recovery of <math><5\text{ms}</math> with open standard protocol ITU-T G.8032, offering ultimate protection to core networks. It also supports ring protocols STP, RSTP and iRing, and is first in industry to support the optimized RSTP (DRSTP).

- + Support international open standard protocol ITU-T G.8032, featuring a ring recovery in <math><5\text{ms}</math>, unaffected by the increase of number of nodes
- + Support STP/RSTP, and proprietary protocol iRing
- + First in industry to support optimized RSTP (DRSTP), solved over-long convergence time of complicated rings
- + Support complicated ring topologies, including intersecting rings, tangent rings, etc.

### Intelligent Controls for Bandwidth Efficiency

Intelligent controls of data traffic can utilize network bandwidth more efficiently and enhance the robustness of complicated communication systems.

- + QoS smart data traffic control, ensuring quality of time-critical services
- + IGMP Snooping and GMRP filter multi-cast traffic to directly send to the destined device
- + VLAN network partitioning, enhancing bandwidth efficiency and network security

## Highly Rugged Industrial Switch

Industrial sites, for example electric power substations, railways, factories and production lines often require devices to be able to withstand extreme temperatures, shocks and vibrations, and significant electromagnetic interferences. The highly rugged ISM switch can build robust and durable communication systems to operate under the most unforgiving industrial conditions.

- + Passed EMC level 4, zero packet data loss under strong EMI
- + Wide operating temperature: -40°C~+85°C
- + Solid aluminum alloy shell, IP40
- + Redundant power supply, power failure alarming
- + MTBF (Mean Time between Failures) > 35 years

## Secure Network

Network security is another important consideration. The ISM managed Ethernet switch is embedded with multiple security approaches, including ACL control and MAC address binding, to build highly secure networks.

- + ACL (Access Control Lists) control, assigning IPs to listed login devices only
- + MAC address binding, isolate data and prevent unauthorized access
- + Port isolation, restrict port communication without configuring VLAN
- + Broadcast storm control

## Efficient Deployment and Management

Supporting SNMP, RMON, plug and play, the ISM switch allows efficient deployment and network management. Adoption of Modbus TCP based network monitoring moreover makes it better targeted towards systems using PLCs.

- + SNMP allows integrated network management
- + RMON supports comprehensive network monitoring, diagnostics and fault-prediction
- + Modbus TCP based network monitoring specifically targeted for systems using PLCs, with status & alarms of port connection/forwarding, temperature over-high/low, power failure, insufficient memory, etc.
- + RSTP enabled by default, plug and play on ring
- + Configure fast with auto batch configuration acquiring IPs and settings of each node
- + Support storage of config files on USB drive



Visit [www.inhandnetworks.com](http://www.inhandnetworks.com) to find IoT solutions using ISM switch:

- Metro Station Environment Monitoring
- Highway Tunnel Monitoring





ISM2005D



ISM2008D



ISM2009D



ISM2016D



ISM3010D



ISM3028U



ISM3018D



ISM3019D



## MODEL SELECTION GUIDE

MODEL	ISM3019D	ISM3018D	ISM3010D	ISM2016D	ISM2009D	ISM2008D	ISM2005D
Ethernet Ports	16T+3GSFP 14T+3GSFP+2M/S/B 12T+3GSFP+4M/S/B	16T+2GSFP 14T+2GSFP+2M/S/B 12T+2GSFP+4M/S/B	8T+2GSFP 6T+2GSFP+2M/S/B	16T 14T+2M/S/B 12T+4M/S/B	9T 6T+3M/S/B	8T 6T+2M/S/B	5T 3T+2M/S/B
Dimensions (mm)	93.6 X 162 X 136.5	93.6 X 162 X 136.5	62 X 162 X 136.5	93.6 X 162 X 136.5	62 X 162 X 136.5	62 X 162 X 136.5	62 X 162 X 136.5

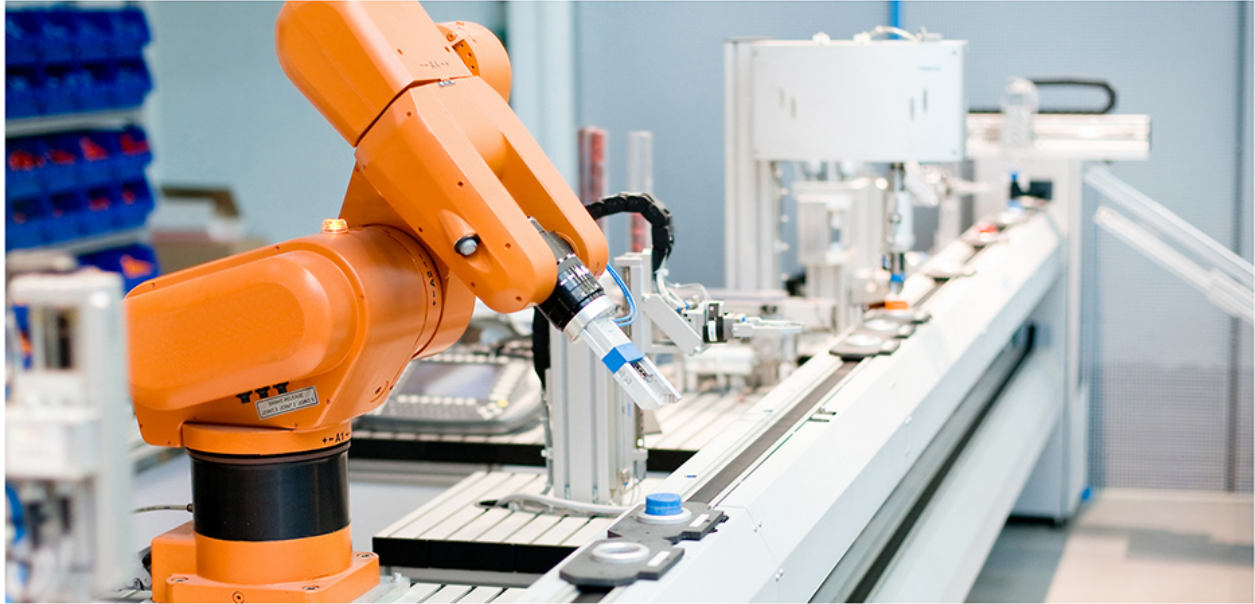
MODEL	ISM3028U
Max. Ethernet Ports	24 100Base ports, or 4 1000Base+24 100Base ports
Max. FE	24
Max. FX	16
1000M SFP	0 or 4

Note: T-100Base-T copper port; GSFP - 1000M SFP slot; M/S/B - 100Base fiber port (multi-mode/single-mode dual strands/single-mode single strand). Fiber module is not included in SFP slot and needs to be purchased separately.



# ISF Series

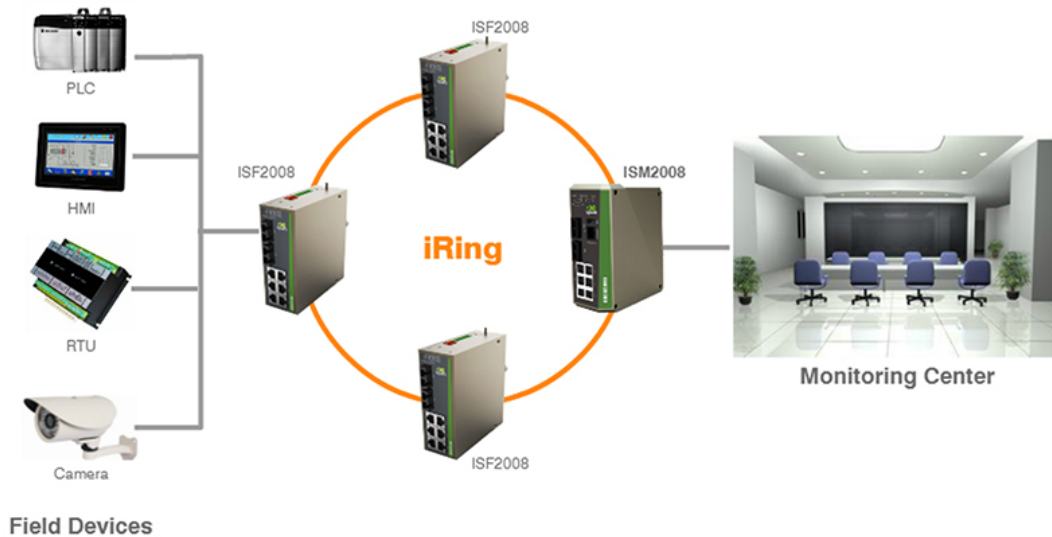
## Ring-type Industrial Ethernet Switch



The InHand's unique ISF Ring-type Industrial Ethernet Switch provides customers with a best value solution for building simple ring networks.

Building ring networks usually requires managed switches. However, for simple ring networking, customer may use one managed switch coupled with a certain number of ISF switches. Price of ISF ring-type switches is much lower than that of managed switches, thus will significantly cut down equipment investment while not compromising network performance. With capabilities of building redundant ring in less than 30ms@100 sets and real-time monitoring of iRing nodes, the ISF switch can provide reliable and stable communications for critical industrial applications.

## FEATURES AND ADVANTAGES



### Best Value Simple Ring Solution

To build a simple ring network, instead of using multiple managed switches, customer may use one managed switch coupled with a certain number of ISF switches. Price of ISF ring-type switches is much lower than that of managed switches, thus will largely cut down the equipment investment.

- + Build simple ring with one managed switch coupled with a certain number of ISF switches, saving equipment costs without compromising network performance

### Reliable Communications

With iRing protocol, the ISF ring-type switch can build up self-healing redundant ring in <math><30\text{ms}@100\text{ sets}</math>, ensuring reliable and stable communications on industrial sites.

- + Support InHand's proprietary iRing protocol, ring recovery in <math><30\text{ms}@100\text{ sets}</math>
- + Real-time monitoring of each node on iRing network, ensuring reliable network operation
- + VLAN network partitioning, enhancing bandwidth efficiency and network security

## Rugged for Unforgiving Operating Environments

The ISF switch is also rugged to withstand unforgiving industrial conditions.

- + Wide operating temperature: -40°C~+85°C
- + Passed EMC level 3
- + Solid aluminum alloy shell, IP40
- + Industrial-grade redundant power supply
- + MTBF (Mean Time between Failures) > 35 years

## Efficient Deployment and Management

The ISF switch is plug and play, enabling fast network deployment or device replacement when needed. The auto relay alarms can help engineers detect faults promptly and manage the network efficiently.

- + Plug and play, enabling fast ring deployment or device replacement
- + Auto relay alarms of power failure and port down for fast fault detection
- + Standard DIN rail and wall mounting, compact-sized to fit easily in racks and cabinets

## MODEL SELECTION GUIDE

MODEL	ISF3018D	ISF3010D	ISF2016D	ISF2008D	ISF2005D
Ethernet Ports	16T+2GSFP 14T+2GSFP+2M/S/B	8T+2GSFP 6T+2GSFP+2M/S/B	14T+2M/S/B	6T+2M/S/B 5T+3M/S/B 4T+4M/S/B	3T+2M/S/B
Dimensions (mm)	75 X 132.6 X 112	45 X 132.6 X 112	75 X 132.6 X 112	45 X 132.6 X 112	94 X 18 X 66

Note: T - 100Base-T copper port; GSFP - 1000M SFP slot; M/S/B - 100Base fiber port (multi-mode/single-mode dual strands/single-mode single strand). Fiber module is not included in SFP slot and needs to be purchased separately.



ISF2005D



ISF2008D



ISF2016D



ISF3010D



ISF3018D



# ISE Series

## Unmanaged Industrial Ethernet Switch



The ISE Unmanaged Industrial Ethernet Switch helps customers to build simple, rugged and highly reliable communication systems.

Built to be rugged and simple, the ISE switch features durable aluminum alloy shell, wide temperature tolerance, electromagnetic compatibility, industrial redundant power supply, plug and play, etc. Consisting ISE1000-100MB, ISE2000-100MB, ISE3000-1000MB and ISE5000-full 1000MB sub-series, the series offers a rich selection of models with different port combinations, connector types and transmission distances.



## FEATURES AND ADVANTAGES

### Rugged Communications

The ISE series is built with high levels of ruggedness, featuring solid and durable metal shell, wide operating temperature, high EM compatibility, industrial redundant power supply, and an MTBF over 35 years.

- + Aluminum alloy shell with protective coating, compression and corrosion resistant
- + IP40, resistant to dust, dirt and chips
- + Wide operating temperature: -40°C~+85°C
- + EMC level 3
- + Industrial-grade redundant power supply
- + MTBF (Mean Time between Failures)>35 years

### Rich Selections of Ports

The ISE series consists ISE1000-100MB, ISE2000-100MB, ISE3000-1000MB and ISE5000-full 1000MB sub-series, offering a rich selection of models with different port combinations and transmission distances.

- + 5-18 ports optional, including optical ports, 100MB/1000MB Ethernet ports
- + Rich optical fiber connector types, SC/FC/ST optional, support short range and mid to long distance transmission

(\* Only supported on some of the ISE models.)

### Simple and Easy to Use

The ISE switch is very simple and easy to use. It is plug and play. The DIP switch of broadcast storm control, port flow control and interruption alarms\*, and relay alarms\* can help engineers manage the network effectively.

- + Support DIP switch on/off broadcast storm control, port flow control and abnormal interruption alarms\*
- + Relay alarms of power failure and port down, for prompt fault detection\*
- + Plug and play, enables fast deployment or quick device replacement
- + Standard DIN rail and wall mounting, compact-sized for easy fitting in racks and cabinets



Comparison between  
**ISE1000 and ISE2000 Series**

	ISE1000 SERIES	ISE2000 SERIES
100MB Ethernet	Yes	Yes
Operating Temperatures	-40~75°C	-40~85°C
EMC	Level 3	Level 3
No. of Ports	5, 8	5, 8, 16
Relay Output	×	√
DIP Switch	×	√
Broadcast Storm Control	×	√
Port Flow Control	×	√



Visit [www.inhandnetworks.com](http://www.inhandnetworks.com) to find IoT solutions using ISE switch:

- Laser Cutter Remote Monitoring



## MODEL SELECTION GUIDE

MODEL	ISE5008D	ISE5005D	ISE3018D	ISE3010D	ISE3009D	ISE3008D
Ethernet Ports	2GC+6GT	5GT	16T+2GSFP 15T+2GSFP+1M/S/B 14T+2GSFP+2M/S/B	8T+2GSFP 4T+2GSFP+4M/S/B	8T+1GP	4T+1GSFP+3M/S/B
Dimensions (mm)	45 X 133 X 105	35 X 120 X 100	75 X 132.6 X 112	45 X 132.6 X 112	45 X 132.6 X 112	45 X 132.6 X 112

MODEL	ISE2016D	ISE2008D	ISE2005D	ISE1008D	ISE1005D
Ethernet Ports	16T 15T+1M/S/B 14T+2M/S/B	8T 7T+1M/S/B 6T+2M/S/B 5T+3M/S/B 4T+4M/S/B	5T 4T+1M/S/B	8T 7T+1M/S/B 6T+2M/S/B	5T
Dimensions (mm)	75 X 132.6 X 112	45 X 132.6 X 112	45 X 132.6 X 112	50 X 115 X 70	35 X 120 X 100

Note: GC - 1000M Combo; GT - 1000Base-T copper port; T - 100Base-T copper port; GSFP - 1000M SFP slot; M/S/B - 100Base fiber port (multi-mode /single-mode dual strands/single-mode single strand). Fiber module is not included in SFP slot and needs to be purchased separately.

# IMC Series

## Industrial Fiber Media Converter



The IMC Series Industrial Fiber Media Converter converts between 10/100Base-TX and 100Base-FX, connecting copper-based cabling systems with fiber optic cabling systems. The self-designed converter is built to industrial-grade, high-reliability standards, featuring high-standard power supply tolerance, protected industrial circuit, plug and play, etc. Through wide applications in electric power, transportation, industrial control and other industries, the converter has been proved reliable and durable.

**VS** Comparison between Industrial and Commercial Converters

	INDUSTRIAL CONVERTERS	COMMERCIAL CONVERTERS
Working Temperature	-40°C~+85°C	0°C~+60°C
EMC	EMC≥ Level 3	EMC ≤ Level 2
Housing	metal housing with fanless cooling, IP40	plastic housing with louvres of fans
Installation	DIN rail, wall mounting, rack mounting, etc.	table top, rack-mounting
Power Input	industrial redundant power input	commercial single power input
Working Voltage	DC24V, DC48V reliable during voltage fluctuations	AC220V unreliable during voltage fluctuations
MTBF	>35 years	3~5 years
Warranty	5 years	1-3 year (s)

## FEATURES AND ADVANTAGES

### Industrial-grade Rugged Converter

- + Metal housing with corrosion-proof coating, vibration and shock resistant, IP40 protection
- + Wide operating temperature: -40°C~+85°C
- + Wide voltage input: DC12-48V, enduring fluctuations between  $\pm 20\%$
- + Industrial-grade redundant power supply
- + EMC Level 3

### Simple and Easy to Use

- + SC/ST/FC connectors optional
- + Low power consumption, <3w
- + Compact sized, easy to fit
- + Support standard DIN rail and wall mounting

## MODEL SELECTION GUIDE

MODELS	IMC101B
Ethernet Ports	1T+M/S/B
Dimensions (mm)	30 X 70 X 100

Note: T - 100Base-T copper port; M/S/B - 100Base fiber port (multi-mode/single-mode dual strands/single-mode single strand).

IMC101B

CEFC





# InBox300 & 310 Series

## Android Industrial Computer



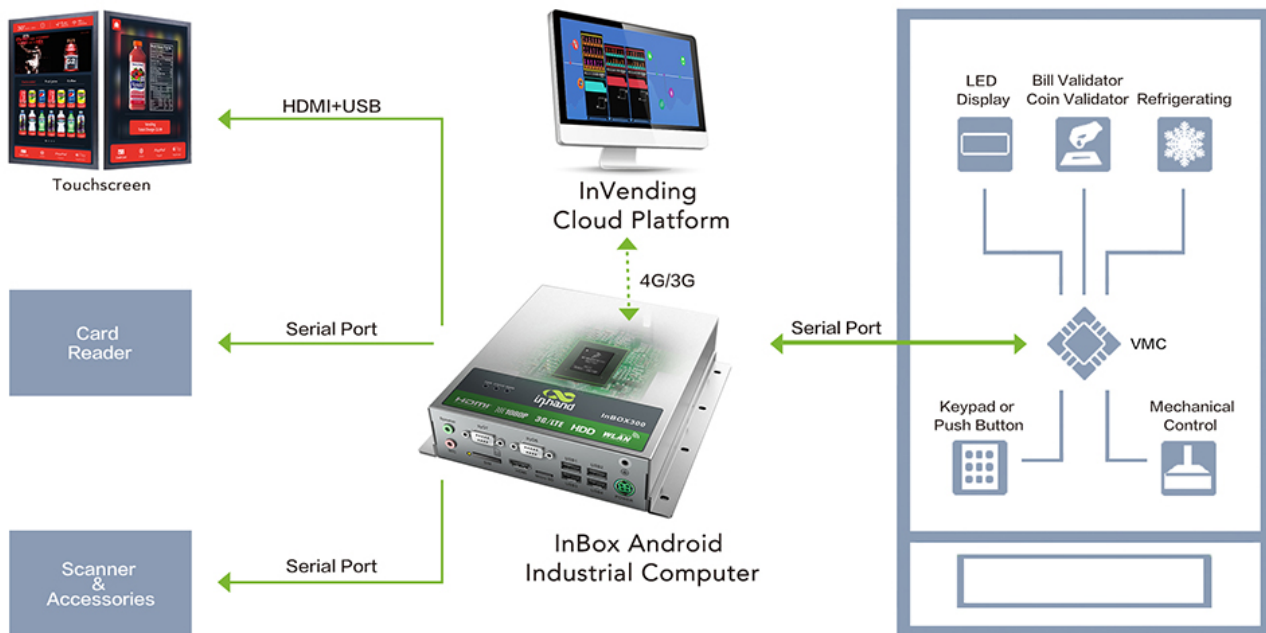
Powerful, rugged ARM processor coupled with the open Android operating system, a new solution is made available for next generation vending. By integrating Freescale Cortex-A9 processor i.MX6 with Android OS, the InBox Android Industrial Computer sports high computing capabilities while at much lower cost and power consumption than the X86-based computing platforms. Multiple open APIs are provided for custom UI and application development. The embedded support for an extensive catalog of vending peripherals and payment devices allows quick and simple integration into existing vending solutions.

Working with InVending Cloud, the InBoxes can help operators to centrally monitor and manage distributed vending machines, greatly increasing the efficiency and profitability of vending operations. Also, with new VM interfaces such as touchscreens, cameras and sensors, more interactive and informative customer engaging programs are made possible to drive new profits for the smart vending business.



**URL OF INVENDING CLOUD:**  
[smartvending.inhandnetworks.com](http://smartvending.inhandnetworks.com)

# FEATURES AND ADVANTAGES



## Powerful Computing Capabilities

The InBox Android Industrial Computer sports high computing capabilities while at much lower cost and power consumption than the X86-based platforms.

- + Freescale Cortex A9 processor i.MX6
- + OpenGL ES2.0 and OpenVG™1.1, 2D and 3D graphics acceleration
- + Full HD 1080P video coding engine
- + 1000M Ethernet and 3G/4G cellular with optimized base driver

## Industrial Rugged Hardware

The InBoxes are built to be industrial-grade to withstand rugged environments and conditions.

- + Low power consumption, industrial fanless cooling
- + Wide temperature and power supply tolerances
- + Electromagnetic disturbance protection

## Android Operating System

As a platform for custom vending applications, the flexible Android API is unparalleled in terms of usability and developer controls.

- + Open-source Android toolkits and rich software resources to greatly reduce development difficulty and cycle time
- + Open APIs for custom UI and 3rd party applications

### VS Comparison between InBox300 and InBox310

	InBox300	InBox310
No. of Serial Port	6	3
Audio Input/Output	√	×
Volume Button	√	×

## Rich Peripherals and Payment Devices

The architecture allows a rich variety of interactive and sensing peripherals, including multiple payment devices that a smart vending machine needs.

- + Multiple RS-232 serial, USB and HDMI ports to connect a wide range of peripherals: scanner, printer, card reader, POS device, infrared touchscreen, video camera, mouse, LED screen, etc.
- + Cash and cashless payment methods, such as Apple Pay, mobile wallet, NFC, QR code, coupons and prepay cards, can be developed according to markets

## InVending Cloud Management Platform

The InVending Cloud works with InBoxes and InPads to help vending operators centrally monitor and manage distributed vending machines, greatly increasing the efficiency and profitability of vending operations.

- + Efficiently deploy and manage VMs, goods, prices, promotions and ads
- + Real-time stock and replenishment notifications for better route planning
- + Real-time update of sales data and sales analysis
- + Real-time alarming of vending machine faults
- + Utilize the smart VM interfaces, e.g. touchscreens, cameras and sensors to create interactive, informative customer engaging programs, such as interactive ad, social media bonding, etc.



Visit [www.inhandnetworks.com](http://www.inhandnetworks.com) to see success story of InHand Smart Vending solution:

- UBOX – China's Largest VM Operator

## INBOX300 / INBOX310

CE



## MODEL SELECTION GUIDE

MODEL	InBOX300
Model No.	InBox300-<WMNN>-<A>-<XXXX>
Code	Code
WMNN – cellular type and module	1st letter indicates cellular type: V—EVDO; P—HSPA+; D-FDD-LTE&TD-LTE&3G&2G 2nd, 3rd and 4th letters identify cellular module
A	blank: standard 1GB RAM A: 2GB RAM
XXXX	PLAT: support smart vending platform, including vending software version STD: standard Android version
Example	InBox300-PH09-STD: support WCDMA, 1GB RAM, standard Android version InBox300-PH09-A-PLAT: support WCDMA, 2GB RAM, support smart vending platform, incl. vending software version

MODEL	InBOX310
Model No.	InBox310-<WMNN>-<XXXX>
Code	Code
WMNN – cellular type and module	1st letter indicates cellular type: V—EVDO; P—HSPA+; D-FDD-LTE&TD-LTE&3G&2G 2nd, 3rd and 4th letters identify cellular module
XXXX	PLAT: support smart vending platform, including vending software version STD: standard Android version
Example	InBox310-PH09-STD: support WCDMA, standard Android version InBox310-DL00-PLAT: support 2G/3G/4G networks, support smart vending platform, incl. vending software version



# InPad070 Series

## 7" Touchscreen All-in-One



The InPad 7" Touchscreen All-in-One is designed specifically for the retrofitting of traditional vending machines without a touchscreen. With powerful, rugged ARM processor coupled with the open Android operating system, it provides an easy and effective solution for upgrading traditional VMs to the next generation vending. Same as InBox, the InPad 7" All-in-One integrates Freescale Cortex-A9 processor i.MX6 with Android OS and sports excellent computing capabilities. Multiple APIs are provided for custom UI and application development. The embedded support for an extensive catalog of vending peripherals and payment devices allows quick and simple integration into existing vending solutions.

Working with InVending Cloud, the InPads help operators to centrally monitor and manage distributed vending machines, greatly increasing the efficiency and profitability of vending operations. Also, with the new VM interfaces like touchscreens, cameras and sensors, more interactive and informative customer engaging programs are made possible to drive new profits for the smart vending business.

## FEATURES AND ADVANTAGES

### Powerful Computing Capabilities

The InPad Android Industrial Computer sports high computing capabilities with high performance hardware.

- + 7" touchscreen, 1280x800 resolution
- + Freescale Cortex A9 processor i.MX6
- + OpenGL ES2.0 and OpenVG™1.1, 2D and 3D graphics acceleration
- + Full HD 1080P video coding engine
- + 1000M Ethernet and 3G/4G cellular with optimized base driver

### Android Operating System

As a platform for custom vending applications, the flexible Android API is unparalleled in terms of usability and developer controls.

- + Open-source Android toolkits and rich software resources to greatly reduce development difficulty and cycle time
- + Open APIs for custom UI and 3rd party applications

### Rich Peripherals and Payment Devices

The architecture allows a rich variety of interactive and sensing peripherals, including multiple payment devices that a smart vending machine needs.

- + Multiple RS-232 serial, USB and HDMI ports to connect a wide range of peripherals: scanner, printer, card reader, POS device, infrared touchscreen, video camera, mouse, LED screen, etc.
- + Cash and cashless payment methods, such as Apple Pay, mobile wallet, NFC, QR code, coupons and prepaid cards, can be developed according to markets

### Industrial Rugged Hardware

The InPads are built to be industrial-grade to withstand rugged environments and conditions.

- + Low power consumption, industrial fanless cooling
- + Wide temperature and power supply tolerances
- + Electromagnetic disturbance protection



Retrofit of a Traditional VM

## InVending Cloud Management Platform

The InVending Cloud works with InBoxes and InPads to help vending operators centrally monitor and manage distributed vending machines, greatly increasing the efficiency and profitability of vending operations.

- + Efficiently deploy and manage VMs, goods, prices, promotions and ads
- + Real-time stock and replenishment notifications for better route planning
- + Real-time update of sales data and sales analysis
- + Real-time alarming of vending machine faults
- + Utilize the smart VM interfaces, e.g. touchscreens, cameras and sensors to create interactive, informative customer engaging programs, such as interactive ad., social media bonding, etc.

## MODEL SELECTION GUIDE

MODEL	InPad070
Model No.	InPad-<WMNN>-<XXXX>
Code	Code
WMNN – cellular type and module	1st letter indicates cellular type: V—EVDO; P—HSPA+; D-FDD-LTE&TD-LTE&3G&2G 2nd, 3rd and 4th letters identify cellular module
XXXX	PLAT: support smart vending platform, including vending software version STD: standard Android version
Example	InPad070-PH09-STD: support WCDMA, standard Android version InPad070-DL00-PLAT: support 2G/3G/4G networks, support smart vending platform, incl. vending software version

INPAD070





# InPortal3012 Series

## Wi-Fi Media Hub



The InPortal3012 is a step forward in upgrading public transportation services in the Internet era. Embedded with both NGINX web server and local SSD storage, the product is a dedicated vehicle Wi-Fi media hub. Vehicle passengers may either connect to the Wi-Fi hotspot to surf the Internet, or enjoy the VOD movies stored on its local memory.

Working with Rainbow cloud, InPortal3012 can help coach operators set up advanced operation systems to centrally manage thousands of InPortal3012s on the move. Functions include device management, content management, vehicle location tracking, visitor behaviour management, statistical reporting, etc.



**URL OF RAINBOW CLOUD :**  
[rainbow.inhandnetworks.com](http://rainbow.inhandnetworks.com)



## FEATURES AND ADVANTAGES

### Powerful 4G Wi-Fi Portal

The powerful Wi-Fi portal is embedded with dual 4G modules, dual Wi-Fi bands and 2x2 MIMO technologies, can provide great Wi-Fi experience on the bus, including blazing fast video streaming.

- + Integrating two 4G cellular modules to provide reliable high-speed LTE access, downlink speeds up to 100Mbps and uplink speeds 50Mbps
- + Support link quality inspection and auto-recovery to ensure reliable LTE connection
- + Dual Wi-Fi bands: 2.4GHz and 5.8GHz, fully compliant with IEEE802.11 ac/a/b/g/n standards
- + With 2X2 MIMO enabled, Wi-Fi bandwidth can reach up to 1.2Gbps, giving excellent multi-user usage experience
- + Best-in-class Broadcom BCM53012 processor
- + Quad 5DBi Wi-Fi antennas and dual 5DBi 4G antennas ensure Wi-Fi coverage for blazing fast video streaming
- + Embedded with reliable NGINX web server, enabling local media services
- + Support PHP for the display of dynamic page content

### Transport-grade Ruggedness

The InPortal3012 is built with transport-grade ruggedness to withstand the challenging conditions in a confined space on a moving vehicle.

- + Transport-grade power module, resistant to voltage dips, overruns, shorts and other failures
- + Support automatic power control with ACC signal to protect SSD and vehicle battery
- + Fanless cooling design simplifies installation

### Internet Behaviour Management

The InPortal supports QoS, black and white lists of websites to help coach operators set a control on the Internet behaviours of passengers, e.g. limit per-user bandwidth and traffic with QoS.

- + Support visitor authentication by SMS or social-media accounts
- + Support QoS to limit per-user bandwidth and traffic, preventing overages while protecting latency-sensitive traffic
- + Support website blacklist and whitelist

### Mass Local Storage

The local storage on the device, optional from 16GB to 256GB, can be used to store local web contents, movies, music, and games, to facilitate local access and save Internet bandwidth.

- + 16GB to 256GB SSD storage optional, resistant to shock and vibration during the drive
- + Hybrid content update mechanisms:
  - Remote synchronization mode: sync contents with the cloud;
  - Local synchronization mode: update contents through SD card or FTP

## Efficient Cloud-based Management

Working with Rainbow Cloud, InPortal3012 can help coach operators setup advanced operation systems to centrally manage thousands of InPortal3012s on the move, either configuring visitor policies or updating media content on the devices.

- + Work with Rainbow Cloud to realize device management, content management, vehicle location tracking, visitor behaviour management, statistical reporting and other functions
- + Support CLI, Web UI and SNMPv3 for efficient network management
- + With GPS enabled, IP3012 can track the location, speed and course over ground of the vehicles
- + Support IPSec VPN, DMVPN, L2TP, SSL VPN, and CA certification to ensure data security

## MODEL SELECTION GUIDE

MODEL	InPortal3012
Part Number	IP3012<N>--<WMNN>--<U>--<GPS>--<M>--<GW>
N - Cellular Type	L - LTE P - Ethernet (no cellular module)
WMNN - Cellular Module	W=Networks: F - FDD-LTE T - TDD-LTE P - Ethernet MNN=Module info
U - Housing Material	STD: Metal Housing
GPS	GPS: support GPS <NA>: no GPS
M	M16: 16GB SSD M64: 64GB SSD M128: 128GB SSD M256: 256GB SSD <NA>: no SSD
GW	GW: Ethernet gateway, no Wi-Fi module <NA>: support Wi-Fi
Example	IP3012L-TL00-STD-GPS-M16: 2*ETH ports, LTE, metal housing, GPS, 16GB SSD

INPORTAL3012



# InHand Wireless Overhead-line System

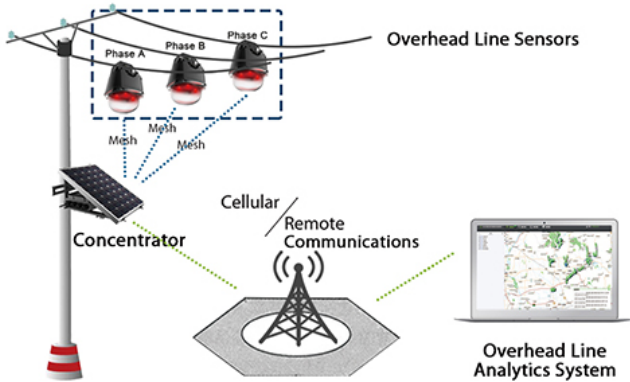


With advanced technologies and years of experience, InHand Networks has been providing industry-leading M2M solutions for the electric power industry. The new InHand Wireless Overhead-line System (IWOS), consisting overhead line sensors, concentrators and main station analytics system, is a ground-breaking innovation in the monitoring of medium voltage overhead distribution lines.

Integrating intelligent sensing, signal processing, artificial intelligence and communication technologies, the system implements real-time high precision monitoring of the current and line-to-ground electric field of 10KV distribution lines, and triggers high-frequency wave-recording when an abnormal status occurs. With the waveform data, the system can accurately locate ground faults in low current grounding systems, source and reenact the complicated course of the occurrence and development of faults, and pre-alert to abnormal line status. Thus the system can help utilities fast locate faults on power lines and significantly shorten recovery periods.

The InHand Wireless Overhead-line System effectively solves a global power problem. It also signals the dawn of a “transparent era” of power grid. Massive data sets containing current, magnetic field and zero-sequence current waveforms lay the foundation for power engineers to expand upon core IWOS technology to culminate in predictive analytics: fault pre-alerts, power quality analysis, and more.

# SYSTEM COMPONENTS

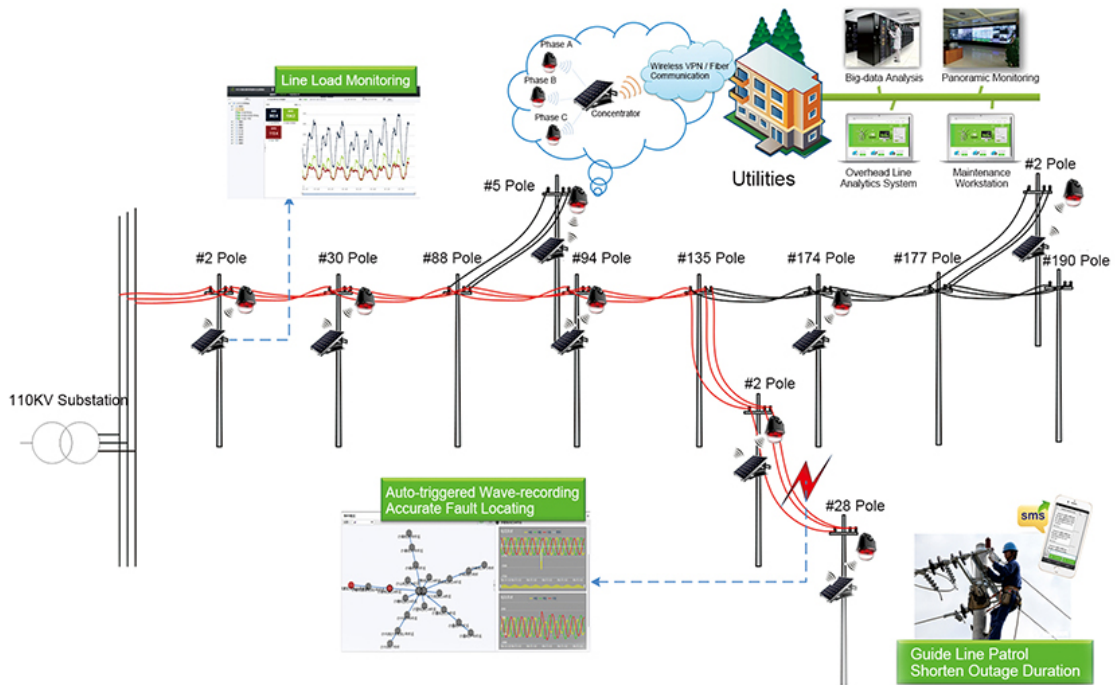


Overhead Line Sensors are the acquisition units of the system.

Concentrators build communication bridges between overhead line sensors and the main monitoring station.

The Overhead Line Analytics System facilitates fault detection and locating in low-current grounded systems. With aggregation and analysis of big data sets, the system also supports realization of advanced functions like fault pre-alerts, power quality analysis, etc.

# FEATURES AND ADVANTAGES





## Overhead Line Sensor

- + Innovative low current (5A) power-harvesting technology, supplies for long hours of reliable operation
- + Advanced electronic current sensor, measurement precision of line current reaching  $\pm 1\%$ .
- + Optimized electric-field sensor, unaffected by multi-circuit lines on one pole, identifies voltage fall and supply interruption accurately
- + Intelligent triggering of high-frequency (4kHz) wave-recording of line current and line-to-ground electric field, captures the momentary waveform of low current ground faults
- + High precision ( $\pm 100\mu\text{s}$ ) wireless synchronization enabled synchronized waveform collection of three phase currents and line-to-ground electric fields
- + Bi-directional wireless communication on low power consumption, supports remote upgrade and maintenance
- + Live installation & removal, IP67

## Concentrator

- + High reliability power supply system, with solar panel as main and maintenance-free accumulator as backup supply
- + Hybrid networking of short and long range wireless connection, enables real-time two-way interaction between main station and the concentrator
- + High precision ( $\pm 100\mu\text{s}$ ) three phase wireless synchronization
- + Three-phase synthesis acquiring transient zero sequence current and electric field signal, enables accurate on-site detection and locating of ground faults
- + Precision (1us) GPS time based absolute timescale
- + Channel monitoring, fault alarming, system diagnosing and self-recovery functions to safeguard continuous communications
- + Industrial-grade design, IP55, support remote wireless maintenance and upgrade, and text message management

## OVERHEAD LINE SENSOR / CONCENTRATOR



## MODEL SELECTION GUIDE

All IWOS products (Main Station Analytics System, Overhead Line Sensor, and Concentrator) are prefixed with ID2000, representing InHand distribution lines monitoring 2000 series. Main Station Analytics System, Overhead Line Sensor, and Concentrator are differed by inter-fixes.

### Main Station Analytics System

ID2000		
X	Unit	S - Main Station Analytics System
-X	Fault Types	S - Short-circuit fault F - Short-circuit and single-phase ground faults
-X	Load Monitoring	N - No load monitoring L - Including load monitoring
-X	Image Monitoring	N - No image monitoring V - Including image monitoring
Example	ID2000S-F-L-N represents: InHand distribution lines monitoring 2000 series, Main Station Analytics System, including short-circuit and single-phase ground faults analysis, load monitoring, no image monitoring.	

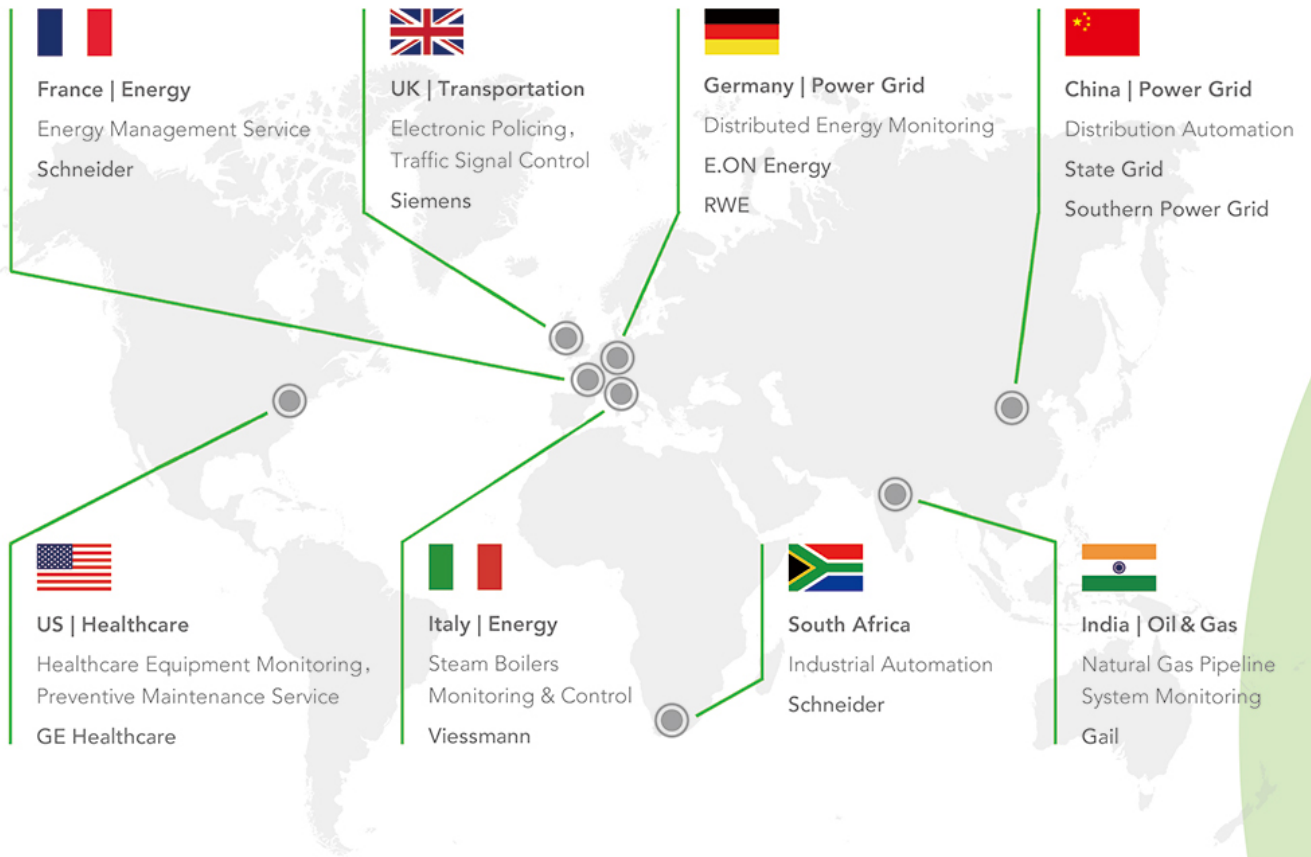
### Overhead Line Sensor

ID2000		
X	Unit	M - Overhead Line Sensor (Monitor)
-XX	Sub-series	FB - Standard fault indication FK - Double-remote fault indication MF - Status monitoring, wave recording of valid values MX - Status monitoring, high-frequency wave recording
-X	Usage Scenarios	J - Overhead lines D - Underground cables M - Underground cables with operation panel
-X	Fault Types	S - Short-circuit fault E - Single-phase ground fault H - Short-circuit and single-phase ground faults
-X	Line Voltage Level and Frequency	A - 10KV, 50Hz B - 35KV, 50Hz C - 10KV, 60Hz D - 35KV, 60Hz
-XX	Form and Indication Types	M0 - Ball shape, flash indication M1 - Ball shape, flip and flash indication
-XX	Short-range Communication Frequency	NA - No communication W5 - 470MHz Wireless W4 - 433MHz Wireless WX - 2.4GHz Wireless
Example	ID2000M-MX-J-H-A-M0-W5 represents InHand distribution lines monitoring 2000 series, Overhead Line Sensor, support high-frequency wave-recording, applicable for overhead lines of 10KV, 50Hz, monitor short-circuit and single-phase ground faults, ball shape with flash indication, communicate with Concentrator via 470MHz short-range wireless communication.	

## Concentrator

ID2000		
X	Unit	C - Concentrator (Communication Terminal)
-XX	Sub-series	FB - Standard fault indication FK - Double-remote fault indication MF - Status monitoring, wave recording of valid values MX - Status monitoring, high-frequency wave recording
-X	Usage Scenarios	J - Overhead lines D - Underground cables M - Underground cables with operation panel
-XX	Forms and Power Supply Types	C0 - Clamp installation, solar powered (incl. GPS) C1 - Ball shape, on-line power-harvesting (incl. GPS) C2 - Clamp installation, solar-powered C3 - Ball shape, on-line power-harvesting C4 - Clamp installation, solar powered (incl. GPS, encrypted chip) C5 - Clamp installation, solar powered (incl. encrypted chip) C6 - New vertical waterproof box, clamp installation, solar powered (incl. GPS)
-X	Line Voltage Level and Frequency	N - No voltage level A - 10KV, 50Hz B - 35KV, 50Hz C - 10KV, 60Hz D - 35KV, 60Hz
-XX	Communication Frequency with Acquisition Units	W5 - 470MHz wireless W4 - 433MHz wireless WX - 2.4GHz wireless
-XX	Communication with Main Station System	G - GPRS network OP - Optical fiber network W5 - 470MHz wireless W4 - 433MHz wireless WX - 2.4GHz wireless
-XX	Solar Power and Power-harvesting	12W - 12W 20W - 20W 50A - Line current for power-harvesting
-XX	Accumulator Capacity	2.6AH 3.4AH 7AH 8AH
-XX	Bluetooth	N - No Bluetooth BLE - Support Bluetooth
Example	ID2000C-MX-J-C0-A-W5-G-20W-3.4AH-BLE represents InHand distribution lines monitoring 2000 series, Concentrator, works with high-frequency wave-recording Overhead Line Sensors, applicable for overhead lines of 10KV, 50Hz, clamp installation, solar powered (incl. GPS), communicate with Overhead Line Sensors via 470MHz short-range wireless communication, communicate with main station over GPRS, solar power 20W, accumulator capacity 3.4AH, support Bluetooth.	

# Used worldwide. Proven worldwide.



## Our customers include:

### Power Grid:



### Industrial Automation:



### Transportation:



### Finance:



### Healthcare:



### Vending & Kiosks:





# InHand Networks, A Global Leader in Industrial IoT.



3900 Jermantown Rd., Suite 150  
Fairfax, VA 22030  
USA  
T: +1 (703) 348-2988  
[info@inhandnetworks.com](mailto:info@inhandnetworks.com)  
[www.inhandnetworks.com](http://www.inhandnetworks.com)