

InRouter 900 Industrial 4G Router

Secure, Reliable, Remote-manageable, For Large Scale M2M Deployment



InRouter 900

Ubiquitous cellular networks are changing everything, while we have been experiencing emerging needs on Machine-to-Machine communication. InRouter 900 series is the new generation of industrial router developed by InHand Networks for M2M in 4G era.

Integrating 4G LTE and various broadband WANs, providing uninterrupted access to internet, embedding full security network services, supporting tens of thousands device connections, InRouter 900 enables more data applications for machines. InRouter 900 has also been built for rapid deployment and easy management, which enables you to scale up M2M application combining data and video, in limited time and budget. InRouter 900 is born with best-in-class reliability which ensures availability of your business, wherever harsh environment your machine stands.

InRouter 900 is particularly suitable for large scale M2M solution, such as vending machine, ATM, digital signage, industrial automation equipment, smart grid, medical device, robot, field machinery, digital factory.

InRouter 900 brings to machines brand new possibilities of data transaction, intelligent analysis, and advanced service.

Advantages

■ **Uninterrupted Access to Internet from Anywhere**

Redundant WAN connection, 2 Ethernet ports, 3G/4G embedded, various DSL, InRouter 900 is built to support various WAN and ensure network availability. Whether the device is located in commercial region or wild field, it can always keep on line with broadband service or widespread 3G/4G connection. Furthermore, InRouter 900 can automatically switch over between broadband and 3G/4G when one link is failed, so as to ensure uninterrupted WAN connection. With InRouter 900, your business is always online.

■ **Embed InHand OpenDevice Platform**

The InHand OpenDevice platform provides a programmable environment for users to develop their applications easily. It supports local storage up to 70MB. Users can run their Python (2.7) programs and use InHand Python SDK to access APIs and resources.

■ **Support IPv6 (FW00 models only)**

The InRouter900 supports IPv6 and also be compatible with IPv4. The IPv6 will bring higher security and help users simplify deployment and lower cost.

■ **Support Large Scale Deployment**

In your M2M application, there are thousands of remote machines, or tens of thousands of VPN connection, which turns out to be a big challenge for network management. InRouter 900 make large scale deployment much easier with following features:

- Multiple configuration tools including Web and CLI, enable administrator to rapidly configure thousands of InRouter
- Remote Network Management: InRouter 900 works with network management platforms installed in application center or headquarter. To remotely batch configure, download and upload configuration file, upgrade firmware, monitor status of connection and VPN tunnel... all these become essential for operating a M2M system especially when a large number of devices scatter widely with limited field staff or even totally unattended.
- InRouter 900 supports industrial standard SNMP and 3rd SNMP software platform, so as to integrate into enterprise level IT management system.
- InRouter 900 also collaborates with InHand Device Manager to handle cellular specialty of network management. InHand Device Manager can be cloud based or installed within

enterprise's intranet. InHand Device Manager improves for cellular circumstance to monitor cellular data flow, signal strength on site, location of the device. Even better, there's no need to apply costly private network from telecomm operator, and you can build your worldwide M2M system across multiple operators.

- Multiple diagnostic tools, supporting 3G/4G modem status, IMEI, IMSI and registration status of cellular networks, help engineer out of complex network circumstance.
 - Support dynamic routing of RIP, OSPF, automatically update routing of whole network, largely increase efficiency of large scale deployment.
 - Support Dynamic Multipoint VPN (DM VPN), greatly reduce workload to configure thousands of remote InRouter 900. Establishing a large & secured remote network never made so easy!
- **Robust Security**
- **Secured VPN Connections**
Support GRE, L2TP, IPsec VPN, DMVPN, OpenVPN; CA, ensure data security
 - **Security of Network**
Support firewall functions to protect from network attacks, such as: Stateful Packet Inspection (SPI), Access Control List (ACL), resist DoS attack, intrusion protection, attack protection, IP/MAC Binding and etc.
 - **Security of Devices**
Support AAA, TACACS, Radius, LDAP, local authentication, and multi levels user authority, so as to establish a secured mechanism on centralized authentication and authorization of device access.
- **High Reliability**
- **Redundancy**
WAN Redundancy: support link backup, VRRP to support automatic switch over between WANs.
Dual SIM cards: backup between different mobile operators to ensure networks availability and bargaining power on data plan.
 - **Automatic Link Detection & Recovery**
PPP Layer Detection: keep the connection with mobile network, prevent forced hibernation, able to detect dial link stability.

Network connection Detection: automatic redial when link broken, keep Long Connection.

VPN Tunnel Detection: sustain VPN tunnel, to ensure availability of business.

- **InRouter Auto-recovery**

InRouter embeds hardware watchdog, able to automatically recover from various failure, ensure highest level of availability.

- **Entirely Ruggedized**

InRouter 900 inherits InHand Networks' legacy on best-in-class ruggedized design. From component selection to circuit layout, InRouter 900 satisfies electric power and industrial applications on EMC, IP protection, temperature range and etc. InRouter 900 is designed to last in harshest circumstances.

- **High Performance, High Bandwidth**

- Equipped with powerful Cortex-A8 processor and 128MB memory, support more application needs
- Support 4G/LTE (100Mbps downlink and 50Mbps uplink) and HSPA+ (21Mbps downlink and 5.76Mbps uplink)

- **InHand Network Operation System: INOS 2.0**

InHand Network Operation System (INOS) has been built as the highly reliable & real-time basis for all network functions, as well as easy-to-use configuration interface via Web, CLI or SNMP. INOS is in modular design, expandable, and adaptable to various M2M applications.

- **Embed WIFI AP and Client, Easy to Establish Versatile Wireless Network**

- Support 802.11 b/g/n standard, fulfill the need to connect WLAN devices, up to 150Mbps throughput
- Easily establish wireless LAN, support WEP/WPA/WPA2 for network security
- WIFI can be the backup WAN link for 3G/4G

Specifications
InRouter 900 Software Specifications

		InRouter 900	
Network Interface	Operator Access	Support APN, VPDN	
	Access Authentication	CHAP/PAP/MS-CHAP/MS-CHAPV2	
	Cellular	LTE/WCDMA(HSPA+)/EDGE/GPRS	
	LAN	ARP, Ethernet	
	WAN	Static IP, DHCP, PPPoE	
Protocol	IP	Ping, Traceroute, DHCP Server/Relay/Client, DNS Relay, Dynamic DNS, Telnet, SSH, HTTP, HTTPS, TFTP, FTP, SFTP	
	IP Routing	Static Routing, RIP, OSPF, IGMP Proxy	
Security	Multi Level Authority	Two level authority: Full Authority and Read-Only User	
	AAA	Local Authentication, Radius, TACACS+, LDAP	
	Firewall	Stateful Packet Inspection (SPI), Anti-DoS Attack	
		Filtering Multicast/Ping package, Access Control List (ACL)	
		NAT, PAT, DMZ, Port Mapping, Virtual Server	
	Data Security	GRE, L2TP, IPSec, DMVPN, OpenVPN	
	CA Certificate	PEM, PKCS12, SCEP	
Others	Anti-ARP, DMZ, MAC Filtering		
Reliability	Link Backup	Floating Route, WAN Link Backup	
		VRRP	
	Link Detection & Auto-Recover	Various Heartbeat Package, Automatic Recover from Failure	
QoS	Watchdog	Self-diagnostic, Automatic Recover from Failure	
	Bandwidth Management	Limiting maximum bandwidth	
WLAN	Multilevel Priority	ICMP/IGMP/TCP/UDP/GRE/ESP/OH/OSPF/VRRP/L2TP	
	Standard	IEEE 802.11b/g/n	
		Mode	Support both AP and Client Mode
		Security	WPA/WPA2, WPA-PSK, Support Open System, Shared Key
WEP/TKIP/AES Encryption			

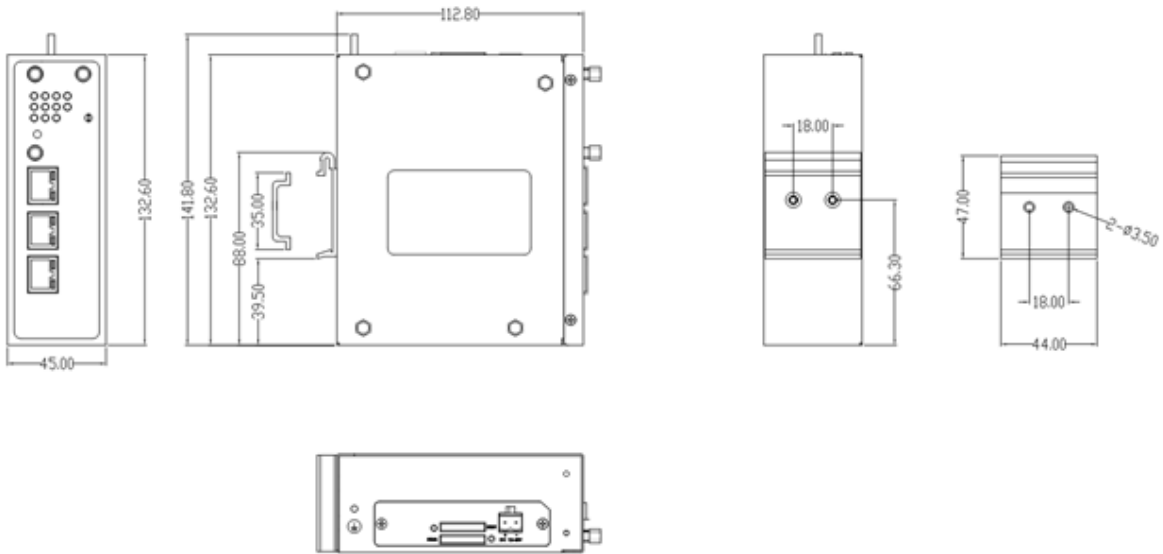
		InRouter 900
Net Management	Configuration	Configure via HTTP, HTTPS, Serial Port, Telnet, SSH
	Firmware Upgrade	WEB, Serial Port, TFTP, FTP, SFTP server, and InHand Device Manager
	Log	Local sys log, remote log, export log via Serial Port
		Important Log Backup in Flash Memory
	SMS	SMS to Inquiry Status, Reboot
	On-Demand Dial Up	Activate by data, Activate by SMS, Scheduled Online/Offline
	SNMP	SNMP v1/v2c/v3, InHand MIBs; SNMP Trap
	InHand Device Manager	Support InHand Device Manager V4 for centralized management in large scale
	AAA	Local/Radius/TACACS+/LDAP
	Multilevel Authority	Multiple Levels of User Authority
Diagnostic	Ping, Traceroute, Sniffer Tools	

InRouter 900 Hardware Specifications

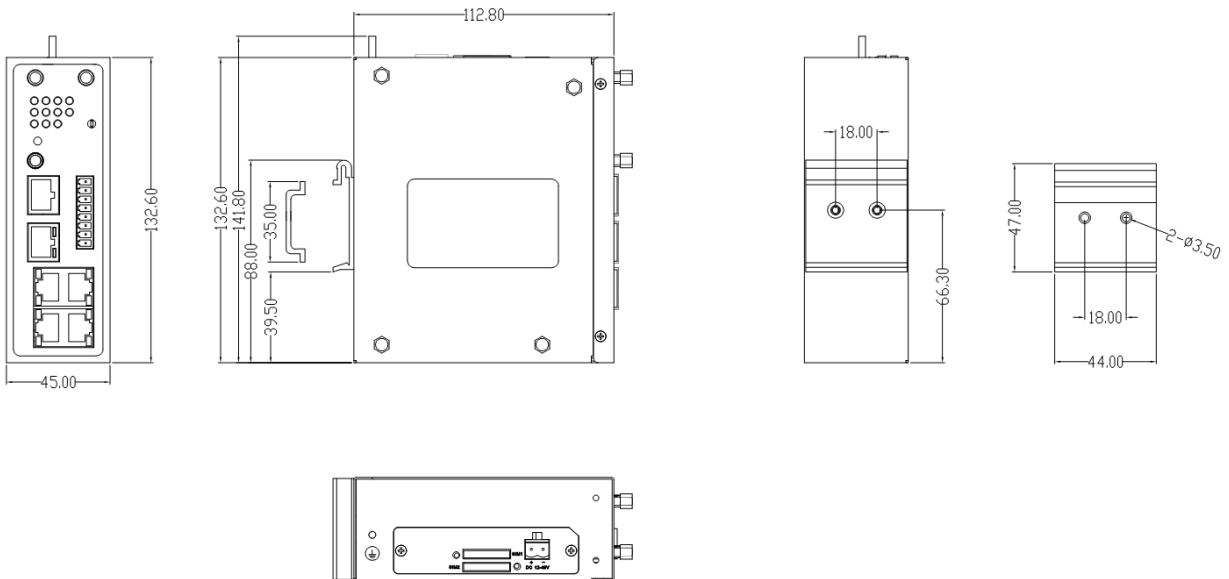
		IR912	IR915
Interface	Ethernet Ports	2* 10/100Mbps Fast Ethernet Ports, WAN/LAN	1* 10/100Mbps Ethernet Port, WAN/LAN, 4*10/100Mbps Ethernet Ports, WAN/LAN
	Serial Port	N/A	2 Serial Ports, RS232 x1 , 1 RS485 x1
			3.81mm industrial terminal
			RS-232 signal: TXD, RXD, GND
			RS-485 signal: A, B, GND
			ESD Protection: 15KV
	Console	RS-232 x1, RJ45 Serial Port	
	SIM Holder	1.8V/3V, 2 Push-type SIM Card Holders	
	Reset	Pinhole Reset Button	
	Antenna	3G/4G: SMA Female Connector x 2, WLAN: RP-SMA x 1	
	Wi-Fi	N/A	Optional, 802.11b/g/n
	DI/DO (optional)	1 relay output, 2A@30VDC; 1 digital input, galvanic isolation, status "1":+10~+30V, status "0":-30~+3V"	
CAN	Optional, 1 x CAN		
GPS	N/A	Optional	
Mechanical	Installation	Din Rail, Wall Mounted	
	Dimension (mm)	132.6 x 112.8 x 45	

		IR912	IR915
	Housing	Metal	
	IP Level	IP30	
	Cooling	Fanless	
	Weight	565 g (IR912P-PH09-S)	590 g (IR915P-PH09-S)
Power	Power Supply	DC 12-48V	
	Power Interface	2-pin 5.08mm industrial terminal	
	Standby	100mA@24V(HSPA+)	160mA@24V(HSPA+)
	Working	150mA@24V(HSPA+)	220mA@24V(HSPA+)
	Peak	180mA@24V(HSPA+)	230mA@24V(HSPA+)
	Reverse Polarity Protection	Support	
Wi-Fi Transmit Power	Transmit Power	802.11b:16dBm +/-2dBm(11Mbps) 802.11g:16dBm +/-2dBm(54Mbps) 802.11n@2.4GHz:16dBm +/-2dBm(HT20 MCS7) 802.11n@2.4GHz:16dBm +/-2dBm(HT40 MCS7)	
Environment	Humidity	5 ~ 95% relative humidity (noncondensing)	
	Storage	-40 ~ 85°C	
	Working	-25 ~ 70°C	
Others	Real Time Clock	Embed RTC, Powered by Super Capacitor	
Indicators		POWER, STATUS, WARN, ERROR, MODEM, SIM, VPN, 3 Levels of Cellular Signal Strength	
EMC Specifications		ESD Electrostatic Discharge Immunity: EN61000-4-2,level 4 RFI Radio Frequency Immunity: EN61000-4-3,level 4 EFT Electrical Fast Transient/Burst Immunity: EN61000-4-4,level 4 Surge Immunity: EN61000-4-5, level 3 Immunity to Conducted Disturbances: EN61000-4-6,level 4 Power Frequency Magnetic Field Immunity: EN61000-4-8, horizontal/vertical 400A/m (>level 4) Shock Test: IEC60068-2-27 Free Fall: IEC60068-2-32 Vibration: IEC60068-2-6	
Approvals and Compliance		CE, FCC, CCC, RCM, UL, PTCRB, AT&T, Verizon Wireless, T-Mobile	
Warranty		3 years	

Dimensions (mm)



IR912 Dimensions



IR915 Dimensions

Ordering Information

Features	IR912	IR915
Part Number	IR91<N1><N2>-<WMNN>-<W>-<S>-<GPS>	
N1 (# of Ethernet Ports)	2: 2 x 100Mbps ETH ports	5: 5 x 100Mbps ETH ports
N2 (Cellular Type)	P—3G or No Cellular, L—4G LTE	
WMNN W=cellular networks MNN=cellular module	PS08: UMTS(HSPA+) Band 1/2/5/8 EDGE/GPRS/GSM 850/900/1800/1900 VZ16: EVDO 800/1900MHz (For China) CDMA 1x 800/1900MHz VS08: EVDO and CDMA 1x (For Verizon Wireless in USA) VW00: EVDO(450MHz) Receiver: 462.5 ~ 467.475MHz Transmitter: 452.5 ~ 457.475MHz	
	TL00: LTE-FDD Band 1/3/5 (For China) LTE-TDD Band 38/39/40/41 TD-SCDMA Band 34/39 UMTS(DC-HSPA+) Band 1/5 EDGE/GPRS/GSM 850/900/1800/1900MHz TL01: LTE-FDD Band 1/3(For China) LTE-TDD Band 38/39/40/41 TD-SCDMA Band 34/39 UMTS(DC-HSPA+) Band 1 EVDO 800MHz CDMA-1x 800MHz EDGE/GPRS/GSM 850/900/1800/1900MHz TH09: LTE-FDD Band 1/3/8 (For China) LTE-TDD Band 38/39/40/41 UMTS(DC-HSPA+) 1/5/8/9 EDGE/GPRS/GSM 900/1800MHz FS08: LTE-FDD Band 1/3/7/8/20 (For Europe) UMTS(HSPA+) Band 1/3/8 EDGE/GPRS/GSM 900/1800MHz FS18: LTE-FDD Band 2/4/5/17 (For AT&T in North/South America) UMTS(HSPA+) Band 2/4/5 EDGE/GPRS/GSM 850/900/1800/1900MHz FS28: LTE-FDD Band 4/13(For Verizon Wireless in USA) FH20: LTE-FDD Band 1/2/3/4/5/7/8/20 (For Europe) UMTS(DC-HSPA+) Band 1/2/5/8 EDGE/GPRS/GSM 850/900/1800/1900MHz FA41: LTE-FDD Band 3/7/20/31 (For 450MHz LTE)	

Features	IR912	IR915
	(Band31 DL:461MHz – 468 MHz UL:451MHz – 458 MHz) FW00: FDD-LTE Band 3/7/20 (for Europe)	
	EN00=No cellular module	
W(Wi-Fi Optional)	NA	W: AP+Client, <NA>: No WLAN
S(Serial Port)	NA	S: RS232*1 & RS485*1, support I/O
GPS(Optional)	NA	GPS: GPS Supported, <NA>: No GPS
Sample	IR915P-PS08-W-S-GPS: 5x ETH, VPN, HSPA+, WLAN, RS-232&RS-485, I/O IR915L-FS28-S: 5x ETH, VPN, 4G LTE, RS-232&RS485, I/O	

InHand Networks

InHand Networks provides reliable, secured and intelligent M2M solution for electric power, industrial automation, commercial and medical devices. Recognized by world class customers and partners. Proven by a large install base. Expanding with intensive investments in research and development. Enduring for long-term support.

InHand Networks has become leader in industrial grade network technology by providing industrial cellular routers, industrial Ethernet switches, wireless sensor network devices and cloud based M2M platforms.

Connecting devices, enabling services.



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