InRouter 900 Industrial 4G Router

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

Router 900 Profile

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.

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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.

■ **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, PSPF, 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.

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■ **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 256MB 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

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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+
	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 (Automatic Registration)
	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
	Watchdog	Self-diagnostic, Automatic Recover from Failure
QoS	Bandwidth Management	Limiting maximum bandwidth
	Multilevel Priority	ICMP/IGMP/TCP/UDP/GRE/ESP/OH/OSPF/VRRP/L2TP
WLAN	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

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		InRouter 900
Net Management	Configuration	Configure via HTPP, HTTPS, Serial Port, Telnet, SSH
	Firmware Upgrade	WEB, Serial Port, TFTP, FTP, SFTP server, and InHand Device Manager
	Log	Local sys log, remote lot, export log via Serial Port
		Important Log Backup in Flash Memory
	SMS	SMS to Inquiry Status, Configure, Reboot
	On-Demand Dial Up	Activate by data, Activate by SMS, Scheduled Online/Offline
	SNMP	SNMP v1/v2c/v3, InHand MIBs
	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 Cellular Interface Specifitions

3G/4G Nominated Performance	LTE: 900/1800/2100/2600MHz (up to 100Mbps downlink, up to 50Mbps uplink)
	HSPA+: 850/1900/2100 MHz (up to 21Mbps downlink, up to 5.76Mbps uplink)
	HSPA: 850/1900/2100 MHz (up to 7.2M/3.6Mbps downlink, up to 2.0Mbps uplink)
	UMTS: 850/1900/2100MHz (up to 2.0Mbps downlink, up to 384Kbps uplink)
	EDGE: 850/900/1800/1900MHz (up to 236kbps downlink, up to 124kbps uplink)
	GPRS: 850/900/1800/1900 MHz (up to 80kbps downlink, up to 42kbps uplink)
	CDMA/CDMA2000
	CDMA 1xEV-DO Rev A: (up to 3.1Mbps downlink, up to 1.8Mbps uplink)
	CDMA1xEV-DO Rev 0: (up to 2.4Mbps downlink, up to 153.6Kbps uplink)
	CDMA1xRTT: (up to 153.6Kbps downlink, up to 153.6Kbps uplink)
	TD-SCDMA
	HSDPA/HSUPA: 900/1800MHz (up to 7.2Mbps downlink, up to 2.0Mbps uplink)

## InRouter 900 Hardware Specifications

	IR9x2	IR9x5	IR9x8
Interface — Ethernet Ports	Two 10/100Mbps Fast Ethernet Ports, including one WAN/LAN dual mode port	One 10/100/1000Mbps Ethernet WAN/LAN Port, Four 10/100Mbps Fast Ethernet LAN Ports	Two 10/100/1000Mbps Ethernet WAN/LAN Ports, Six 10/100Mbps Fast Ethernet LAN Ports
Power Supply	2 pole Industrial Wiring Terminal, DC 12-48V		
Serial Port	2 Serial Ports, RS232 x1 , 1 RS485 x1		
Console	RJ45 Serial Port		
SIM Holder	2 Push-type SIM Card Holders		
Reset	Pinhole Reset Button		
Real Time Clock	Embed RTC, Powered by Super Capacitor		
Antenna	3G/4G: SMA Female Connector x 2, WLAN: SMA Male Connector x 1		
WIFI	Optional, 802.11b/g/n		
DI/DO	Optional, 1 x In, 1 x Out		
CAN	Optional, 1 x CAN		
GPS	Optional, SMA Female Connector x 1		
Machnical — Installation	Din Rail, Wall Mounted		
Dimension (mm)	132.6 x 112.8 x 45		
Housing	Metal		
IP Level	IP30		
Cooling	No Fan		
Power Consumption — Standby	< 2.6W		
Working	< 3.6W		
Peak	< 4W		
Environment — Humidity	5 ~ 90% relative humidity (noncondensing)		
Storage	-40 ~ 85℃		
Working	-25 ~ 70℃		
Indicators	POWER, STATUS, WARN, ERROR, MODEM, 2 x 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		

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	IR9x2	IR9x5	IR9x8
	400A/m (>level 4) Shock Test: IEC60068-2-27 Free Fall: IEC60068-2-32 Vibration: IEC60068-2-6		
Approvals and Compliance	CE、FCC、UL、PTCRB (In Progress when this document drafted)		

Dimensions (mm)
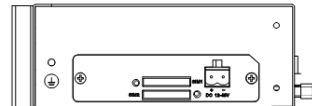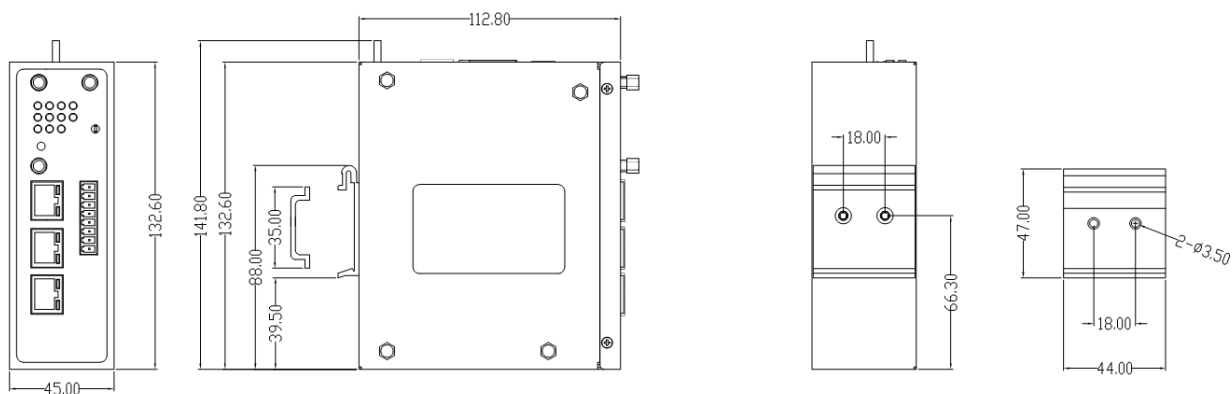
InRouter 9x2 Dimensions
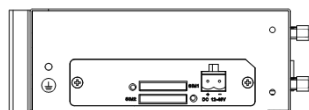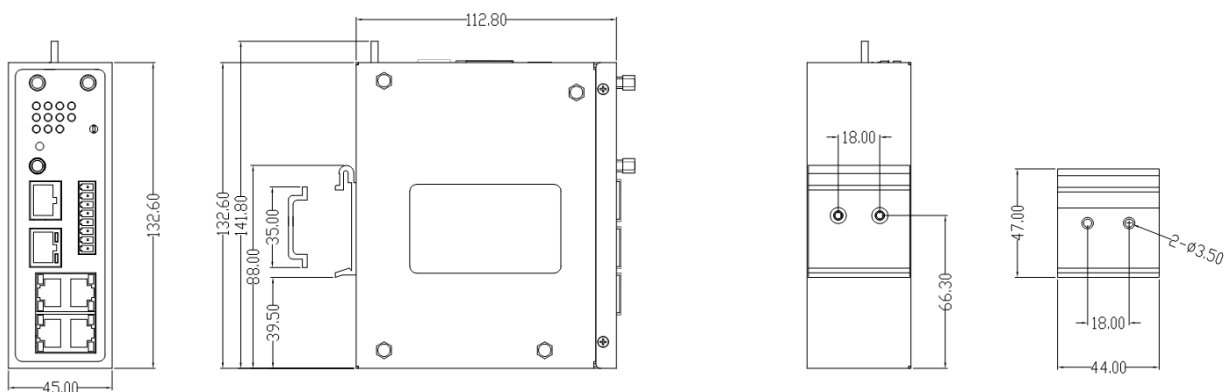
InRouter 9x5 Dimensions

Ordering Information

Model	InRouter 900 Part Number
Part Number	IR9<X><NG><N>-<WMNN>-<W>-<P>-<CAN>-<GPS>
X = Software Functions	0: Routing, Static/Dynamic Routing 1: VPN Support, GRE/L2TP/IPSec/OpenVPN, CA
NG = Ethernet Ports	N: Number of Ethernet Ports, 2: 2x ETH, 5: 5xETH, 8: 8xETH G: Giga byte Ethernet, <NA>: 100M Ethernet
N = Cellular Networks	P—HSPA+、L—LTE
WMNN = Cellular Module	W stand for cellular networks, P—HSPA+ 、F—FDD-LTE、T—TD-LTE MNN stand for various cellular module embedded in InRouter
W(WLAN)	W: WIFI AP+Client, <NA>: No WLAN
Installation	P: Wall Panel Mounted, <NA>: Din Rail Mounted
Other Interfaces	CAN: CAN Bus, GPS: GPS Supported, <NA>: I/O
Sample	IR912P-PH01-W-P-CAN: 2x ETH, VPN, HSPA+ embedded, WLAN, Panel Mounted, CAN Bus supported

InHand Network

InHand Networks is a technology company providing reliable, secured and intelligent M2M solution for electric power, industrial automation, commercial and medical devices. Recognized by world class customers and partners, proven by large scale install base, intensive investments in R&D, enduring team seeking for excellence, InHand Networks has become leader in industrial grade network technology covering industrial cellular, industrial Ethernet switches, wireless sensor network and cloud based M2M platform.

Connecting devices, enabling services.

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