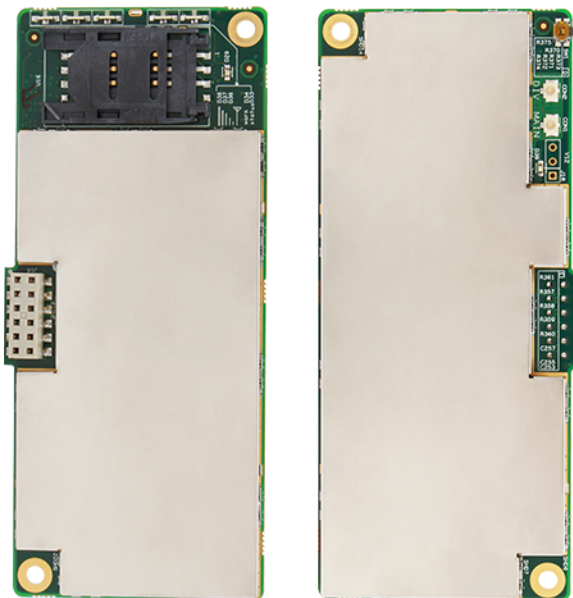


# InRouter901L Industrial LTE Cat 1 Embedded Router

Low Power, High Performance, Optimized Cost for M2M/IoT Applications



## Overview

The InRouter901L is an embedded industrial grade router developed for the latest 4G LTE Cat 1. Combining lower power consumption and low-latency connection, the InRouter901L is ideal for M2M and industrial IoT applications requiring high reliability and optimized cost.

The InRouter901L provides a maximum of 10Mbps downlink and 5Mbps uplink, allowing for M2M/IoT applications at a lower cost while on high-performance LTE networks. Built with compact design, the InRouter901L enables quick and easy integration of LTE cellular connectivity into customers' devices, greatly reducing time to market.

Like other products of the InRouter series, the new InRouter901L embedded router provides highly-reliable and secure communications and features intelligent software functions including OSPF dynamic routing and DMVPN to support high-efficiency large-scale network deployment and management. Among a wide range of applications, the InRouter901L can be used in metering, tracking, kiosk, ATM, digital signage, remote automation, digital manufacturing, transportation and etc.

## Advantages

### ■ High Performance

- Support 4G LTE Cat 1 with 10Mbps downlink and 5Mbps uplink
- Equipped with powerful Cortex-A8 processor and 128MB memory, support more application needs
- 1 Ethernet port; 4G embedded module, ensures always-on connection

### ■ Easy Integration

- 45.24 x 106.88 x 11.90mm compact design, can be easily embedded into customer's board
- Provide low-cost and easy-to-deploy solution for OEMs

### ■ Support Large Scale Deployment

- Multiple configuration tools including Web and CLI, enable administrator to rapidly configure thousands of InRouter901L
- Remote Network Management: the InRouter901L works with network management platforms installed in application center or headquarter to achieve remote batch configuration, download and upload configuration file, firmware upgrade, connection and VPN tunnel monitoring. All these functions become essential for operating a M2M/IoT system especially when many devices scattered widely with limited field staff or even completely unattended
- The InRouter901L supports industrial standard SNMP and 3<sup>rd</sup> SNMP software platform, to integrate into enterprise level IT management system
- The InRouter901L also collaborates with InHand *Device Manager* platform to handle cellular specialty of network management. InHand *Device Manager* can be cloud based or installed within enterprise's intranet. InHand *Device Manager* is able to monitor cellular data flow, signal strength on site and the location of devices. Even better, there's no need to apply costly private network from telecom operator, and you can build your worldwide M2M/IoT system across multiple operators
- Multiple diagnostic tools, supporting 4G modem status, IMEI, IMSI and registration status of cellular networks, help engineer out of complex network maintenance
- Support dynamic routing of RIP, OSPF, automatically update routing of the whole network, largely increase efficiency of large scale deployment.
- Support Dynamic Multipoint VPN (DMVPN) to greatly reduce workload to configure

thousands of remote InRouter901L. Establishing a large & secured remote network is 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 etc.

### ● Security of Devices

Support AAA, TACACS, Radius, LDAP, local authentication, and multi levels user authority, to establish a secured mechanism on centralized authentication and authorization of device access.

## ■ High Reliability

### ● 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.

### ● InRouter901L Auto-recovery

The InRouter901L embeds hardware watchdog, able to automatically recover from various failure, ensure highest level of availability.

## ■ InHand Network Operation System: INOS 2.0 (Based on Linux 3.2.0)

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/IoT applications.

**Specifications**
**InRouter901L Software Specifications**

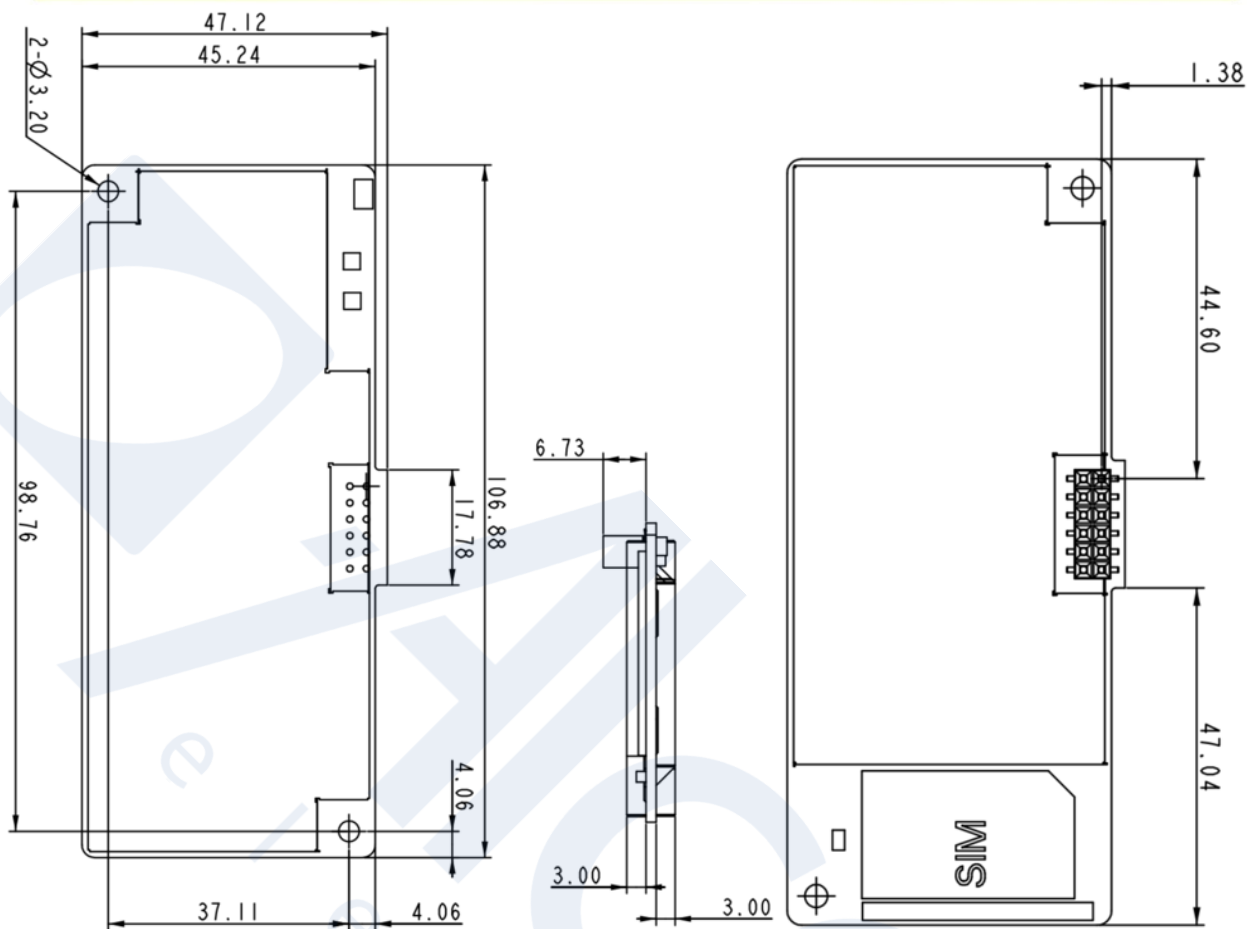
		InRouter901L	
Network Interface	Operator Access	Support Public, Private network	
	Access Authentication	CHAP/PAP/MS-CHAP/MS-CHAPV2	
	Cellular	LTE Cat 1	
	LAN	ARP, Ethernet	
Protocol	IP	Ping, Traceroute, DHCP Server/Relay/Client, DNS Relay, Dynamic DNS, Telnet, SSH, HTTP, HTTPS, TFTP, FTP, SFTP	
	IP Routing	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 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	
Net Management	Configuration	Configure via HTTP, HTTPS, Telnet, SSH	
	Firmware Upgrade	WEB, Serial Port, TFTP, FTP, SFTP server, and InHand Device Manager	
	Log		Local sys log, remote log
			Important Log Backup in Flash Memory
	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		

		InRouter901L
	Multilevel Authority	Multiple Levels of User Authority
	Diagnostic	Ping, Traceroute, Sniffer Tools

### InRouter901L Hardware Specifications

		InRouter901L
Interface	Ethernet Ports	1* 10/100Mbps Fast Ethernet Ports without magnetics, LAN
	Serial Port	1 Serial Ports, 3.3V TTL
		2.54mm connector
		Serial signal: TXD, RXD, GND
	Console	TTL UART: TXD, RXD, GND 2.54 mm connector holes on Board
	SIM Holder	1.8V/3V, 2FF, Flip type SIM card holder
	Restore	Restore Button to reset all configuration to default
Antenna	2 * U.FL socket for LTE MAIN and DIV	
Mechanical	Installation	Embedded to customer's board
	Dimension (mm)	45.24 x 106.88 x 11.90
	Housing	PCB
	Cooling	Fanless
	Weight	50 grams
Power	Power Supply	1.8A @ 3.3V DC
	Power Interface	2.54mm connector
	Standby	1.0A @ 3.3V DC
	Working	1.1A @ 3.3V DC
	Peak	1.8A @ 3.3V DC
Environment	Humidity	5 ~ 95% relative humidity (noncondensing)
	Storage	-40 ~ 85°C
	Working	-25 ~ 70°C
Indicators		STATUS, WARN, ERROR, 3 LEDs for Cellular Signal Strength

**Dimensions (mm)**

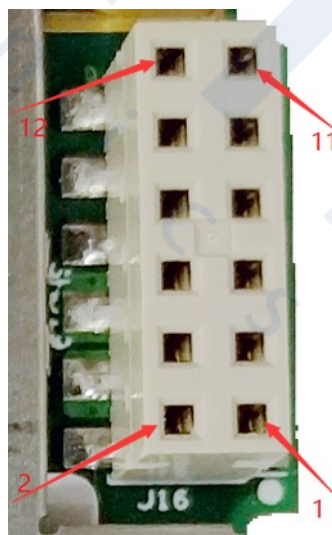


Note: PIN number: 2x6. Pitch: 2.54mm.

Recommended length for the Male header: > 5mm

**PIN Definition**

Pin number	Signal name
1	ETH_TXP
2	GPIO1
3	ETH_TXN
4	3.3V_IN
5	GPIO2
6	GND
7	UART_TXD
8	ETH_RXP
9	UART_RXD



Pin number	Signal name
10	ETH_RXN
11	GPIO3
12	ETH_CT

Note: the signals of Ethernet port are without magnetics.

## Ordering Information

Features	IR901L
Part Number	IR901L-<WMNN>
WMNN W=cellular networks MNN=cellular module	FS31: LTE-Bands 4, 13(1700/2100 AWS, 700)
Example	IR901L-FS31

### InHand Networks

InHand Networks provides reliable, secured and intelligent M2M/IoT 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/IoT platforms.

Connecting devices, enabling services.

