Secure, Reliable, for Large Scale M2M/IoT Deployment

**InRouter900 Series**

**Industrial LTE Router**

Featuring industrial-grade design, 4G/3G connectivity and intelligent software functions, the InRouter900 is a full-featured and high-end LTE router designed for mission critical and industrial IoT applications.

With dual SIM, VRRP and VPN, The InRouter900 provides best-in-class reliability and secure communications for remote devices, helping enterprise customers achieve efficient large-scale deployment and management.

The InRouter900 supports Python programming which can greatly facilitate custom IoT development with shorten time to market.

It is a certified [Microsoft Azure IoT Device](#).

### Application

- **Python Programming**
- **Smart Robot**
- **InRouter900**
- **4G/3G MQTT**
- **Cloud-based Industrial Robot Monitoring Platform**

The InRouter 900 is ideal for large scale critical and industrial applications, such as:

- Manufacturing
- Industrial Automation
- Robots
- Smart Grid
- Oil & Gas
- Agriculture
- Water & Wastewater
- Smart Transportation
- Healthcare
Advantages

- Global 4G LTE
- Multi-carrier Certified
- Large Scale Deployment
- Dual SIM Redundancy
- Automatic Link Detection & Recovery
- VRRP
- VLAN
- WLAN
- GPS
- Remote Management via SNMP and InHand Device Manager
- Python Programming
- Azure IoT Certified
- Ruggedized for Harsh Environments

- **Uninterrupted Internet Access Anytime Anywhere**
  Redundant WAN connection, 2 Ethernet ports, 3G/4G, various DSL, available with LTE CAT 4 (downlink 150Mbps, uplink 50Mbps) and LTE CAT 1 (downlink 10Mbps, uplink 5Mbps), supports Wi-Fi (AP/Client)

- **Supports Python Programming**
  Users can use pre-installed Python SDK to access APIs and resources and run their Python (2.7) programs for customized development.

- **Supports Large Scale Deployment**
  Easy remote management via Web, CLI and etc.
  Supports RIP, OSPF, BGPv4 for improved efficiency
  Dynamic Multipoint VPN (DMVPN) to greatly reduce the workload of configuring thousands of remote devices.

- **Robust Security**
  Secured VPNs: L2TP, IPsec VPN, DMVPN, OpenVPN and CA
  Network Security: Stateful Packet Inspection (SPI), Access Control List (ACL), resist DoS attack, intrusion protection, attack protection, IP/MAC Binding and etc.
  Device Security: AAA (TACACS, Radius, local authentication) and multi-level user authority

- **High Reliability**
  Redundancy with link backup, VRRP and Dual SIM
  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.

- **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/IoT applications.
### Interface Definition

#### 9-pin Industrial Terminal Definition

<table>
<thead>
<tr>
<th>Pin</th>
<th>Definition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RXD</td>
<td>Serial port RS232 data receiving</td>
</tr>
<tr>
<td>2</td>
<td>TXD</td>
<td>Serial port RS232 data transmitting</td>
</tr>
<tr>
<td>3</td>
<td>GND</td>
<td>Serial port RS232 signal ground</td>
</tr>
<tr>
<td>4</td>
<td>A</td>
<td>Serial port RS485+</td>
</tr>
<tr>
<td>5</td>
<td>B</td>
<td>Serial port RS485-</td>
</tr>
<tr>
<td>6</td>
<td>IN</td>
<td>Digital input signal</td>
</tr>
<tr>
<td>7</td>
<td>COM</td>
<td>Digital input ground</td>
</tr>
<tr>
<td>8</td>
<td>NC</td>
<td>Digital output signal</td>
</tr>
<tr>
<td>9</td>
<td>COM</td>
<td>Digital output ground</td>
</tr>
</tbody>
</table>
## Specifications

### IR900 Hardware Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>IR912</th>
<th>IR915</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU</strong></td>
<td>ARM Cortex A8, 600MHz</td>
<td></td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>128MB</td>
<td>128MB</td>
</tr>
<tr>
<td><strong>FLASH</strong></td>
<td>128MB</td>
<td>128MB</td>
</tr>
<tr>
<td><strong>Ethernet Ports</strong></td>
<td>10/100Mbps, 5*10/100Mbps, WAN/LAN; supports VLAN</td>
<td></td>
</tr>
<tr>
<td><strong>Serial Port</strong></td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Interface</strong></td>
<td>2 Serial RS232 x1, RS485 x1</td>
<td></td>
</tr>
<tr>
<td><strong>Power Supply</strong></td>
<td>DC12-48V</td>
<td>DC12-48V</td>
</tr>
<tr>
<td><strong>Standby</strong></td>
<td>100mA @ 24V (HSPA+)</td>
<td>120mA @ 24V (HSPA+)</td>
</tr>
<tr>
<td><strong>Working</strong></td>
<td>160mA @ 24V (HSPA+)</td>
<td>180mA @ 24V (HSPA+)</td>
</tr>
<tr>
<td><strong>Peak</strong></td>
<td>230mA @ 24V (HSPA+)</td>
<td></td>
</tr>
<tr>
<td><strong>Wi-Fi Transmit Power</strong></td>
<td>802.11b: 13dBm +/− 2dBm (11Mbps)</td>
<td>802.11n: 2.4GHz: 13dBm +/− 2dBm (HT40 MCS7)</td>
</tr>
<tr>
<td><strong>Temperature</strong></td>
<td>-40 ~ 75°C</td>
<td>-25 ~ 70°C</td>
</tr>
<tr>
<td><strong>Humidity</strong></td>
<td>10% ~ 90%</td>
<td>10% ~ 90%</td>
</tr>
<tr>
<td><strong>LED</strong></td>
<td>POWER, STATUS, ALARM, ERROR, MODERN, SIM, VPN, Signal</td>
<td></td>
</tr>
<tr>
<td><strong>EMC Specifications</strong></td>
<td>H1, EN61000-4-3, level 4</td>
<td>EN61000-4-3, level 4</td>
</tr>
<tr>
<td><strong>Power Source</strong></td>
<td>DC12-48V</td>
<td>DC12-48V</td>
</tr>
<tr>
<td><strong>Interface</strong></td>
<td>2 pin 0.08mm industrial 2 pin 0.08mm industrial</td>
<td></td>
</tr>
<tr>
<td><strong>SIM Slot</strong></td>
<td>SIM Holder</td>
<td>SIM Holder</td>
</tr>
<tr>
<td><strong>SIM Card</strong></td>
<td>2 Push-type SIM Card</td>
<td></td>
</tr>
<tr>
<td><strong>GPS</strong></td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>GPS (optional)</strong></td>
<td>GPS/4G/SM</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### Network Interface

<table>
<thead>
<tr>
<th>Item</th>
<th>IR900</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operator Access</strong></td>
<td>APN, VPDN</td>
</tr>
<tr>
<td><strong>Access Authentication</strong></td>
<td>CHAP/MS-CHAP/CHAP V2</td>
</tr>
<tr>
<td><strong>Gain</strong></td>
<td>802.11b/g/n: +2dBm (54Mbps)</td>
</tr>
<tr>
<td><strong>MAC</strong></td>
<td>802.11b/g/n: +2dBm (54Mbps)</td>
</tr>
<tr>
<td><strong>LAN</strong></td>
<td>IP, HTTP, DHCP, SSL, ARP, Ethernet</td>
</tr>
<tr>
<td><strong>VLAN</strong></td>
<td>IP, SSL, HTTP, HTTPS, FTP, TFTP, SSH, Telnet, DHCP, DNS, Relay, Dynamic DNS, Telnet, SSH, HTTP, HTTPS, FTP, TFTP, SFTP</td>
</tr>
<tr>
<td><strong>IP Routing</strong></td>
<td>Static Routing, RIP, OSPF, IGMP Proxy, BGP V4</td>
</tr>
<tr>
<td><strong>Security</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Firewall</strong></td>
<td>Stateful Packet Inspection (SPI), Anti-DoS Attack</td>
</tr>
<tr>
<td><strong>AAA</strong></td>
<td>Two level authentication: Full Authority and Read-Only User, RADIUS, TACACS+</td>
</tr>
<tr>
<td><strong>CA Certificate</strong></td>
<td>PEM, PKCS12, SCEP</td>
</tr>
<tr>
<td><strong>Data Security</strong></td>
<td>IPsec, A2TP, PPTP, GRE, OPENVPN, DMVPN, CA</td>
</tr>
</tbody>
</table>

### Miscellaneous

<table>
<thead>
<tr>
<th>Item</th>
<th>IR9915</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Housing</strong></td>
<td>Metal</td>
</tr>
<tr>
<td><strong>Dimension (mm)</strong></td>
<td>152 x 122.8 x 53</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>50mA@24V</td>
</tr>
<tr>
<td><strong>Cooling</strong></td>
<td>Fanless</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>50g</td>
</tr>
<tr>
<td><strong>Antenna</strong></td>
<td>3G/4G: SMA Female Connector x2, 802.11n: Wi-Fi: RP-SMA x1</td>
</tr>
<tr>
<td><strong>Connectors</strong></td>
<td>802.11b: 13dBm +/- 2dBm (11Mbps)</td>
</tr>
<tr>
<td><strong>DIO/DI</strong></td>
<td>802.11n: 2.4GHz: 13dBm +/- 2dBm (HT20 MCS7)</td>
</tr>
<tr>
<td><strong>Connectors</strong></td>
<td>802.11n: 2.4GHz: 13dBm +/- 2dBm (HT40 MCS7)</td>
</tr>
<tr>
<td><strong>Environment</strong></td>
<td>Indoor, Wall Mounted</td>
</tr>
<tr>
<td><strong>Operating System</strong></td>
<td>InRouter900</td>
</tr>
<tr>
<td><strong>OS</strong></td>
<td>Linux</td>
</tr>
<tr>
<td><strong>CPU</strong></td>
<td>ARM Cortex A8, 600MHz</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>128MB</td>
</tr>
</tbody>
</table>

### Security

- **Firewall:** Stateful Packet Inspection (SPI), Anti-DoS Attack
- **AAA:** Two level authentication: Full Authority and Read-Only User, RADIUS, TACACS+
- **CA Certificate:** PEM, PKCS12, SCEP
- **Data Security:** IPsec, A2TP, PPTP, GRE, OPENVPN, DMVPN, CA
- **Others:** Anti-ARP, DMZ, MAC Filtering

### Reliability

- **Link Backup:** Floating Route, WAN Link Backup
- **Auto-Recover:** Various Heartbeat Package, Automatic Recover from Failure
- **Watchdog:** Self-diagnostic, Automatic Recover from Failure

### Port

- **Supports VLAN and Port Mirroring**

### GPS

- **Support**
- **GPS:**
- **NSS**
- **CGPS:**

### Bandwidth

- **Bandwidth Limiting:**
- **Data Priority:** Supports Protocol-based data control
- **WLAN:**
- **Standby:**
- **Security:** WPA/WPA2, WPA-PSK, Supports Open System, Shared Key, WEP/TKIP/AES Encryption

### Mode

- **Mode:** Supports both AP and Client Mode

### DTU

- **Bridge:** TCP, UDP transparent transmission, TCP Server, DC

### Net Management

- **Configuration:** DHCP, HTTP, HTTPS, VLAN
- **Firmware Upgrade:** WEB, Serial Port, TFTP, FTP, SFTP server, and InHand Device Management System
- **Log:** Local sys log, remote log, export log via Serial Port
- **Import Log Backup in Flash Memory**

### SMS

- **SMS:** SMS to Inquiry Status, Reboot
- **On-Demand Dial Up:** Activated by data, Activated by SMS, Scheduled Online/Offline
- **SNMP:** SNMP v1/v2c/v3, InHand MBs
- **DM:** DM from device management via INHand Device Management System
- **AAA:** Local/Radius/TACACS+/LMAP
- **Multilevel Authority:** Multiple Levels of User Authority
- **Diagnostic:** Ping, Traceroute, Sniffer
## Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Part Number Code :</th>
<th>&lt;N1&gt; - Module</th>
<th>&lt;WMNN&gt; - cellular networks &amp; module</th>
<th>&lt;W/NA&gt; - WLAN</th>
<th>S - Serial Port (IR915 only)</th>
<th>&lt;G/NA&gt; - GPS (IR915 only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR912P-PS08</td>
<td>IR915P-&lt;N1&gt;-&lt;WMNN&gt;-&lt;W&gt;-S-&lt;GPS&gt;</td>
<td>P:3G or No 3G/4G</td>
<td>UMTS(HSPA+)Band1/2/5/8 (850/900/1900MHz) EDGE/GPRS/GSM 850/900/1800/1900</td>
<td>W: Wi-Fi</td>
<td>S: RS232</td>
<td>G: GPS</td>
</tr>
<tr>
<td>IR915P-PS08</td>
<td>IR915P-&lt;N1&gt;-&lt;WMNN&gt;-&lt;W&gt;-S-&lt;GPS&gt;</td>
<td>P:3G or No 3G/4G</td>
<td>UMTS(HSPA) Band1/8 (900/2100MHz) EDGE/GPRS/GSM 850/900/1800/1900MHz</td>
<td>W: Wi-Fi</td>
<td>S: RS232</td>
<td>G: GPS</td>
</tr>
<tr>
<td>IR912P-PH09</td>
<td>IR915P-PH09-&lt;W&gt;-S-&lt;GPS&gt;</td>
<td>P:3G or No 3G/4G</td>
<td>For China: EVDO 800/1900MHz CDMA 1x 800/1900MHz</td>
<td>W: Wi-Fi</td>
<td>S: RS232</td>
<td>G: GPS</td>
</tr>
<tr>
<td>IR912P-EN00</td>
<td>IR915P-EN00-&lt;W&gt;-S-&lt;GPS&gt;</td>
<td>P: 3G or No 3G/4G</td>
<td>No 3G/4G</td>
<td>W: Wi-Fi</td>
<td>S: RS232</td>
<td>G: GPS</td>
</tr>
</tbody>
</table>

Example: IR915P-PS08-W-S-GPS: 5x ETH, VPN, HSPA+, WLAN, RS-232&RS-485, I/O IR912L-F508: 2x ETH, FDD, HSPA+, WCDMA/GPRS