

Installation and Configuration Quick Guide

QR310

Industrial Cellular Router Remote Gateway

(2 Eth + 1 SIM + 1 RS232/RS485)

Package Contents

Before installing QR310 Router, please verify the kit contents as following.

1 x QR310 Industrial Cellular Router Remote Gateway

1 x power adapter(12V DC/1A, EU/US/UK/AU plug optional)

1 x Quick Start Guide

1 x Ethernet Cable

1 x SMA Cellular antenna (default: magnet/optional: stubby)

1 x SMA Wi-Fi antenna (default: magnet/optional: stubby)

1 x 35mm DIN rail mounting kit

1 x RS232/485 serial cable

***If any of the above items is missing or damaged, please contact your sales representative.**

Environmental Requirements

Input voltage: 7.5V-32V(standard DC12V/1A)

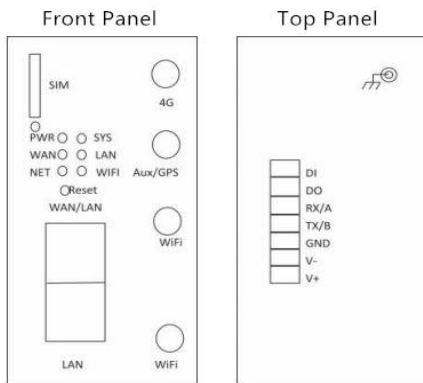
Operating temperature: -30 to +70 °C

Storage temperature: -40 to 85°C

Relative humidity: < 95% (no condensation)

Hardware Introduction

1. Overview



2. 7 Pin terminal block



1	DI	Redundant Interface
2	DO	Redundant Interface
3	RX/A	Data Input
4	TX/B	Data Output
5	GND	GND

6	V-	Power Input (Negative)
7	V+	Power Input (Positive)

3. LED Indicators

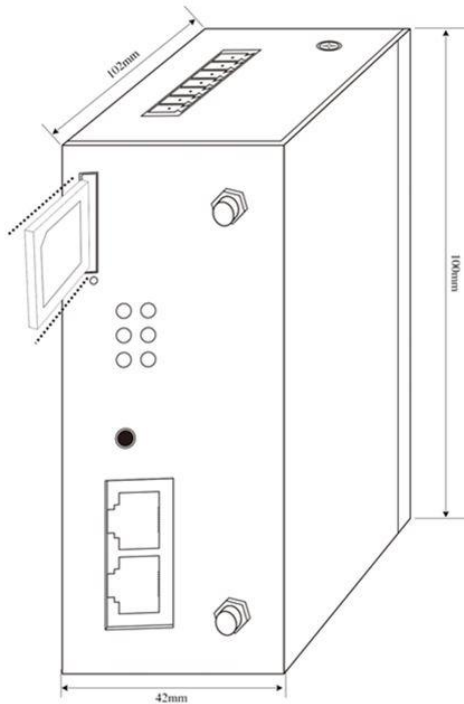
Name	Color	Status	Description
PWR	Green	On	Router is powered on
		Off	Router is powered off
WiFi	Green	On	WiFi is on
		Off	WiFi is off
SYS	Green	On	Redundant
		Off	Redundant
WAN	Green	On, blinking	Link connection is working
		Off	Link connection is not working
LAN	Green	On, blinking	Link connection is working
		Off	Link connection is not working
NET	Green	On, solid	Network is joined successfully and worked in an optimum one
		Off	Network is not joined

4. Reset Button

After powered on the router, press and hold the RST button for 10 seconds, and release the button to return the router to factory defaults.

Hardware Installation

1. Insert or Remove SIM Card



Insert or remove the SIM card as shown in the following steps.

✓ Insert SIM card

- 1) Make sure router is powered off.
- 2) To open the SIM card slot, use a card removal pin plug in the card hole.
- 3) To insert SIM card, press the card with finger until you hear a click and then push back the sim card slot

3

✓ Remove SIM card

- 1) Make sure router is powered off.
- 2) To open the SIM card slot, use a card removal pin plug in the card hole.
- 3) To remove SIM card, press the card with finger until it pops out and then take out the card.
- 4) To push back the sim card slot.

Note:

- 1) Use the specific card when the device is working in extreme temperature (temperature exceeding 40 °C), because the regular card for long-time working in harsh environment will be disconnected frequently.
- 2) Do not forget to push back the card to avoid being lost.
- 3) Do not touch the metal of the card surface in case information in the card will lose or be destroyed.
- 4) Do not bend or scratch the card.
- 5) Keep the card away from electricity and magnetism.
- 6) Make sure router is powered off before inserting or removing the card.

2. Attach External Antenna (SMA Type)

Attach external SMA antenna to the router's antenna connector and twist tightly. Make sure the antenna is within the correct frequency range provided by the ISP and with 50 Ohm impedance.

3. Mount the Router

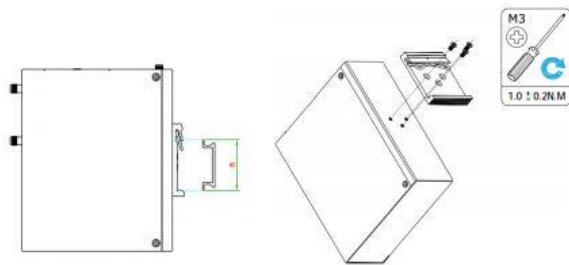
Qixiang Technology, Contact Us for purchasing

Website: www.keennew.com
Email: sales@keennew.com
Whatsapp: +86 13249165907

The router can be placed on a desktop or mounted to a DIN rail.

DIN rail mounting

Use 3 pieces of screws to fix the DIN rail to the router, and then hand the DIN rail on the mounting bracket. It is necessary to choose a standard bracket mount the router with the wall mounting kit on the wall.



4. Connect the Router to a Computer

Connect an Ethernet cable to the LAN port of the router, and connect the other end of the cable to your computer.

5. Power Supply

The power interface is in the 7 Pin terminal block on the top panel. Connect the power adapter with the convert cable with Pin terminal block.

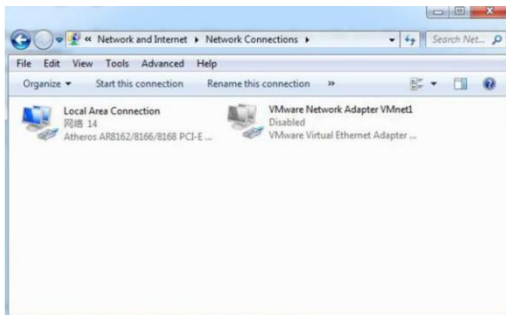
Note: The range of power voltage is 7.5V-32V DC

PC Configuration

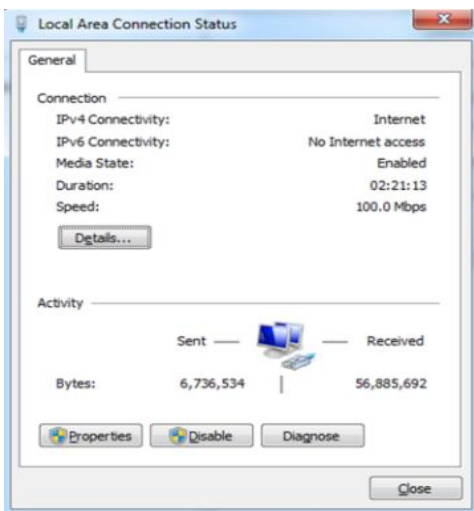
There are two methods to get IP address for the PC. One is to obtain an IP address automatically from “**Local Area Connection**”, and another is to configure a static IP address manually within the same subnet of the router. Please refer to the steps below.

Here take **Windows 10** as example, and the configuration for windows system is similar.

1. Click **Start > Control panel**, click **Network and Internet**, click **Network and Sharing Center**, click **Change Adapter Settings**, and then double-click **Local Area Connection (Ethernet)**.

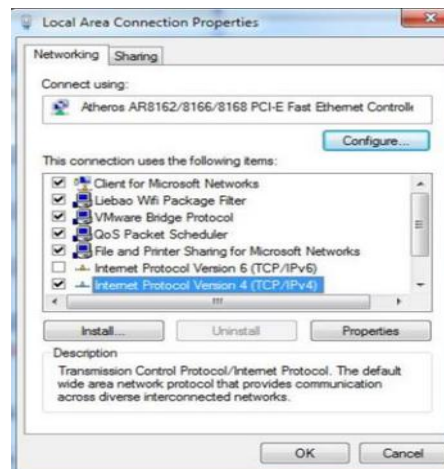


2. Click **Properties** in the window of **Local Area Connection (Ethernet) Status**.



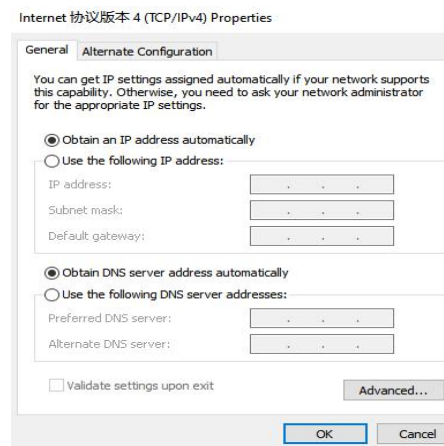
5

3. Choose **Internet Protocol Version 4 (TCP/IPv4)** and click **Properties**.



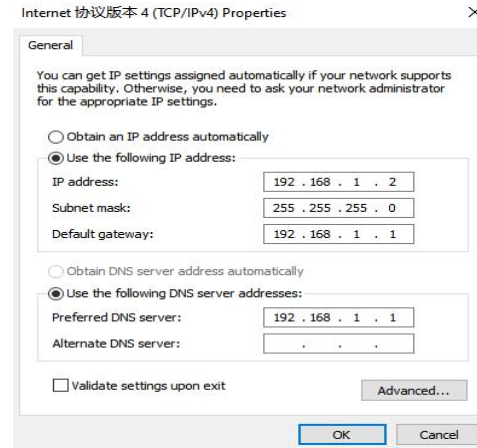
4. Two ways for configuring the IP address of PC.

1) Obtain an **IP address automatically**:



2.) Use the following IP address

Configured a static IP address manually within the same subnet of the router, router default IP address is 192.168.1.1, so static IP address set as 192.168.1.xxx (XXX can be any number between 2 ~ 254). Subnet set as 255.255.255.0



5. Click **OK** to finish the configuration.

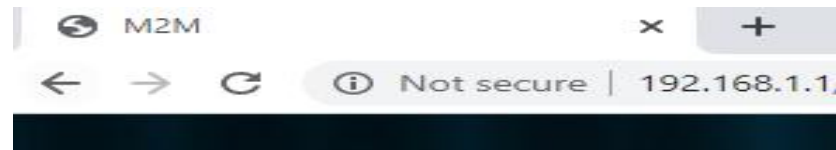
Router Configuration

1. Log in the Router

To log in to the management page and view the configuration status of your router, please follow the steps below.

1) On the PC, open a web browser such as Internet Explorer, Google or Firefox etc.

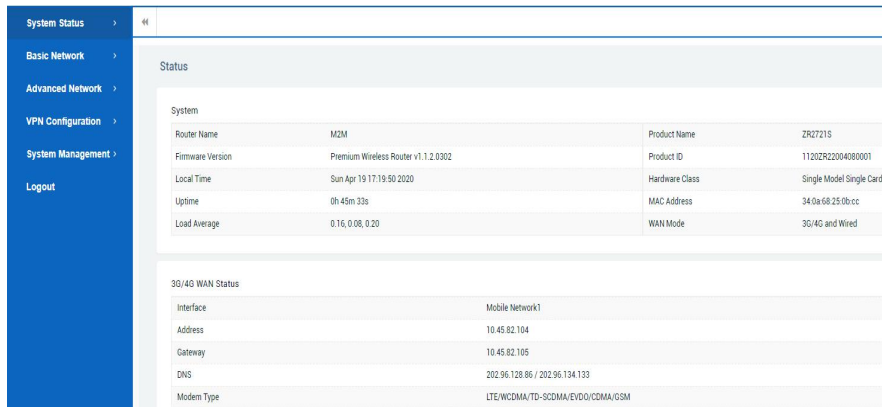
2) From your web browser, type the IP address of the router into the address bar and press enter. The default IP address of the router is **192.168.1.1**, though the actual address may vary.



3) In the login page, enter the username and password, then click **Login**. The default username and password are “**admin**”.



4) After logging in, the home page of the QR310 Router's web interface is displayed, for example.



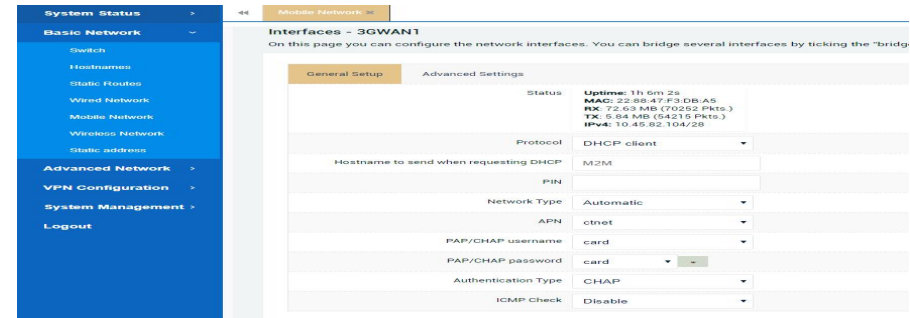
2. Configure the Cellular Connection

There are two methods to dial up for cellular connection of this router.

1) DHCP dial-up (Default)

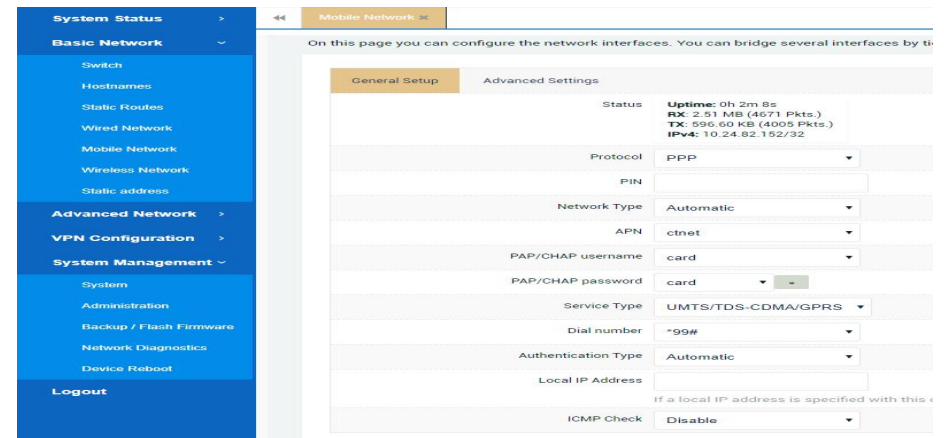
7

Click **Basic Network > Mobile Network**, choose “**DHCP client**” as the Protocol, don't change other default settings, click **SAVE & APPLY** button.



2) PPP dial-up

When you don't want to dial up with DHCP, this router also provide PPP dial-up option. Click **Basic Network > Mobile Network**, choose “**PPP**” as the Protocol, click **SWITCH PROTOCOL** button, no need to change the default parameter, click **SAVE & APPLY** button.



Website: www.keennew.com
 Email: sales@keennew.com
 Whatsapp: +86 13249165907

Qixiang Technology, Contact Us for purchasing

3) Check the cellular connection status

Click **System Status > Overview > 3G/4G WAN Status** to view the status of the cellular connection, the details status information will be displayed.

The screenshot shows the 'System Status' page with a sidebar menu on the left. The 'Overview' section is selected, and the '3G/4G WAN Status' is displayed in the main content area. The status is 'connected 0h 1m 23s'.

3G/4G WAN Status	
Interface	Mobile Network1
Address	10.6.114.224
Gateway	10.6.114.225
DNS	202.96.134.33 / 202.96.128.166
Modem Type	LTE/WCDMA/TD-SCDMA/EVDO/CDMA/GSM
Modem IMEI	863879043609893
Modem IMSI	460030787067217
Network Operator	China Telecom
Current Network Standard	FDD LTE
USIM Status	simready
RSSI	31 (-51 dBm / 100%)
ConnectStatus	connected 0h 1m 23s

Note:

A) This router support IoT and VPDN card of multiple carriers.

B) Generally, this router will identify APN information automatically. When dial-up fail with some IoT card and VPDN card, please contact your carrier and fill in the AP data such as username, password to configure then get cellular connection.

C) This router support wired connection, the configuration is similar with cellular network. Click **Basic Network > Wired Network > WAN**, choose **“DHCP client”** (Optional PPPoE, Static address) as the Protocol, click **SAVE & APPLY** button.

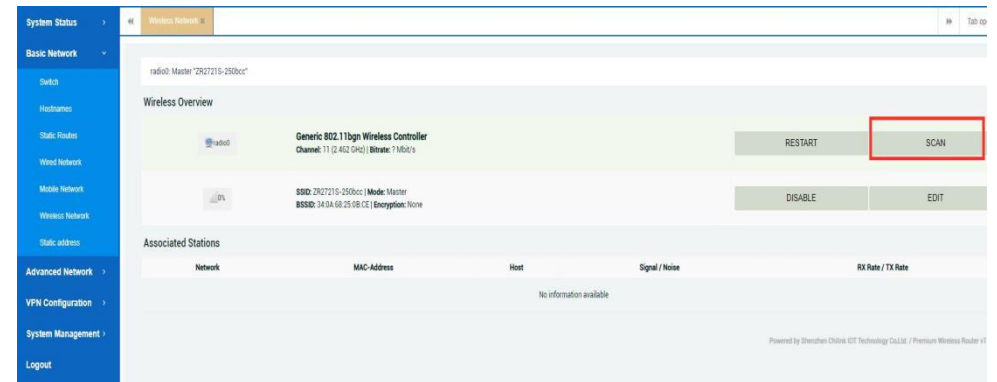
3. Configure the WiFi Connection

Besides cellular and wired connection, you can choose WiFi Client mode to connect this router to internet with following steps:

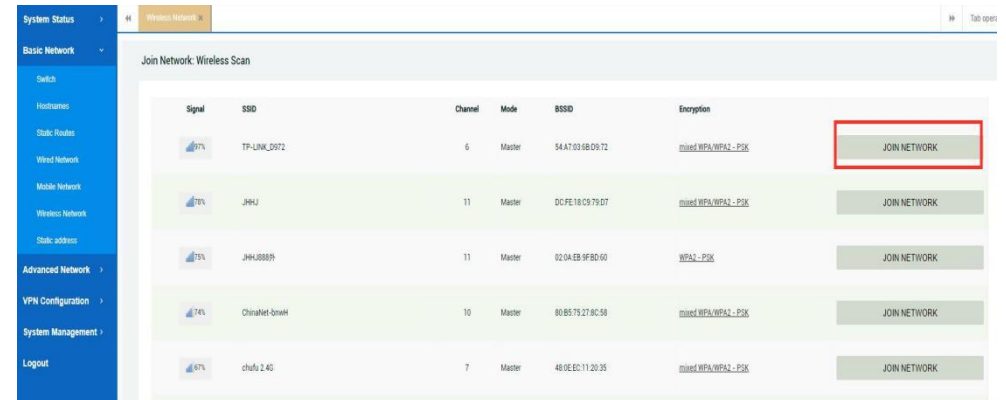
8

Qixiang Technology, Contact Us for purchasing

1) Click **Basic Network > Wireless Network**, click **SCAN** button

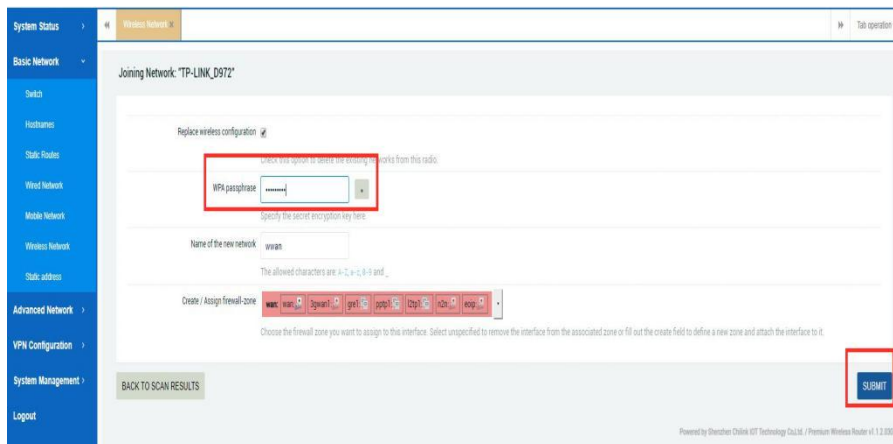


2) Select existing WiFi network, Click **JOIN NETWORK**

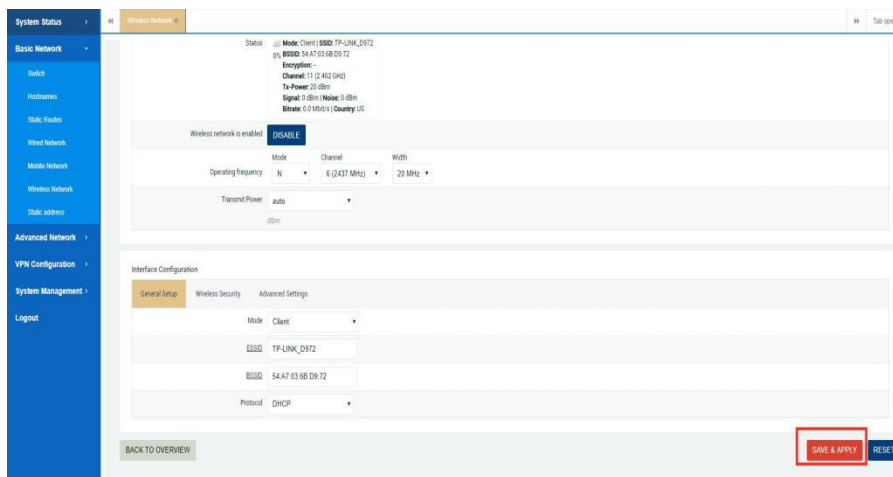


3) Fill in WiFi password in **“WPA passphrase”**, then click **SUBMIT** button

Website: www.keennew.com
Email: sales@keennew.com
Whatsapp: +86 13249165907

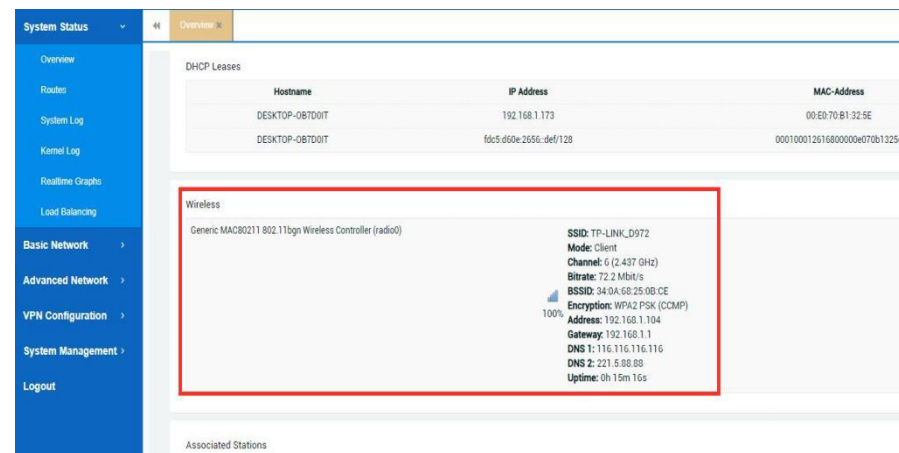


4) Protocol as default **DHCP**, Click **SAVE & APPLY** button, Router now can connect to internet-LINK via WiFi network



5) Double check WiFi connection status: **System Status > Mobile**

Network > Overview > Wireless



4. Connect PC and Terminal to Router

There are two methods to connect PC and terminal to router. One is connect with Ethernet cable, and another is connect through Wireless Access Point. Please refer to the steps below.

1) Ethernet cable connection (Wired)

Connect an Ethernet cable to the LAN port of the router, and connect the other end of the cable to your computer or terminal. Obtain an IP address automatically from "**Local Area Connection**", or to configure a static IP address manually, detail please refer to page 4 "**PC Configuration**"

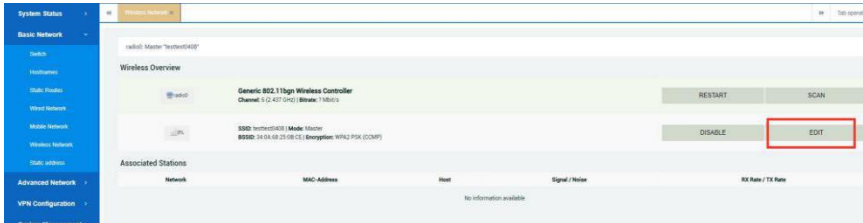
2) Wireless Access Point

To log in to the router management page, please refer to Page 6 "**Router Configuration**"

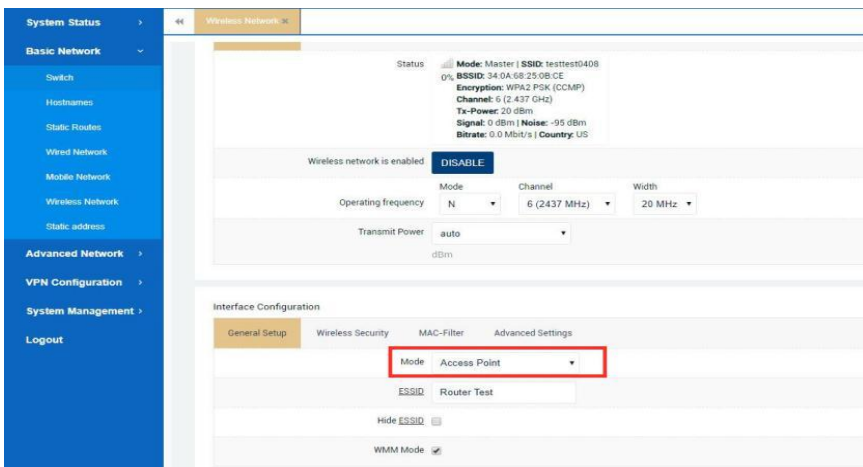
Website: www.keennew.com
 Email: sales@keennew.com
 Whatsapp: +86 13249165907

Qixiang Technology, Contact Us for purchasing

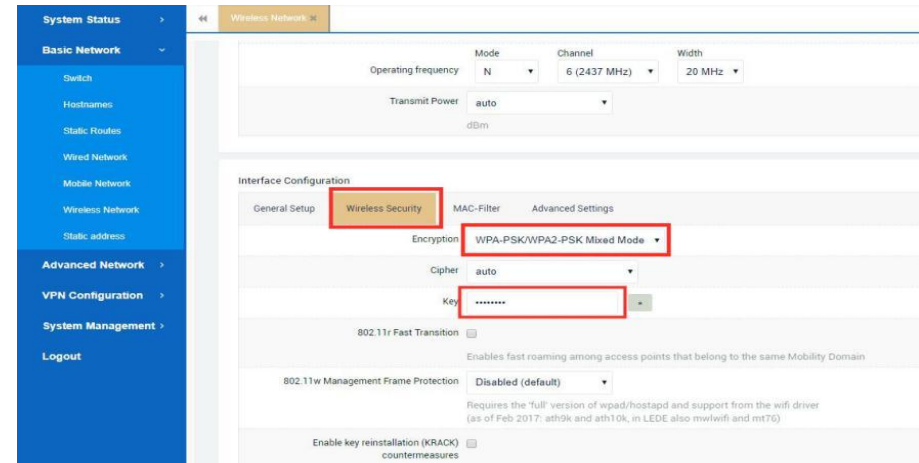
Click **Basic Network > Wireless Network> Wireless Overview**, click **EDIT** button



> **General Setup**, Choose **“Access Point”** as Mode, fill in **ESSID**, click **SAVE & APPLY** button.



> **Wireless Security**, recommend choose **“WPA-PSK/WPA2-PSK Mixed Mode”** as Encryption, set password in **“key”**, click **SAVE & APPLY** button.



When finished, use your computer or terminal scan available Wireless Access Point, choose your ESSID and key in password, then enjoy the high speed, stability, flexibility network.

Note: When this router is using WiFi Client Mode to connect internet, Wireless Access Point is not workable.

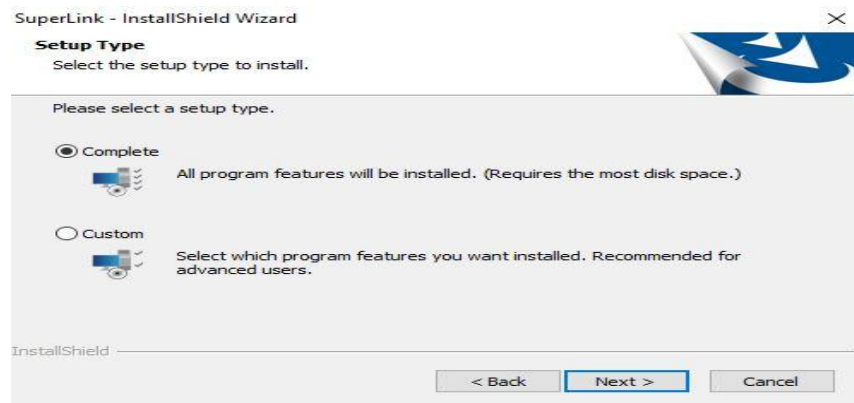
PLC/HMI/IPC Remote Networking Application

This router offer remote networking with PLC/HMI/IPC (Ethernet Port/Serial Port), using Superlink and Vcomm software.

1. Installation of Superlink and Vcomm software

1) Superlink:

Double click superlink software to implement installation, choose the language of English and select "Complete" setup type.



2) Vcomm:

Double click VCOMM software to implement installation, choose the language of English, choose the default setting during installation.

11

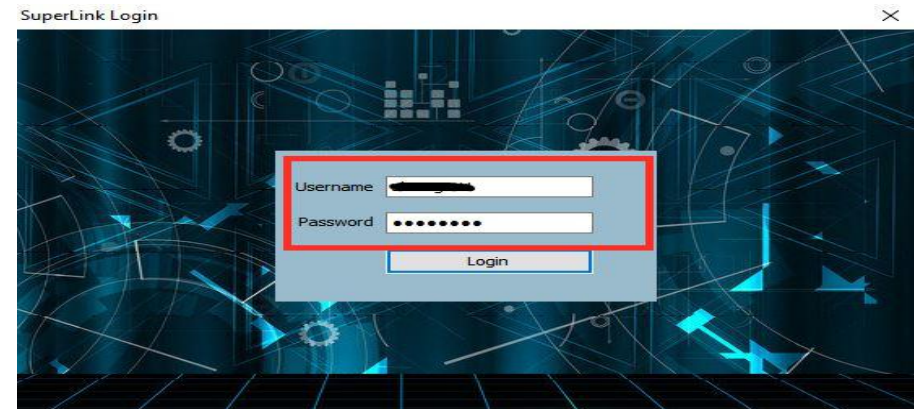


2. Remote Networking For PLC Ethernet Port

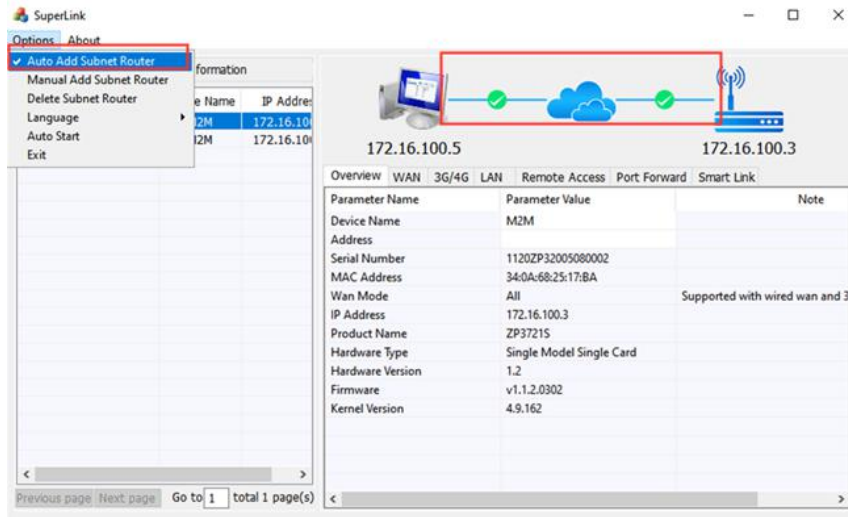
QR310 router gateway can remote access and program terminal device (Ethernet), such as PLC, HMI, Controller, etc. There is two methods to implement remote networking. One is configure gateway in PLC/HMI/IPC, another is built SNAT Traffic Rule in Firewall. Here take PLC with Ethernet port for example:

1) Configure gateway in PLC/HMI/IPCA)

A) Install Superlink software, double click Superlink to login, Username and Password refer to the label printed on the left panel of QR310 router.



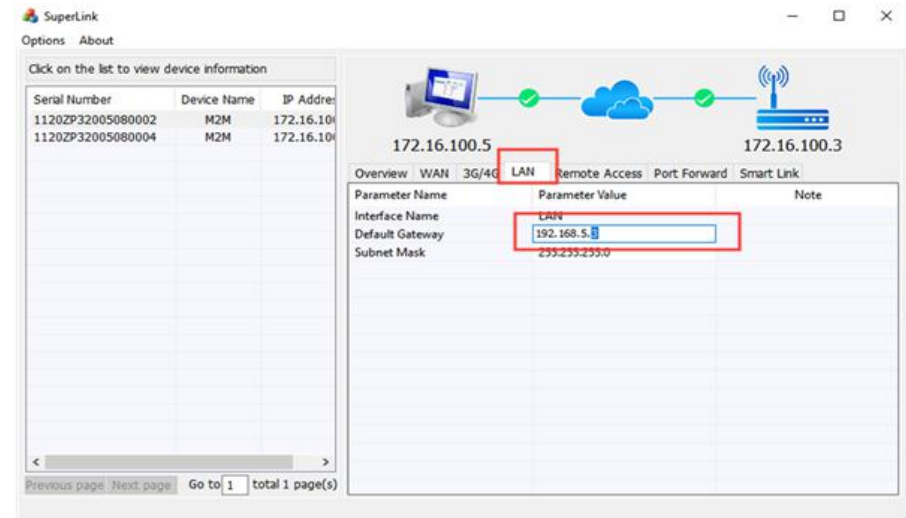
B) Click **Options** > select **“Auto Add Subnet Router”**, software will auto search all the router gateway machine under this account. “√” mean the gateway connect successfully. “×” mean the gateway is not connected.



C) Configure IP address, Subnet mask and gateway in PLC/HMI/IPC, the network segment need to be the same with QR310, and gateway address set the same as QR310 LAN address. Example:

Case 1: QR310 default LAN address is 192.168.1.1, configuration in PLC following: IP address 192.168.1.x (x during 2-246), Subnet mask 255.255.255.0, gateway 192.168.1.1

Case 2: if the PLC have a specific IP address in local network and can't changed(example 192.168.5.2), the configuration in PLC following: IP address keep original 192.168.5.2, Subnet mask 255.255.255.0, gateway 192.168.5.x(x during 1, 3-246). Then login superlink to change QR310 router **LAN > Default Gateway** to 192.168.5.x (the same as the gateway you have configured in PLC)



D) Connect an Ethernet cable to the **LAN** port of QR310 router, and connect the other end of the cable to PLC Ethernet port, then power on.



E) Finish the configuration, engineer can login PC superlink in anyplace, it will auto built network connection between local PC and remote gateway/PLC, then engineer open PLC software in computer to access remote PLC, upload and download program.

```

C:\WINDOWS\system32\cmd.exe
Microsoft Windows [Version 10.0.18363.778]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>ping 192.168.5.2

Pinging 192.168.5.2 with 32 bytes of data:
Reply from 192.168.5.2: bytes=32 time=53ms TTL=127
Reply from 192.168.5.2: bytes=32 time=33ms TTL=127
Reply from 192.168.5.2: bytes=32 time=37ms TTL=127
Reply from 192.168.5.2: bytes=32 time=37ms TTL=127

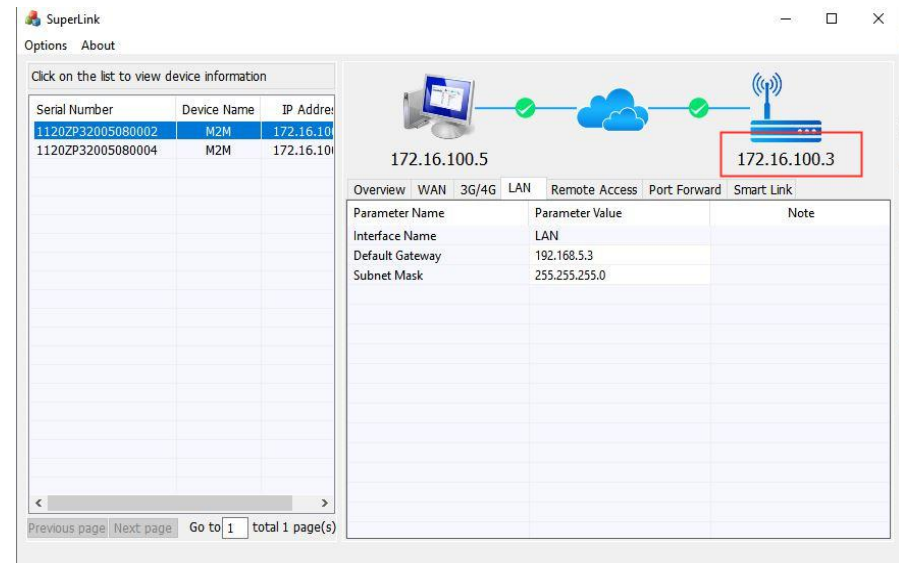
Ping statistics for 192.168.5.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 33ms, Maximum = 53ms, Average = 40ms

C:\Users\Administrator>
  
```

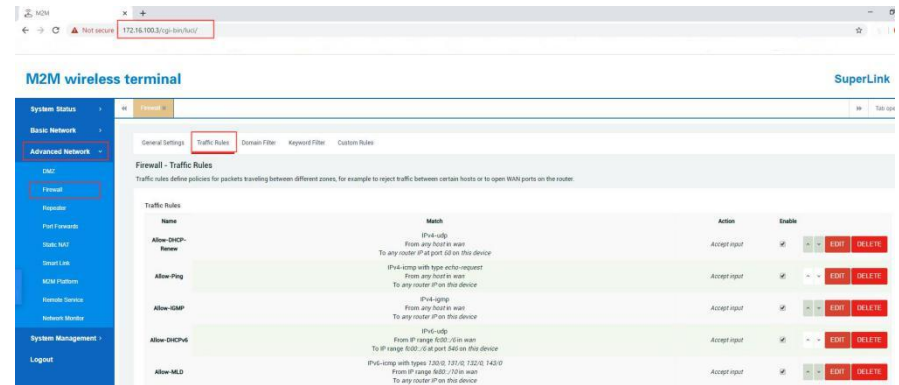
2) Built SNAT Traffic Rule in Firewall

When the gateway of PLC/HMI/IPC are not configured, or factory network is fixed and not allow to configure gateway in PLC(PLC only have IP address and subnet mask). QR310 router offer SNAT Traffic Rule configuration to achieve remote access with following steps:

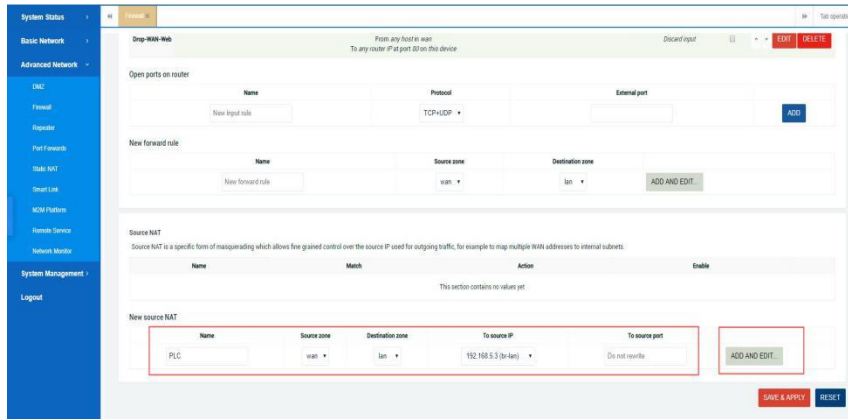
A) PC login superlink, use virtual gateway IP address 172.16.100.3(example, actual address refer to your superlink) to access web browser configuration



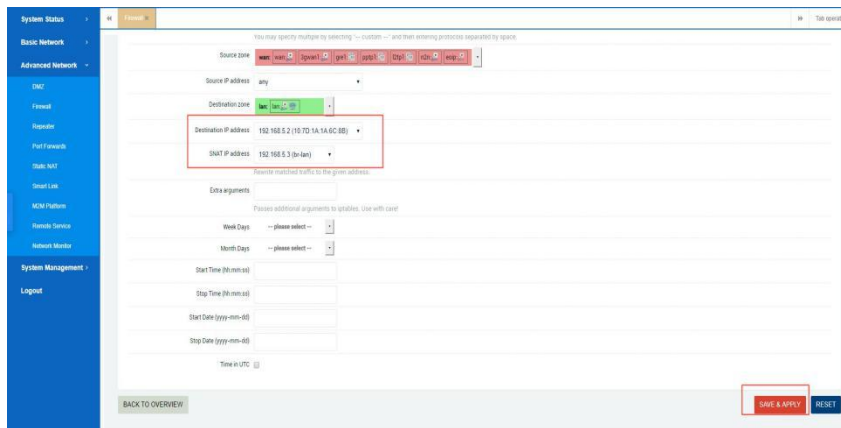
B) Login web browser 172.16.100.3, click **Advanced** > **Firewall** > **Traffic Rules**



C) Configure **New source NAT** > **Name** > **Source Zone** (choose “wan”) > **Destination Zone** (choose “lan”) > **To source IP** (choose gateway example 192.168.5.3), click **ADD AND EDIT** button



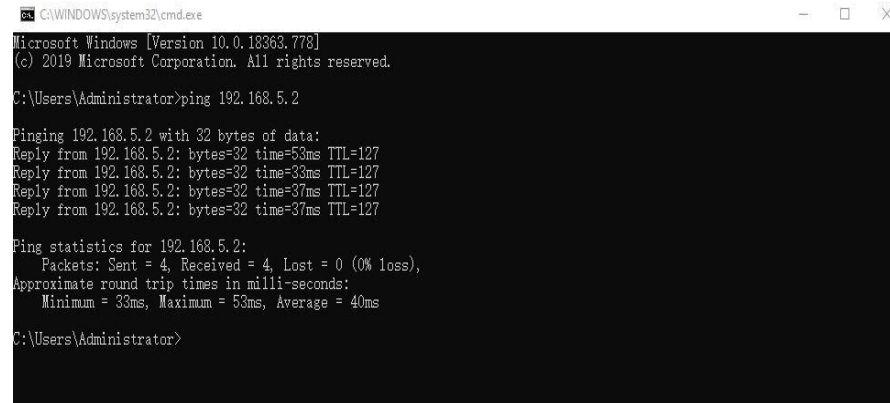
D) Then **Destination IP address** set PLC IP address (example 192.168.5.2), **SNAT IP address** set gateway address (example 192.168.5.3), then click **SAVE & APPLY** button



E) Connect an Ethernet cable to the **LAN** port of QR310 router, and connect the other end of the cable to PLC Ethernet port, then power on.



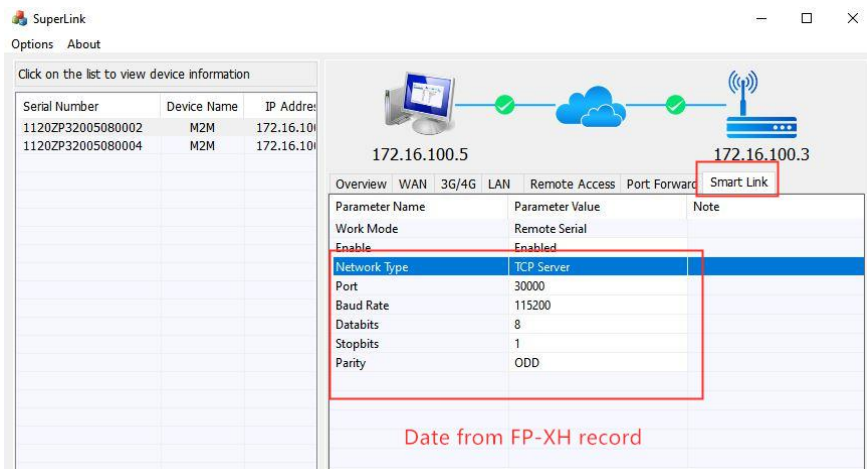
F) Finish the configuration, engineer can login PC superlink in anyplace, it will auto built network connection between local PC and remote gateway/PLC, then engineer open PLC software in computer to access remote PLC, upload and download program.



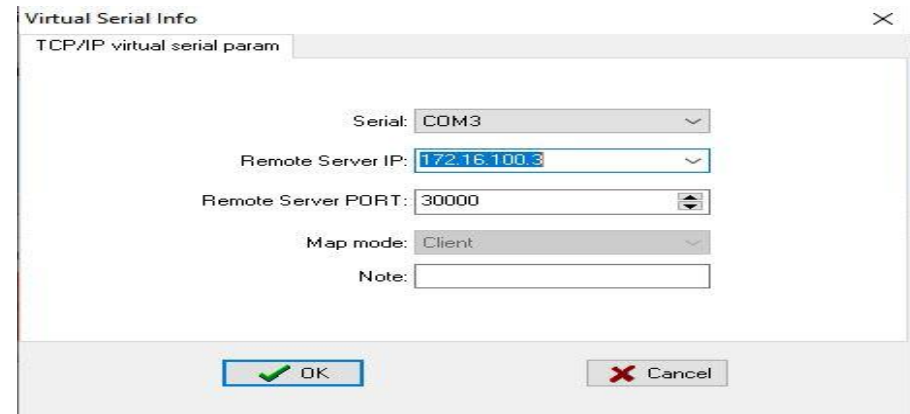
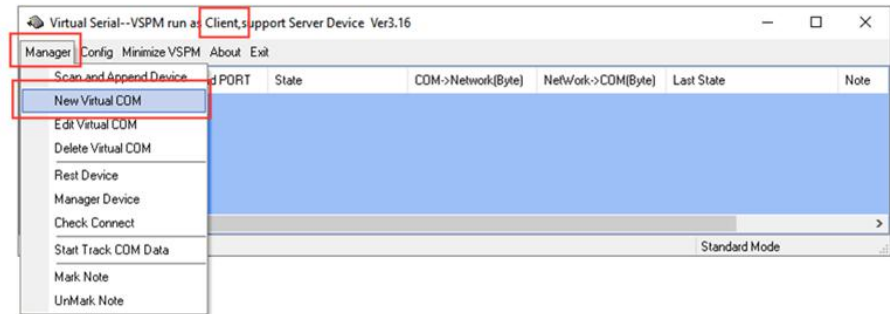
3. Remote Networking For PLC Serial Port

This router work with Superlink +Vcomm to implement remote networking with PLC/HMI/IPC (Serial Port), steps as below:

- 1) Connect PLC serial port to PC with a USB cable, open program software to record the **Baud Rate Parameter**. For example, the baud rate parameter of Panasonic FP-XH (default 115200-8-O-1)
- 2) Connect QR310 router serial port with PLC FP-XH serial port with cable(Rx-Rx, Tx-Tx, GND-GND)
- 3) Configure QR310 router, install and login Superlink, configure the parameter in **Smark Link**, fill in **Network Type > Port(self-defined) > Databits > Stopbits > Parity**



- 4) Install Vcomm software and login, click **Manager > New Virtual COM**, choose **new COM number**, fill in **Remote Server IP** (example QR310 superlink remote address 172.16.100.3), **Remote Serial PORT** set the same as **Superlink -"Samrt Link"**(30000), click **OK** button



- 5) Open PLC program software, **configure communication, port** configure the same as Vcomm virtual com, **Baud Rate** parameter configure the same as **Superlink "Smart Link"**.

6) Engineer open PC program software remote access PLC, upload and download program.

CONTACT US:

Email: sales@keennew.com

WhatsApp: +8613249165907

GuangZhou QiXiang Technology Co.,Ltd is a professional provider of machine-to-machine (M2M) and Internet of Things (IoT) connectivity products and services. Qi Xiang has been focusing on providing Industrial Cellular Router, Cellular Serial Modem, Network Print Server, Serial Device Server (DTU), Android Industrial Motherboard, Embedded Router Board, M2M Cloud Platform, etc.

With the powerful R&D team, efficient manufacturing plant, professional engineer and QA function, our rugged products offer mobile, high speed, reliable, flexible, 24*7 hours connectivity for multiple fields such as Oil Field, Smart Grid, Smart City, Transportation, Industry Automation, Telco Infrastructure, Retail, Video Surveillance, etc. Our products had been passed strict quality control according to CCC, CE, ISO 9001 regulations and implemented in many well-known companies such China Mobile, China Telecom, China Unicom, KingLong Bus, UnionPay, Hive Box, etc.