
User Manual and Test Instructions

PLC Application

Rev: 1.0

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1. PRODUCT

This document is applicable to High Flying' s PLC IoT equipment. It uses HF9610 and HF9624 products to connect to PLC for program burning, command control and so on. This article currently supports serial port PLC, network port type PLC waiting for version update support.

HF9610: Wi-Fi+ Ethernet to RS232/RS485/RS422. Support RS232/RS485/RS422 PLC.



HF9624: **4G**+Wi-Fi+Ethernet to RS232/RS485/RS422. **Support Ethernet and RS232/RS485/RS422 PLC.**



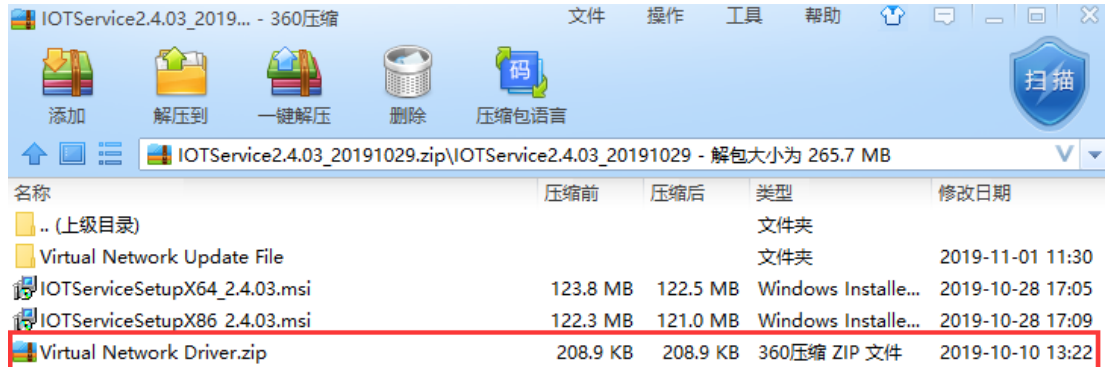
2. HARDWARE REQUIREMENTS

- HF9610 1PCS
- HF9624 1PCS
- Mitsubishi Fx3U-32M、Fx2N-16MR(RS232 type)
- Samsung S7-200(Ethernet Type)

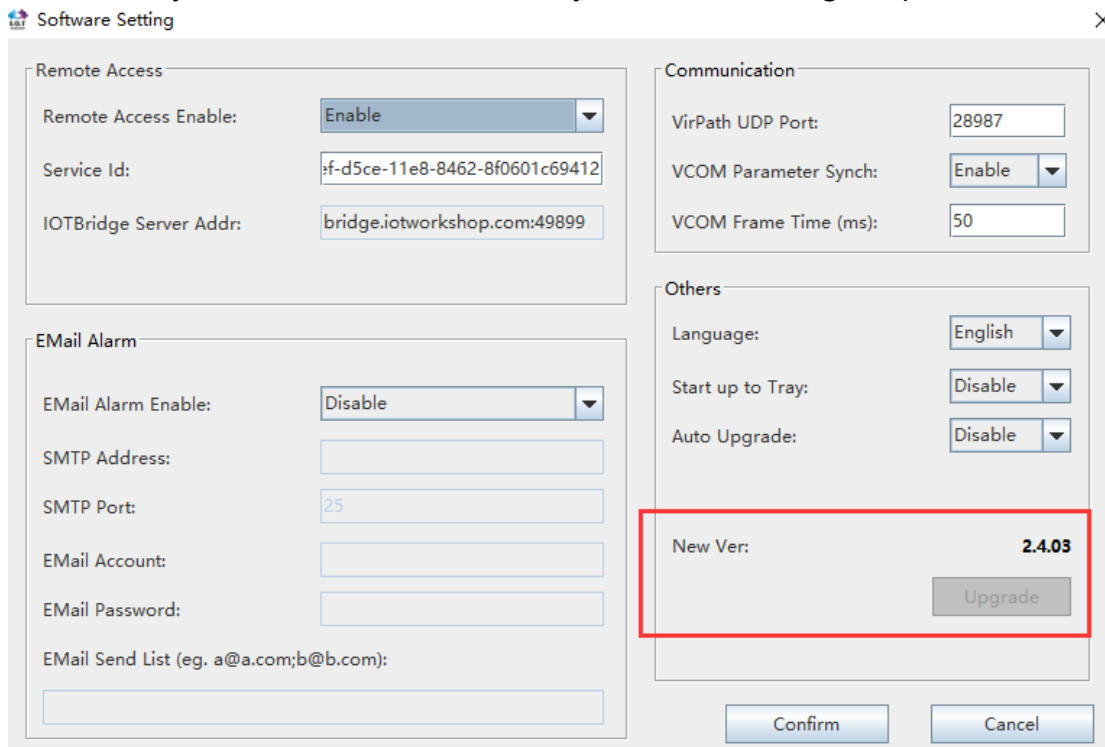
3. SOFTWARE REQUIREMENTS

■ IOTService, it will use virtual network for Ethernet PLC, tools version at least need 2.4.03, download the latest from our website.

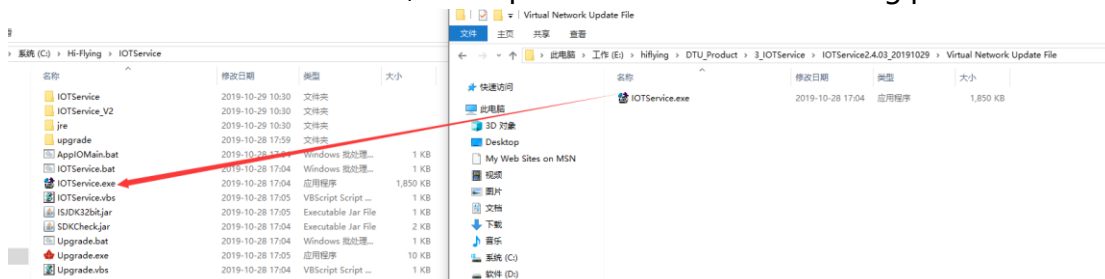
After installed the latest IOTService, then install the virtual network driver.



If already installed the old version, may click the following to update to latest



Download the latest tools, and replace the file as the following pic.

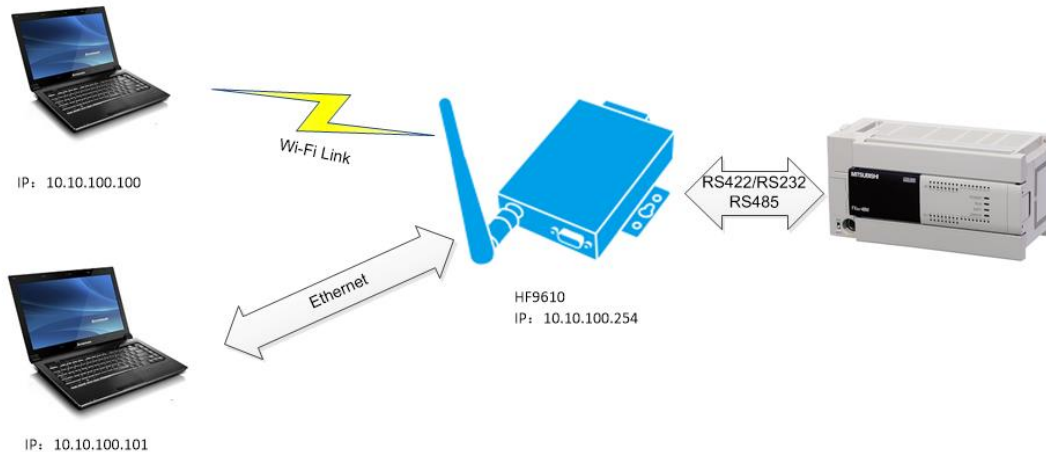


■ GX Developer (Mitsubishi PLC master computer software)

4. SERIAL PORT PLC LAN MODE

4.1. HF9610 TEST TOPOLOGY

- Connect the hardware as shown below. The PC can be connected to the HF9610 by Wi-Fi or Ethernet.



If Ethernet is used for connection, be sure to configure the product network port of the HF9610 as the LAN port function (the default is the WAN port function).

The LAN port is used to connect to a PC and other devices, and assign an IP address to the PC.

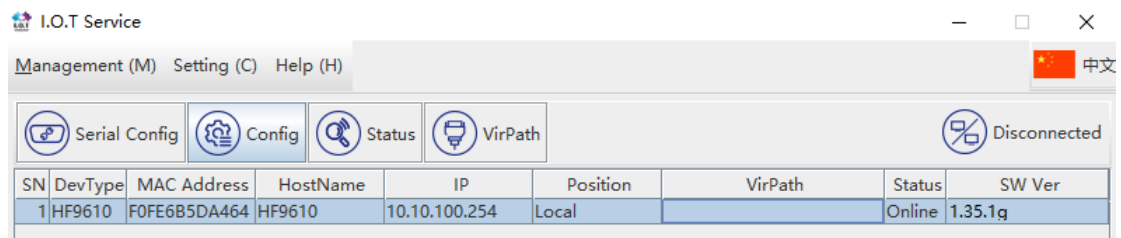
The WAN port is used to connect to the upper-level router and obtain the IP address from the upper-level router.

The screenshot shows the 'Device Setting' window for the HF9610 device. The window is divided into several sections:

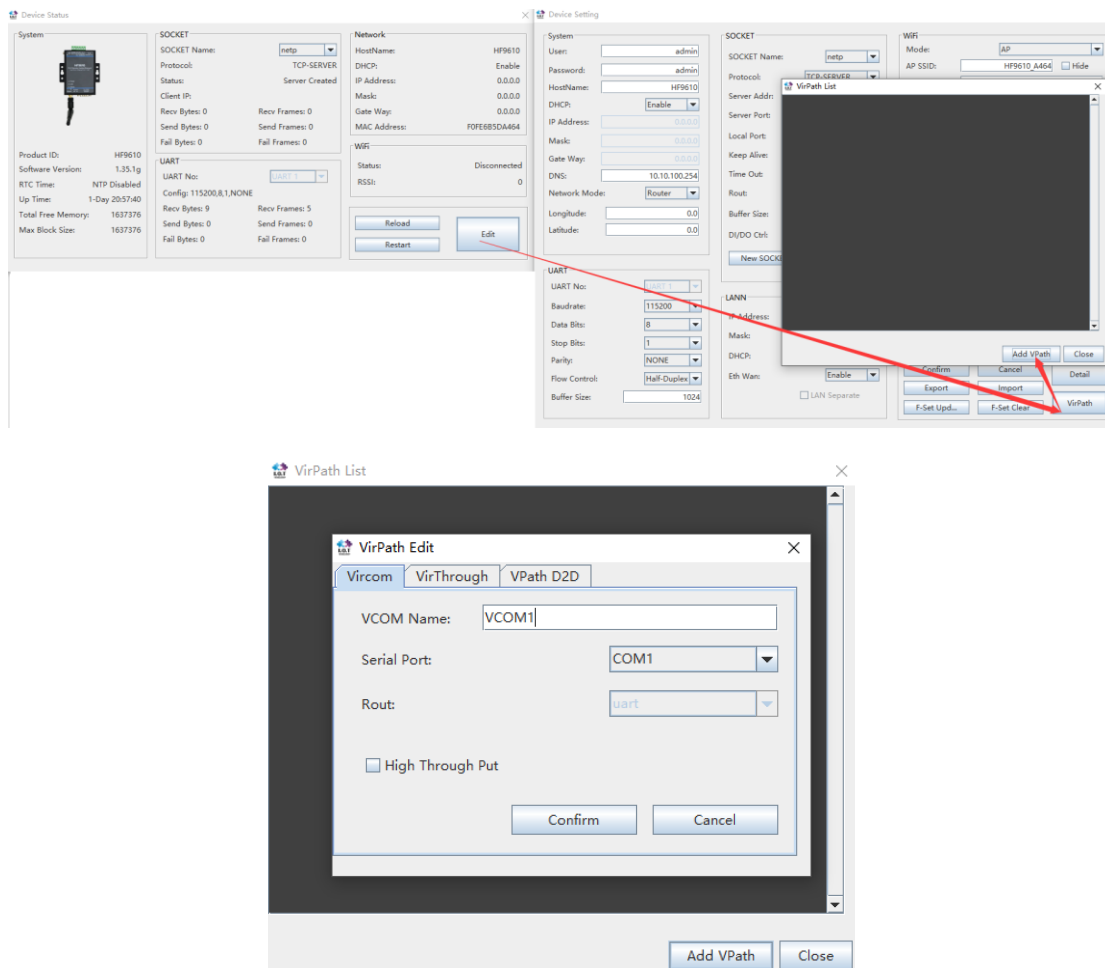
- System:** Fields for User (admin), Password (admin), HostName (HF9610), DHCP (Enable), IP Address (192.168.8.126), Mask (255.255.255.0), Gate Way (192.168.8.1), DNS (10.10.100.254), Network Mode (Router), Longitude (0.0), and Latitude (0.0).
- UART:** Fields for UART No (UART 1), Baudrate (115200), Data Bits (8), Stop Bits (1), Parity (NONE), Flow Control (Half-Duplex), and Buffer Size (1024).
- SOCKET:** Fields for SOCKET Name (netp), Protocol (TCP-SERVER), Server Addr (0.0.0.0), Server Port (0), Local Port (8899), Keep Alive (60), Time Out (0), Rout (uart), Buffer Size (1024), and DI/DO Ctrl (Disable). Buttons for 'New SOCKET' and 'SOCKET Del' are present.
- LAN:** Fields for IP Address (10.10.100.254), Mask (255.255.255.0), DHCP (Enable), and Eth Wan (Disable). A checkbox for 'LAN' is also present.
- WiFi:** Fields for Mode (AP), AP SSID (HF9610_A464), AP Key, AP Channel (AUTO), STA SSID (HF9610), and STA Key. A 'Scan' button is present.

At the bottom right, there are buttons for 'Confirm', 'Cancel', 'Detail', 'Export', 'Import', 'F-Set Upd...', 'F-Set Clear', and 'VirPath'.

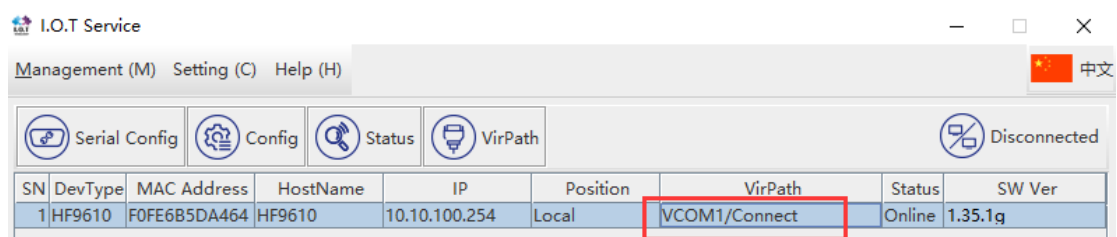
- Open the IOTService tool and you can see that the device is in the list.

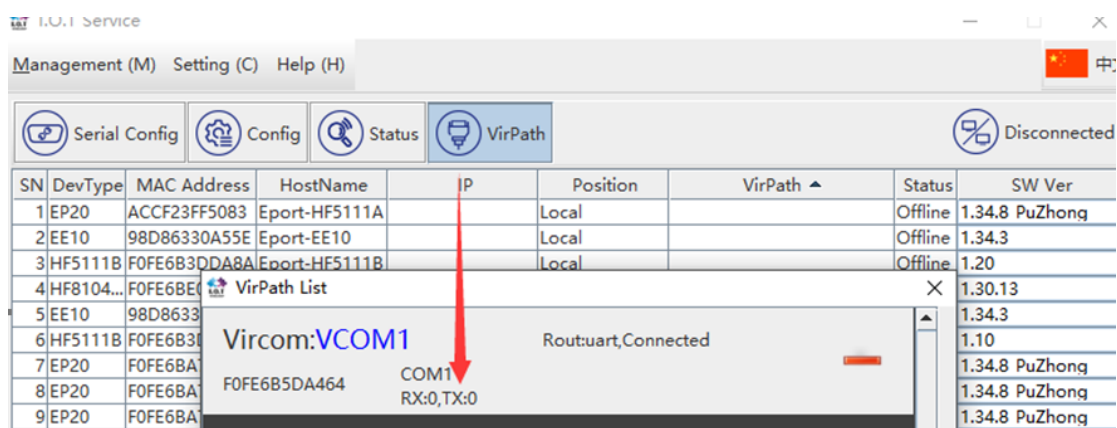


- Create a virtual serial port as follows. And make sure the channel name must be unique.

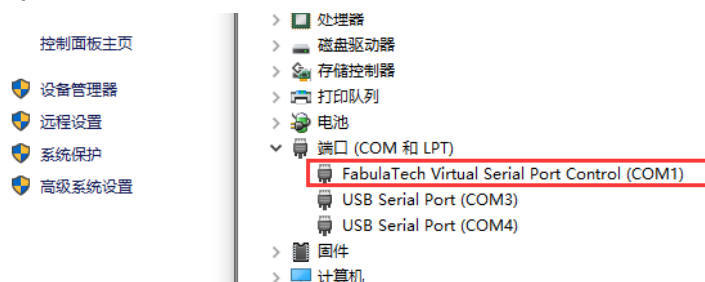


After the creation is complete, you need to confirm on the home page that the virtual serial port is in the "Connect" state. Then you can view the number of bytes sent and received by the virtual serial port.

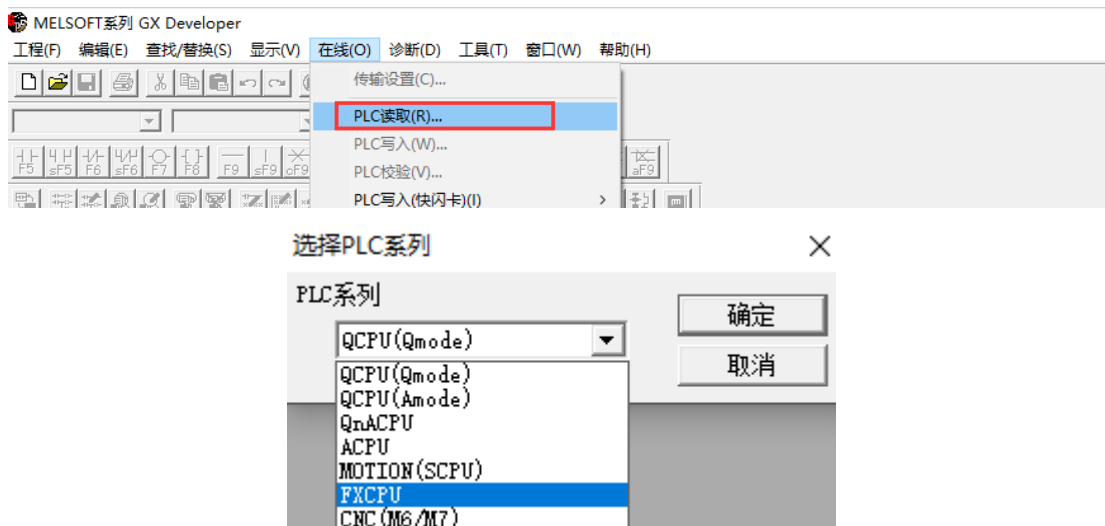




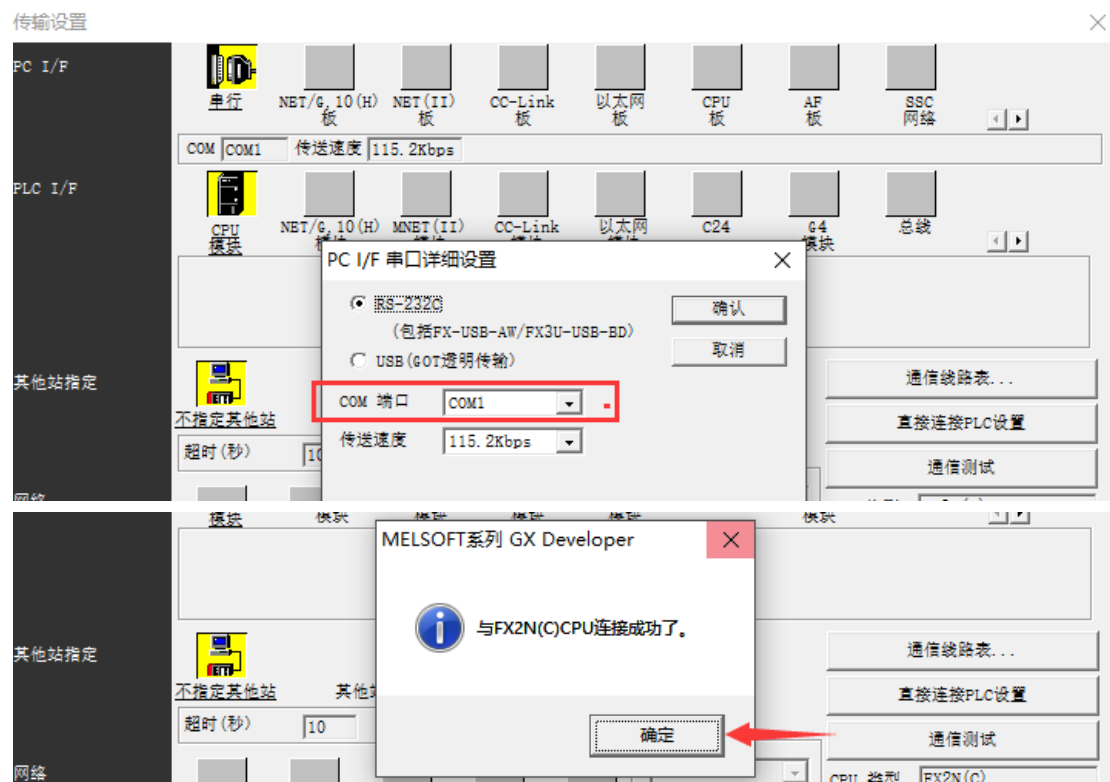
You can also check whether the created virtual serial port exists in the PC system.



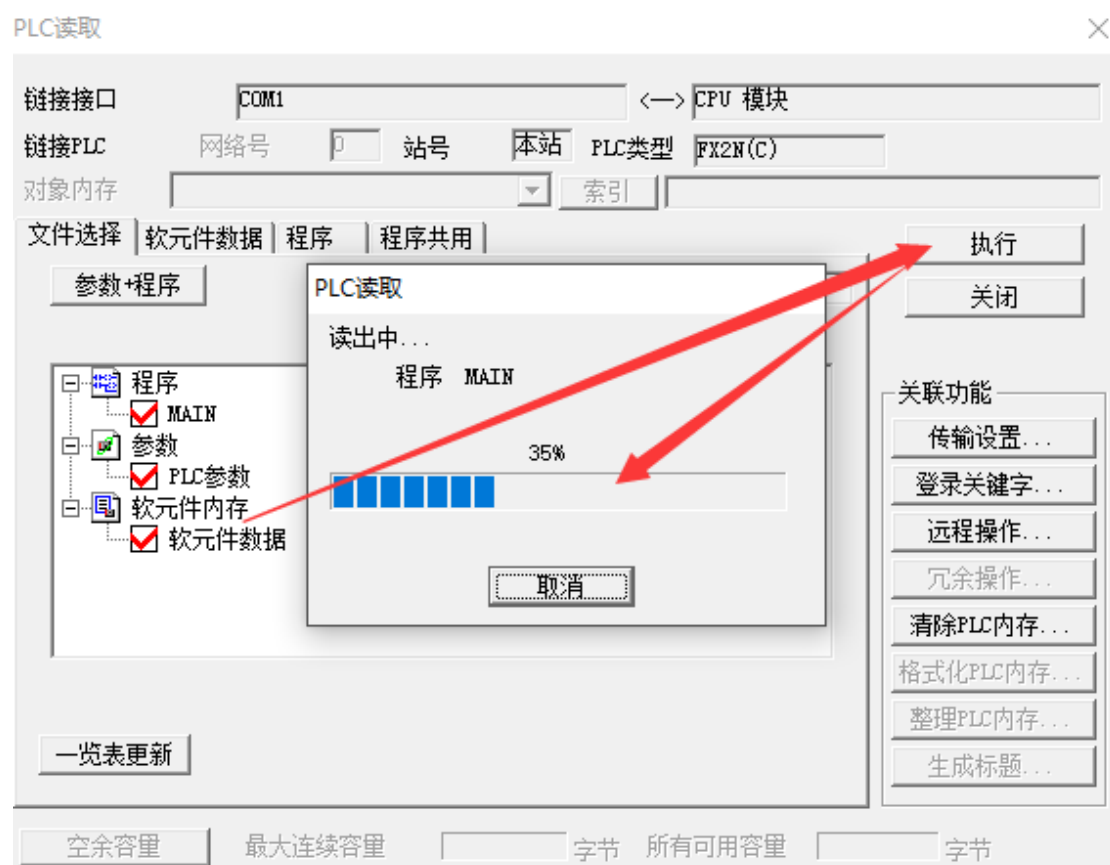
- Open the GX Developer tool and select the corresponding PLC product according to the PLC model. This article takes Mitsubishi Fx2N as an example. Read the PLC program as shown below.



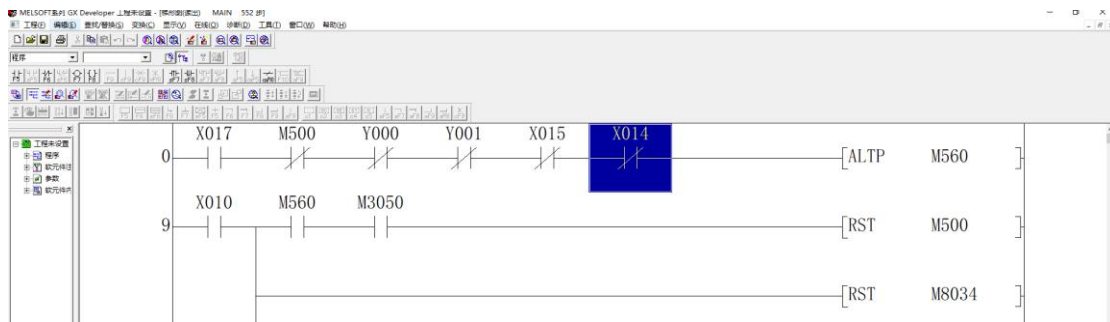
Click on the communication test to test the connection status.



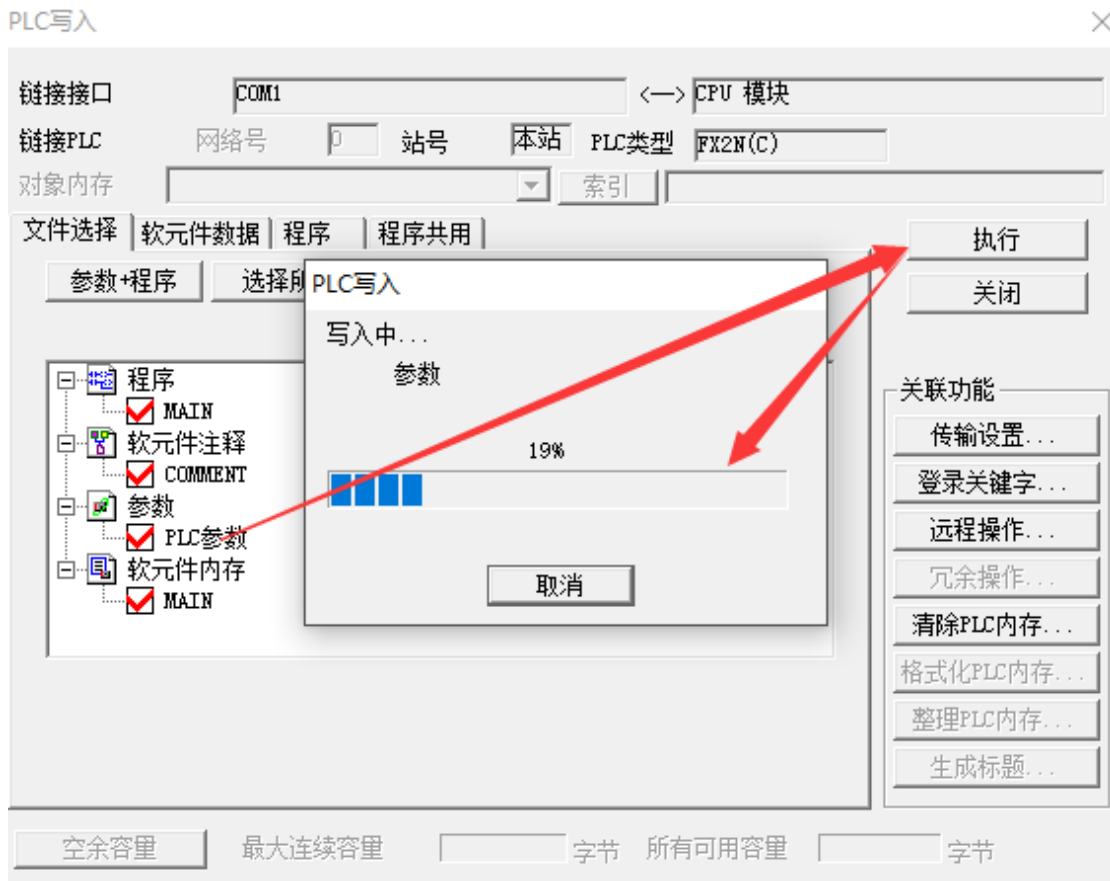
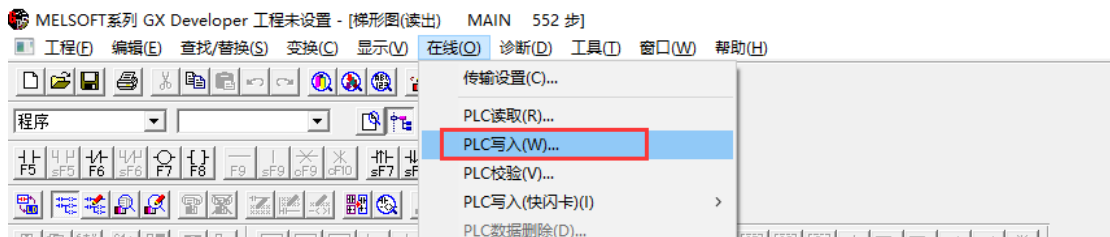
Read the program of the PLC.



The PLC program read is as follows.

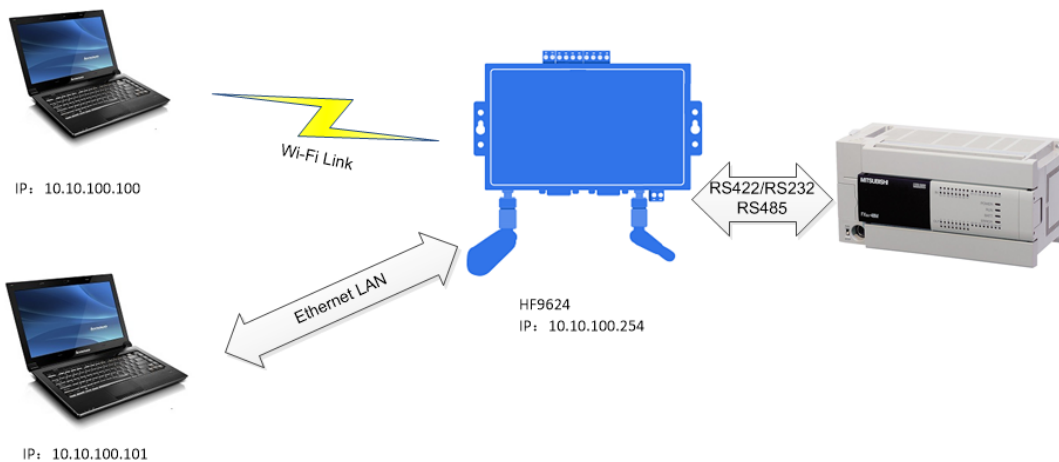


- Test the write program, operate as shown below, and perform the write action.



4.2. HF9624 TEST TOPOLOGY

- Connect the hardware as shown below. The PC can be connected to the HF9624 by Wi-Fi or Ethernet.

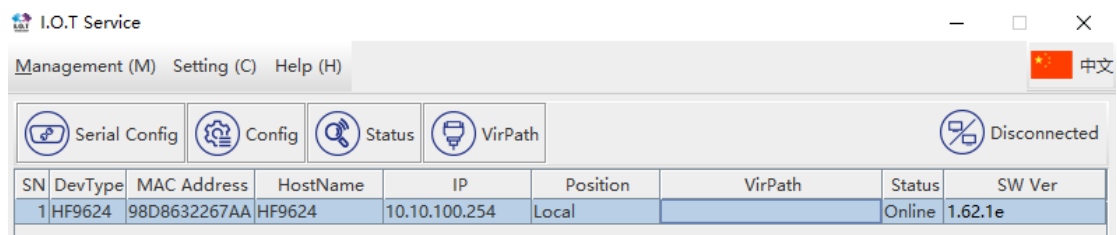


If using Ethernet connection, pay attention to the LAN port of HF9624.

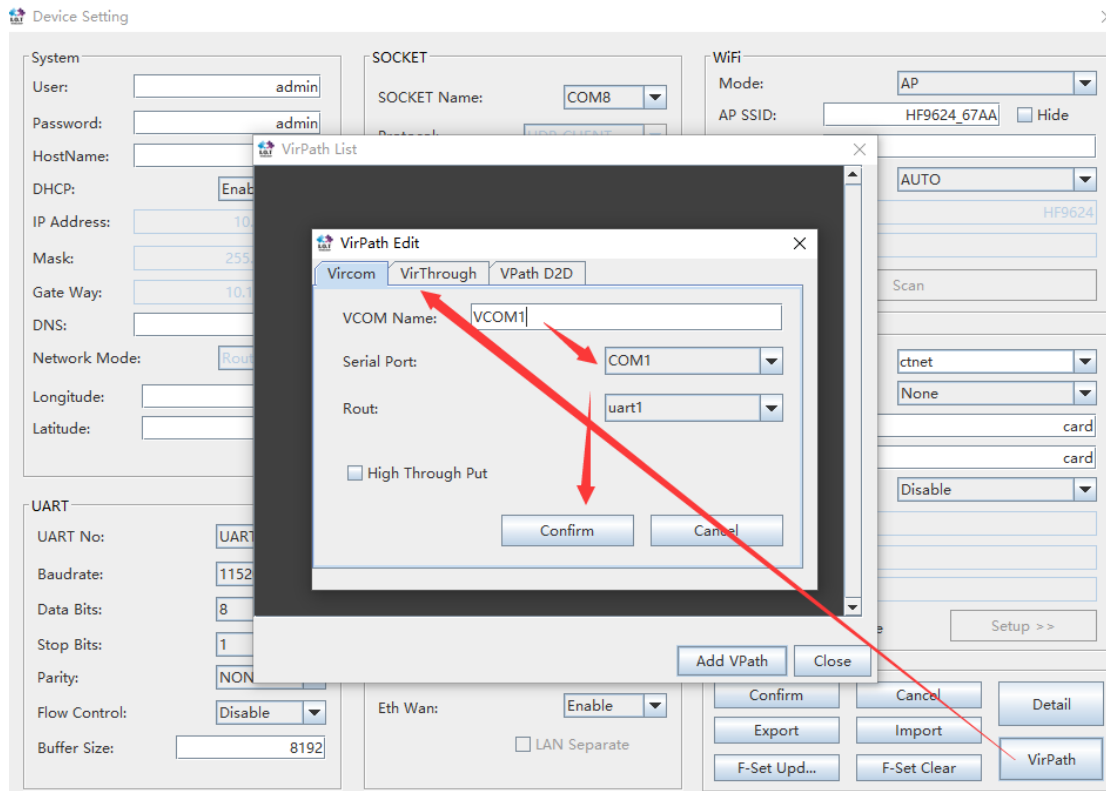
The LAN port is used to connect to a PC and other devices, and assign an IP address to the PC.

The WAN port is used to connect to the upper-level router and obtain the IP address from the upper-level router.

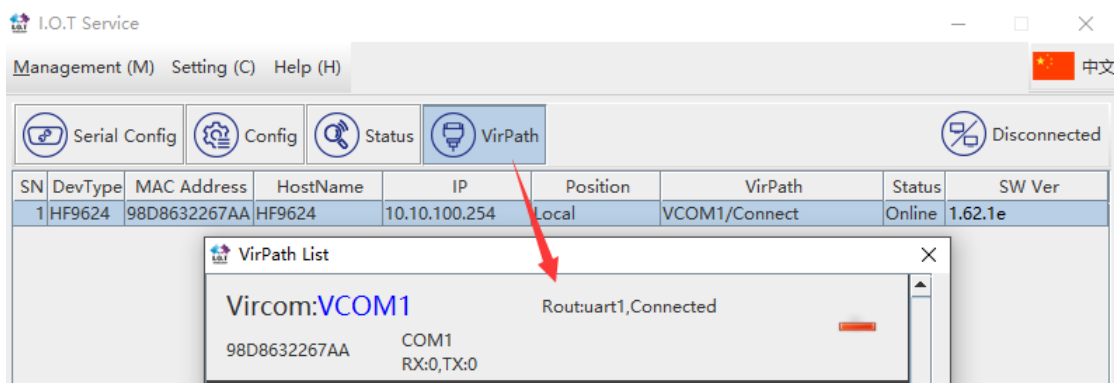
- Open the IOTService tool and you can see that the device is in the list.



- Create a virtual serial port as follows. And make sure the channel name must be unique. Rout can choose serial port 1 or serial port 2. HF9624 supports two serial ports to work independently.



After the creation is complete, you need to confirm on the home page that the virtual serial port is in the "Connect" state. Then you can view the number of bytes sent and received by the virtual serial port.

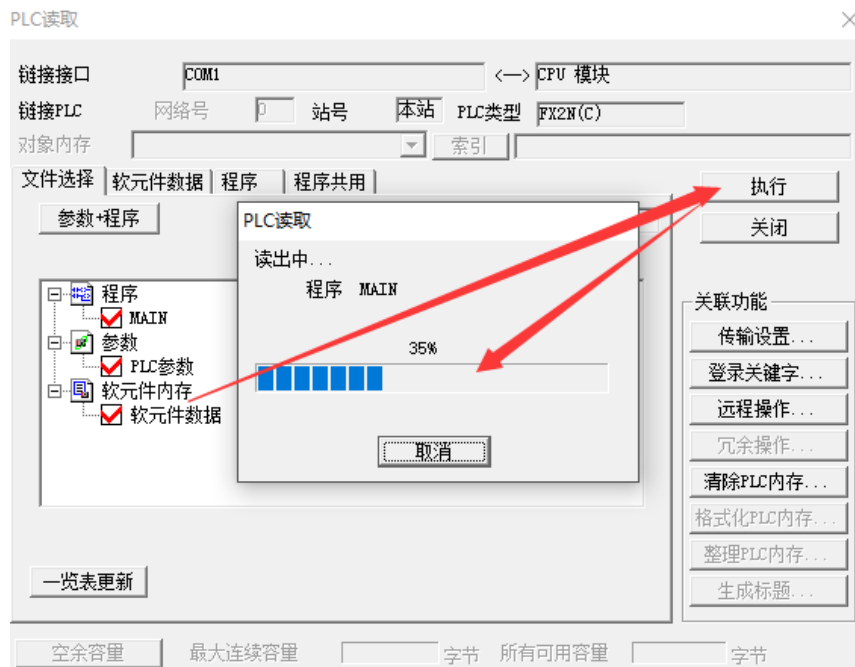


You can also check whether the created virtual serial port exists in the PC system.

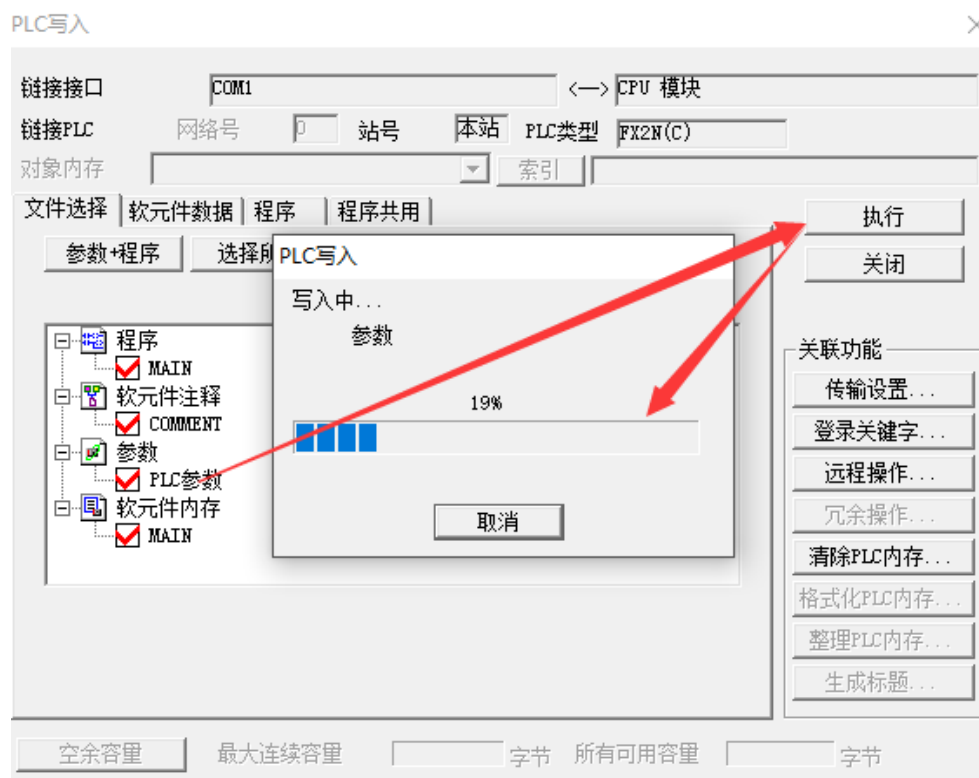


- Open the GX Developer tool and select the corresponding PLC product according to the PLC model. This article takes Mitsubishi Fx2N as an example. Read the PLC program as shown below.

The operation is the same as the HF9610.



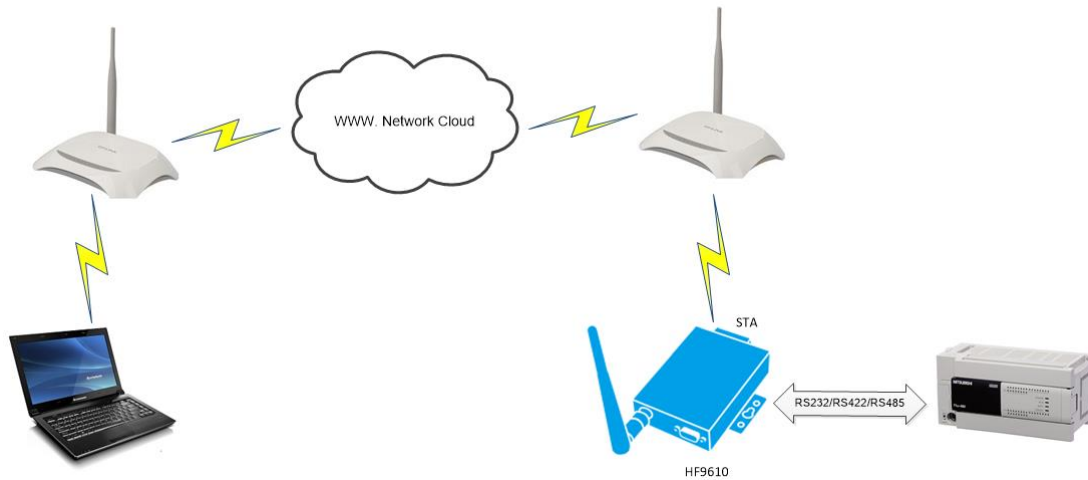
Write PLC program.



5. SERIAL PORT PLC REMOTE MODE

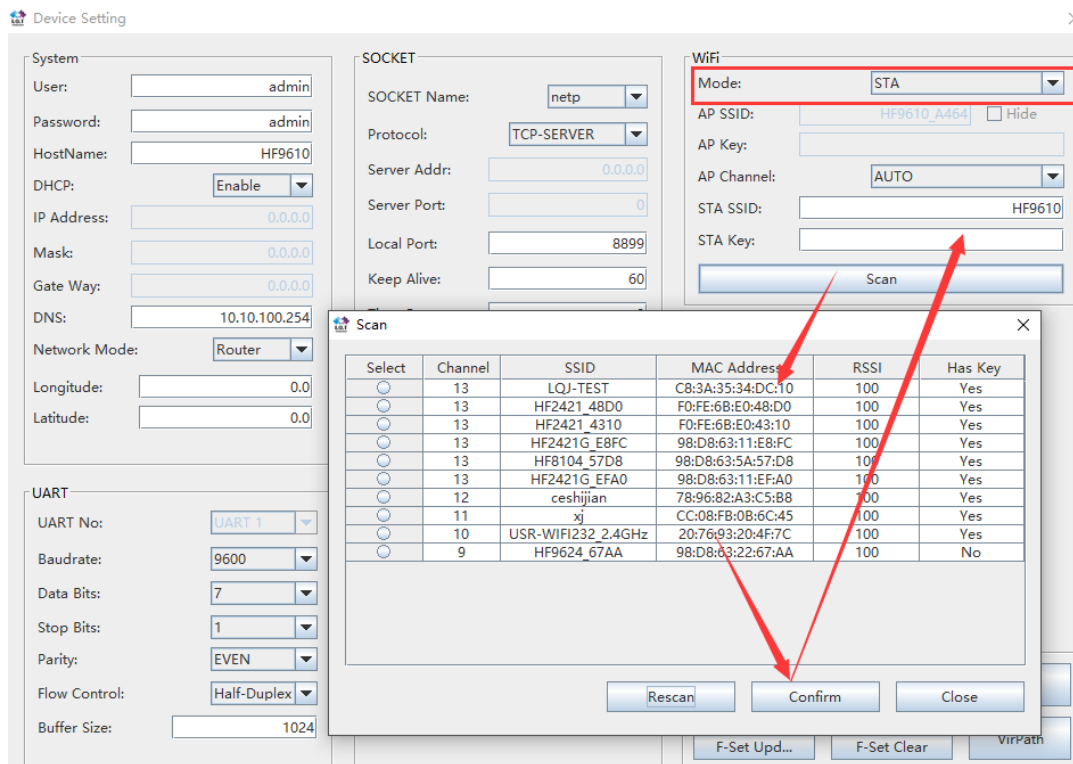
5.1. HF9610 TEST TOPOLOGY

The following figure shows how to operate a PLC device remotely

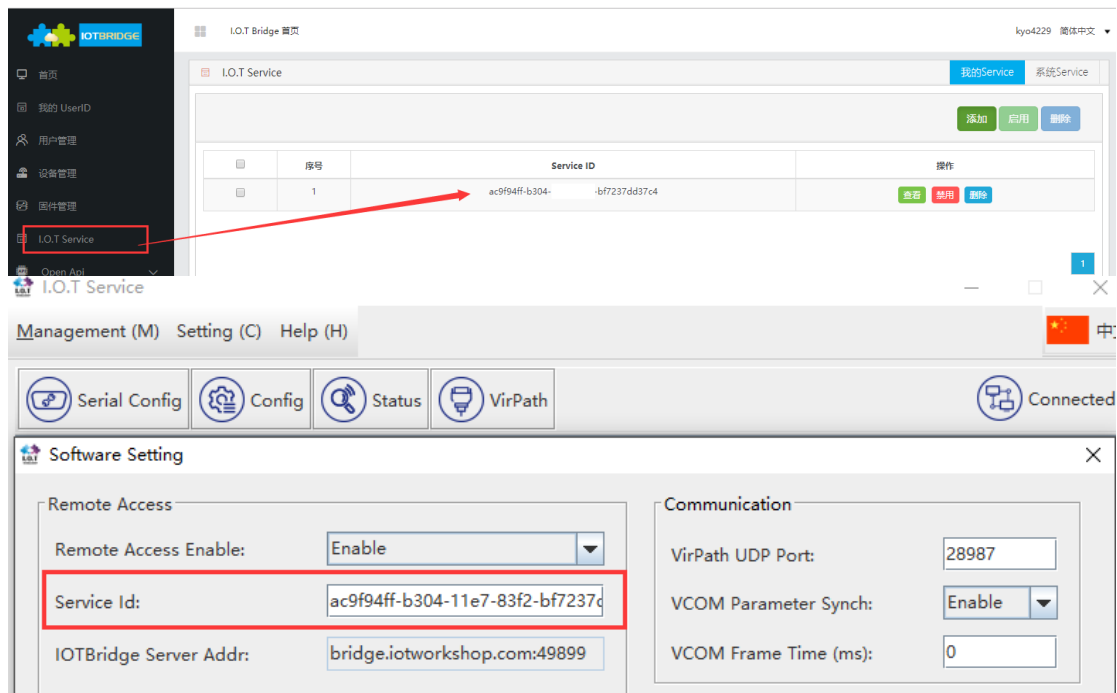


If the HF9610 works in the AP mode and the network port works in the WAN mode, the network cable can be directly connected to the LAN port of the router, so that the HF9610 is connected to the external network. If you need to access the Internet through Wi-Fi, the steps are as follows.

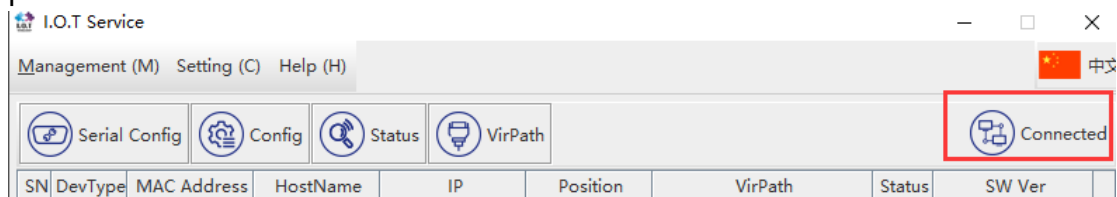
First connect the PC to the HF9610 with a network cable or Wi-Fi, open the IOTService tool, and configure Wi-Fi to connect to the router in STA mode (Wi-Fi works in STA mode, and the network port automatically works in LAN mode).



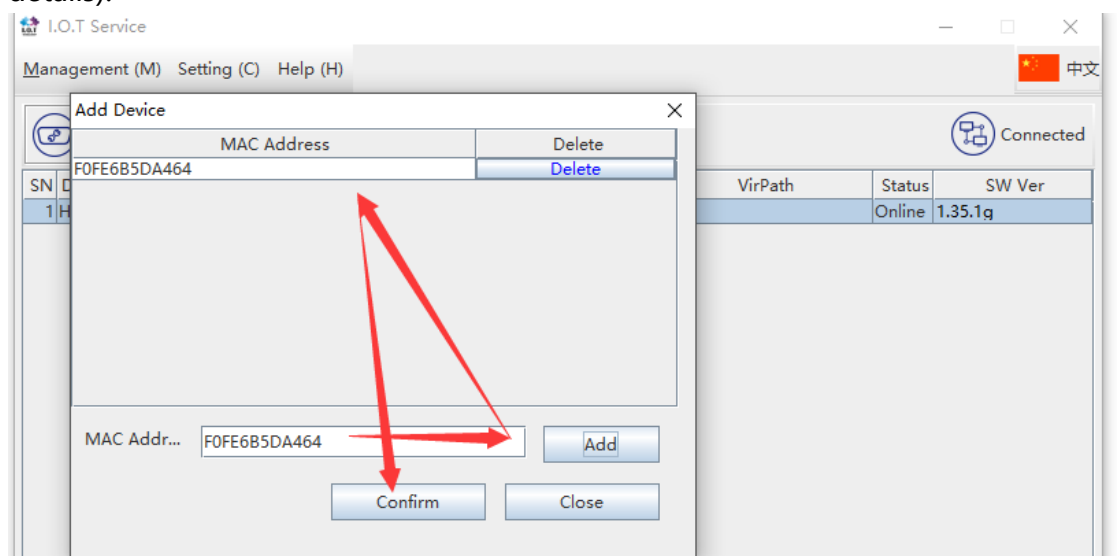
Sign up for the account at <http://bridge.iotworkshop.com> and copy the Service ID to the IOTService software.



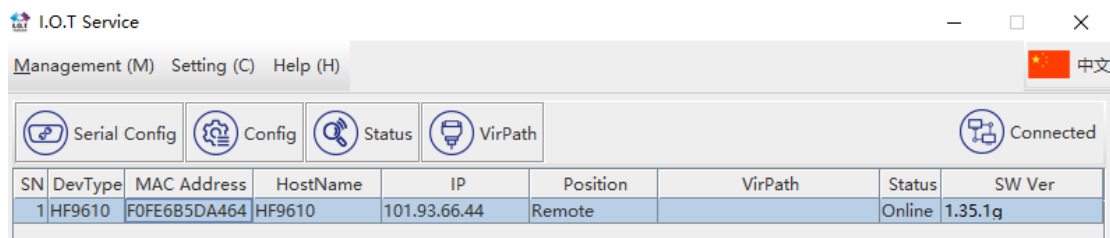
After rebooting, the tool display is connected to the High Flying IOTBridge platform.



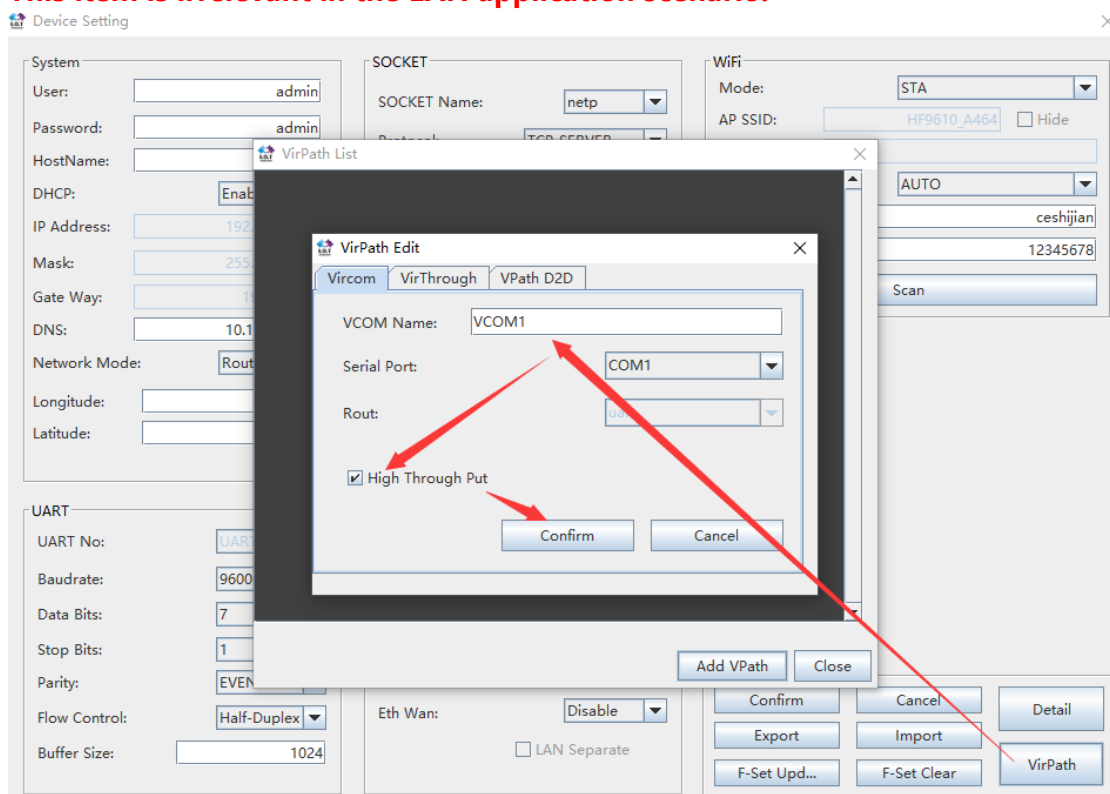
Add the device to the account (you can also bind the device to the account by writing the User ID on the device side, see the IOTService tool documentation for details).



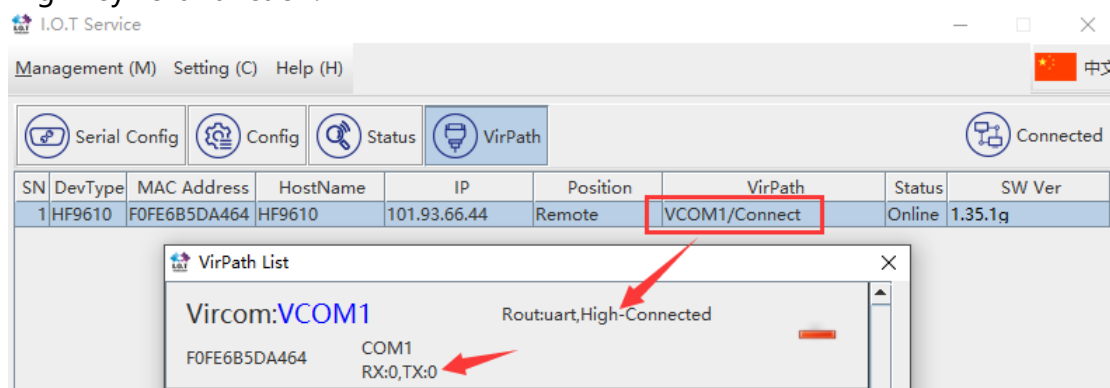
The platform sees the device remotely online.



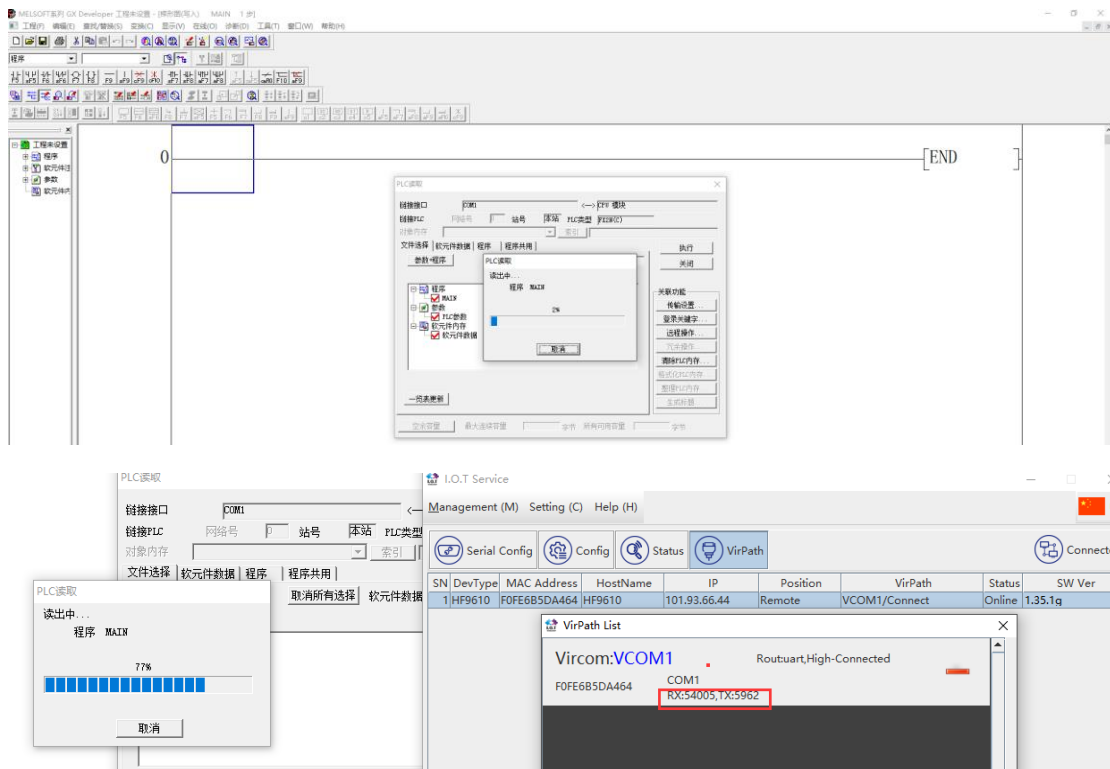
Create a virtual serial port as shown below. **The channel name must be unique, and [High Through Put] must be checked. The IOTBridge platform will retransmit and sort the lost packets to ensure that the messages are not lost. This item is irrelevant in the LAN application scenario.**



View the status to see the created virtual serial port channel, which has the High keyword function.

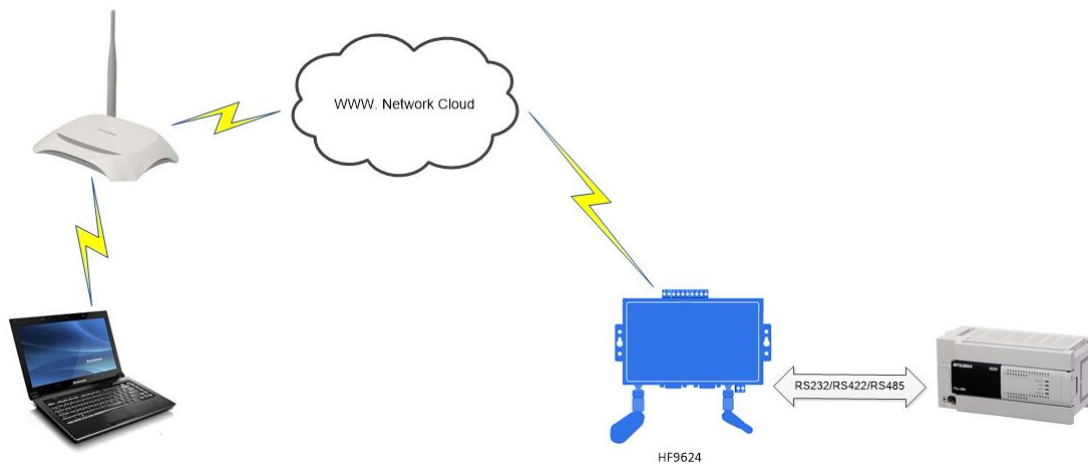


After the creation, the same way as the LAN operation, select the PLC to read and download the program. In remote mode, the speed will be slightly slower than the LAN. The transfer process can see the number of bytes of data.




5.2. HF9624 TEST TOPOLOGY

The following figure shows how to operate a PLC device remotely.



After the HF9624 is inserted into the SIM card, the PC cable is connected to the LAN port or Wi-Fi is connected to the HF9624. The IOTService tool is opened to confirm whether the HF9624 is successfully connected to the network and obtain the IP address of the carrier.

Device Status



Product ID: HF9624
Software Version: 1.62.1e
RTC Time: 2019-6-28 17:23:1 Fri

ICCID: 89860439101880571582
IMEI: 867184034893101
IMSI: 460045926201582
4G State: 4G 90

SOCKET

SOCKET Name: netp
Protocol: TCP-SERVER
Status: Server Created
Client IP:
Recv Bytes: 0 Recv Frames: 0
Send Bytes: 0 Send Frames: 0
Fail Bytes: 0 Fail Frames: 0

UART

UART No: UART 1
Config: 115200,8,1,NONE
Recv Bytes: 0 Recv Frames: 0
Send Bytes: 0 Send Frames: 0
Fail Bytes: 0 Fail Frames: 0

Network

HostName: HF9624
DHCP: Enable
IP Address: 10.215.12.235
Mask: 255.255.255.248
Gate Way: 10.215.12.236
MAC Address: 98D8632267AA

WiFi

Status: Disconnected
RSSI: 0

Reload Restart Edit

Same as HF9610, bind the device to the IOTBridge account. You can see the device remote online on the platform.

I.O.T Service

Management (M) Setting (C) Help (H)

Serial Config Config Status VirPath Connected

SN	DevType	MAC Addr...	HostName	IP	Position	VirPath	Status	SW Ver
2	HF9624	98D8632267AA	HF9624	223.104.254.21	China.Beijing		Online	1.62.1e
1	HF9610	F0FE6B5DA464	HF9610	101.93.66.44	Remote		Online	1.35.1g

Create a virtual serial port as shown below. **The channel name must be unique, and [High Through Put] must be checked. The IOTBridge platform will retransmit and sort the lost packets to ensure that the messages are not lost. This item is irrelevant in the LAN application scenario. Rout can select serial port 1 or serial port 2, and fill in according to the serial port number of the actual PLC connection.**

Device Setting

User: admin
Password: admin
HostName:
DHCP: Enable
IP Address: 10.215.12.235
Mask: 255.255.255.248
Gate Way: 10.215.12.236
DNS:
Network Mode: Route
Longitude:
Latitude:

SOCKET

SOCKET Name: COM8

WiFi

Mode: AP
AP SSID: HF9624_67AA
Hide
AUTO
HF9624
Scan
ctnet
None
card
card
Disable
Setup >>

UART

UART No: UART 1
Baudrate: 115200
Data Bits: 8
Stop Bits: 1
Parity: NONE
Flow Control: Disable
Buffer Size: 8192

Eth Wan: Enable
LAN Separate

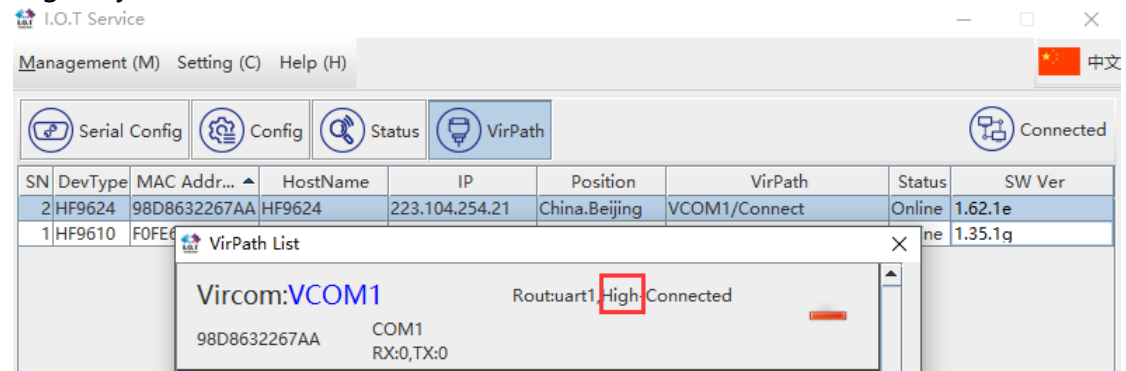
Add VPath Close

VirPath List

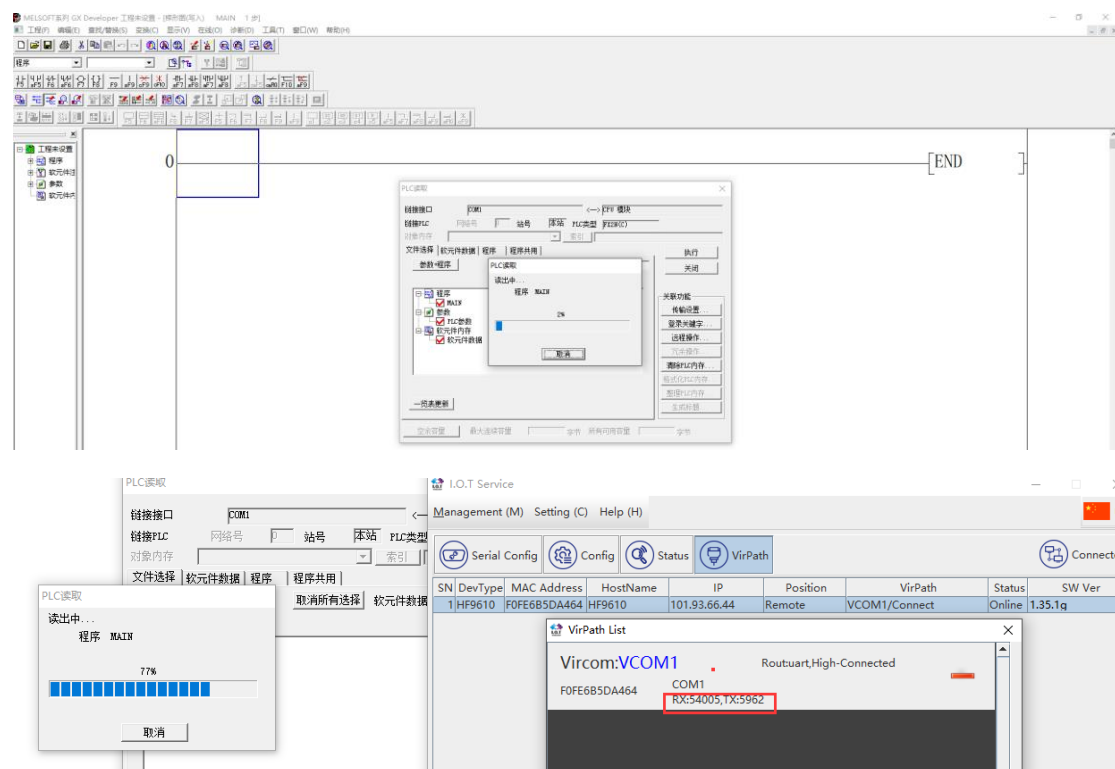
Vircom VirThrough VPath D2D

VCOM Name: VCOM1
Serial Port: COM1
Rout: UART1
☒ High Through Put
Confirm Cancel

View the status to see the created virtual serial port channel, which has the High keyword function.



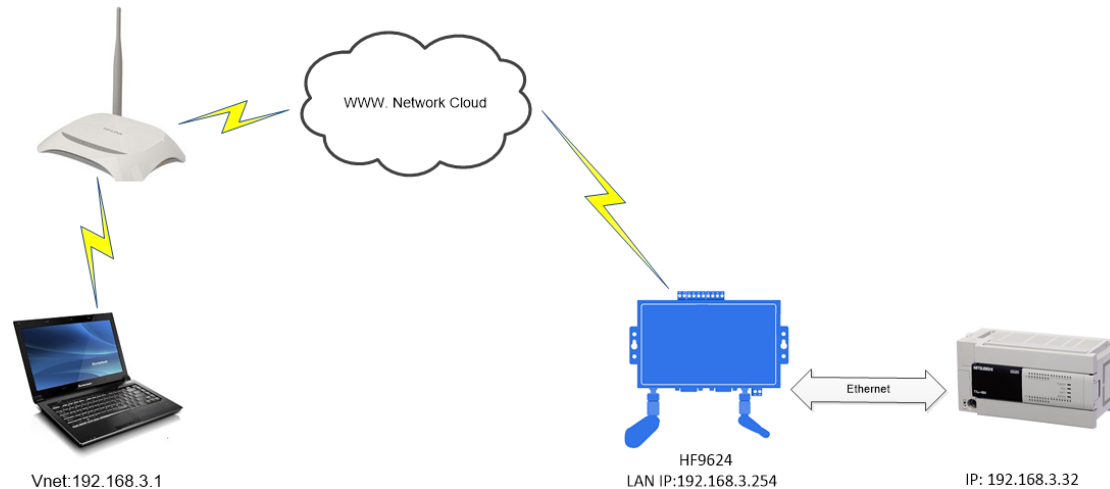
After the creation, the same way as the LAN operation, select the PLC to read and download the program. In remote mode, the speed will be slightly slower than the LAN. The transfer process can see the number of bytes of data.



6. ETHERNET PORT PLC REMOTE MODE

6.1. HF9624 TEST TOPOLOGY

The following figure shows how to operate a PLC device remotely.



Same as above, bind the device to the IOTBridge account. You can see the device remote online on the platform. Firmware at least need 1.63.1e.

I.O.T Service

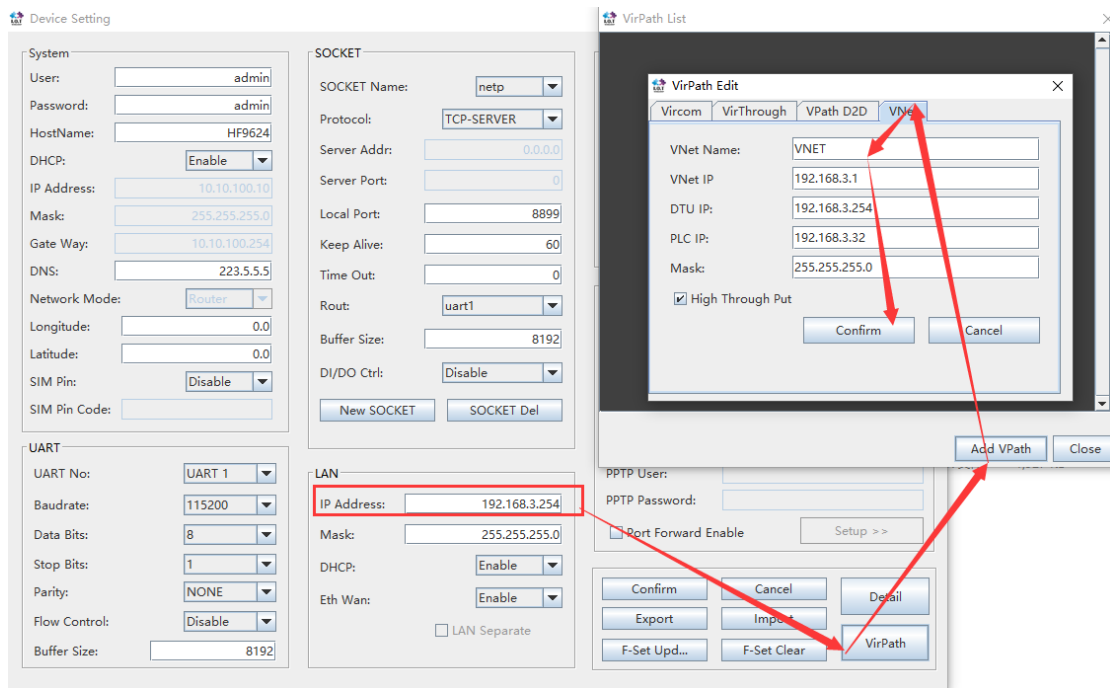
Management (M) Setting (C) Help (H)

Serial Config Config Status VirPath Connected

SN	DevType	MAC Address	HostName	IP	Position	VirPath	Status	SW Ver
1	HF9624	ACCF2112340C	HF9624	223.104.213.95	Remote		Online	1.63.1h
2	111111	F0FE6B111122	Eport-HF5111B	223.104.213.95	Remote		Online	1.34.8
3	HF2411	262040055641	Eport-HF2411	223.104.254.51	Remote		Offline	1.2.2i
4	HF2111A	300037614702	41288559U00...	117.136.8.108	Remote		Offline	2.0.2d KAS 4

Set HF9624 LAN IP to the same subnet with PLC. In this example, PLC is 192.168.3.32, set HF9624 LAN IP to 192.168.3.254, create Virtual Network.

- VNet Name: Name.
- VNet IP: PC Virtual Network IP, must the same LAN with HF9624 LAN, fill 192.168.3.1 here.
- DTU IP: HF9624 LAN IP
- PLC IP: PLC IP, fill 192.168.3.32 here, support max 4 IP, for example "192.168.3.32,192.168.3.33,192.168.3.34,192.168.3.35"
- Mask: HF9624 LAN Mask



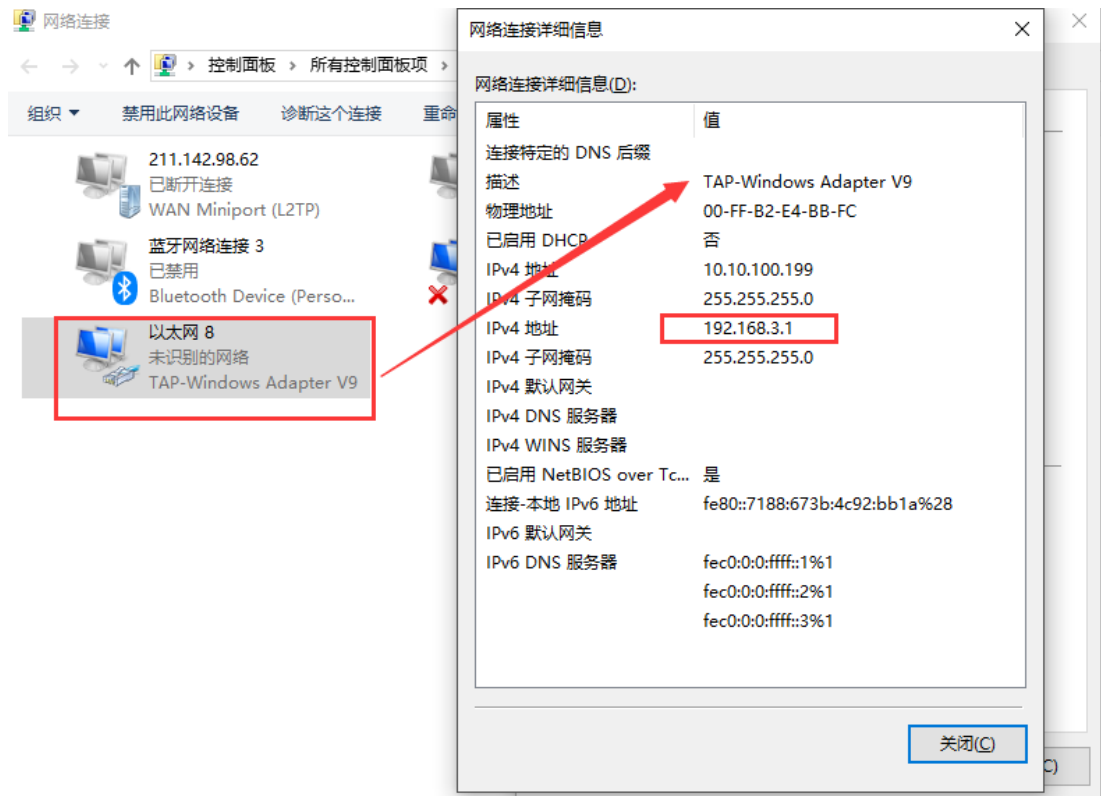
After create virtual network, PC can see this new network with the IP 192.168.3.1

I.O.T Service

Management (M) Setting (C) Help (H)

Serial Config Config Status VirPath Connected

SN	DevType	MAC Address	HostName	IP	Position	VirPath	Status	SW Ver
1	HF9624	98D86311DE74	HF9624	192.168.5.146	Local		Online	1.63.1h
2	HF2421	98D86311E040	Eport-HF2421	192.168.5.144	Local		Online	1.63.1h
3	EE11	98D8635903C6	Eport-EE11	192.168.5.105	Local		Online	1.32.09
4	EE10	98D86330A660	Eport-EE10	192.168.5.106	Local		Online	1.34.3
5	EE10	98D86330A55E	Eport-EE10	192.168.5.107	Local		Online	1.34.3
6	EP20	F0FE6BA7309E	Eport-HF5111A	192.168.5.158	Local		Online	1.35.1-PuZhong
7	EP20	F0FE6BA7305C	Eport-HF5111A	192.168.5.159	Local		Online	1.35.1-PuZhong
8	HF9624	ACCF2112340C	HF9624	223.104.212.88	China.Pudong	VNET/Connect	Online	1.63.1h
9	HF2411	262040055641	Eport-HF2411	223.104.254.51	Remote		Offline	1.2.21
10	HF2111A	300037614702	41288559U00...	117.136.8.108	Remote		Offline	2.0.2d KAS 4
11	HF5111B	F0FE6B111122	Eport-HF5111B	223.104.213.95	Remote		Offline	1.34.8

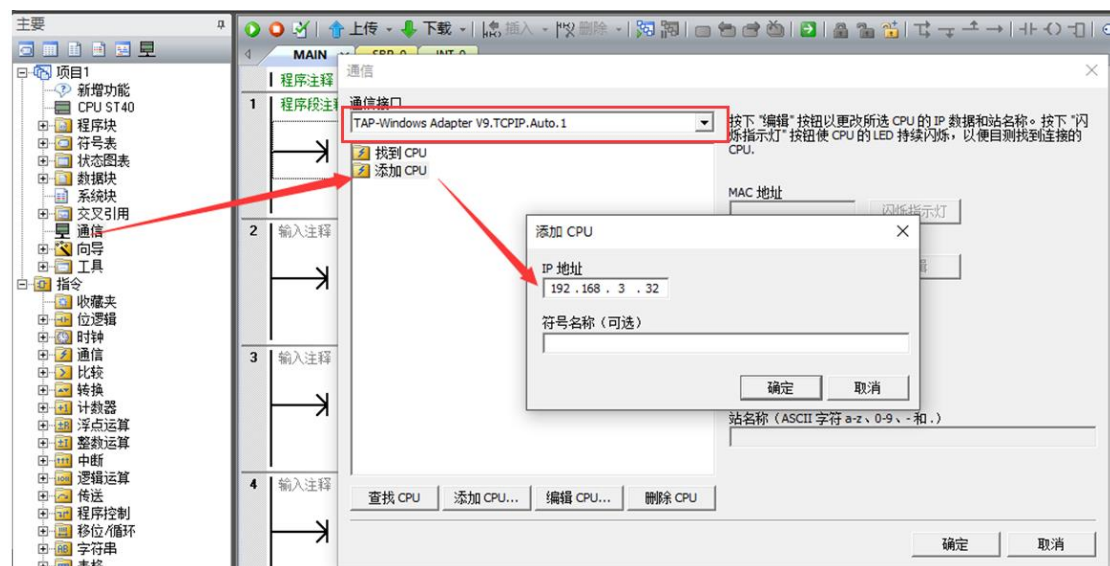


PC ping PLC IP to confirm the connection.

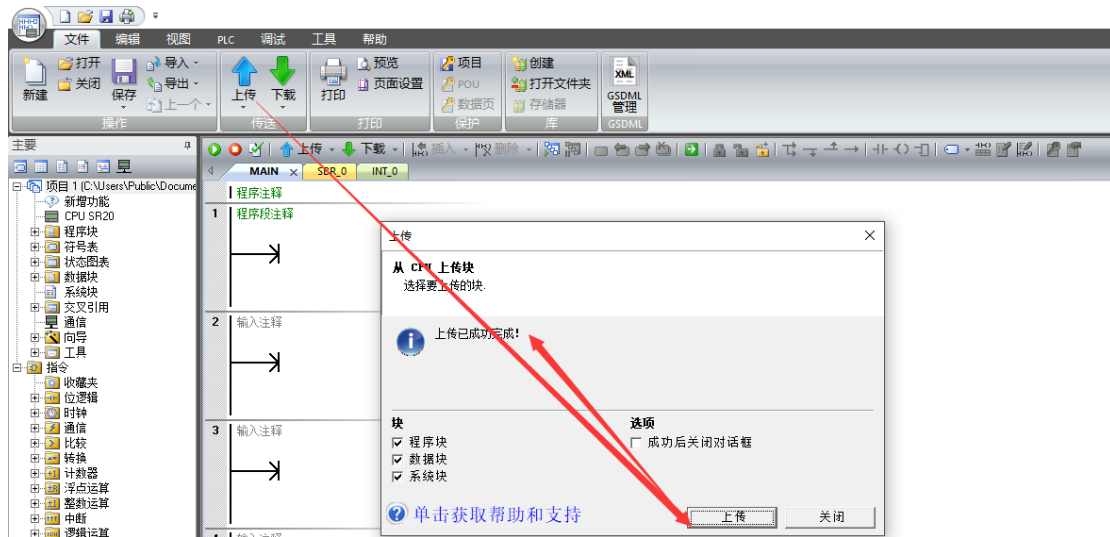
```
C:\Users\Lenovo>ping 192.168.3.32

正在 Ping 192.168.3.32 具有 32 字节的数据:
来自 192.168.3.32 的回复: 字节=32 时间=242ms TTL=30
来自 192.168.3.32 的回复: 字节=32 时间=179ms TTL=30
来自 192.168.3.32 的回复: 字节=32 时间=119ms TTL=30
```

Open PLC software, choose the virtual network card(Start with TAP, end with Auto.1), add PLC IP.



Test Upload.



Test download

