

IOT Master_User Manual

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1. IOTMASTER TOOL INTRODUCTION AND INSTALLATION

1.1. Introduction

IOTMaster tool is a management and configuration software for all industrial control products of HF, which can automatically search and find serial servers in LAN, and help customers to manage and configure serial servers more conveniently and quickly, and with HF IOTBridge industrial control cloud platform, it can realise remote management and configuration of devices, and through IOTBridge cloud platform P2P technology, it can realise LAN NAT penetration, which includes the communication between local software of computer and on-site serial or network port devices remotely. Through the IOTBridge cloud platform P2P technology to achieve LAN NAT penetration, can be achieved, including the computer local software remote and on-site serial or network port device communication, serial devices in two places to communicate with each other remotely and other needs.

1.2. Installation

Step 1. Go to the following link to download the tool package:

<http://ftp.hi-flying.com:9000/IOTMaster/>

Step 2. After downloading and unzipping, run IOTMaster.exe application directly. Currently, IOTMaster tool only supports 64-bit operating system, if it is 32-bit, it can't be run, so you can install and use the original old version of IOTService tool.

data	2024/2/21 16:36	文件夹	
HFLog	2024/3/17 14:17	文件夹	
connectivity_plus_plugin.dll	2024/4/29 11:37	应用程序扩展	85 KB
contextual_menu_plugin.dll	2024/4/29 11:37	应用程序扩展	98 KB
flutter_ip_adapter_info_plugin.dll	2024/4/29 11:37	应用程序扩展	78 KB
flutter_libserialport_plugin.dll	2024/4/29 11:37	应用程序扩展	34 KB
flutter_windows.dll	2024/1/1 19:24	应用程序扩展	17,796 KB
IOTMaster.exe	2024/4/29 11:38	应用程序	62 KB
launch_at_startup_plugin.dll	2024/4/29 11:37	应用程序扩展	75 KB
nb_utils_plugin.dll	2024/4/29 11:37	应用程序扩展	75 KB
screen_retriever_plugin.dll	2024/4/29 11:37	应用程序扩展	95 KB
serialport.dll	2024/4/29 11:38	应用程序扩展	58 KB
system_tray_plugin.dll	2024/4/29 11:37	应用程序扩展	122 KB
window_manager_plugin.dll	2024/4/29 11:38	应用程序扩展	135 KB
wukuang.xml	2024/5/8 13:20	XML 文件	6 KB

Step 3. After running, the following screen will be displayed.

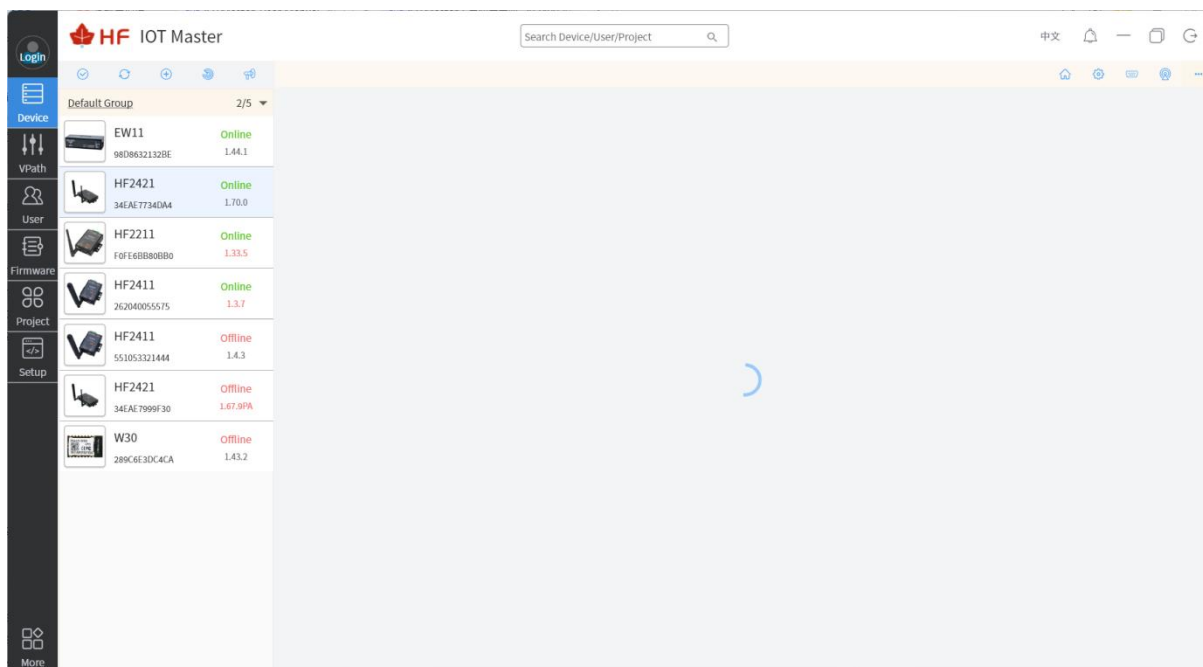


Figure 1. Main interface of the tool

Step 4. Inside the package, there is another zip file, which is the virtual NIC driver, if it is a HF product that supports the virtual NIC function (at present, there are only three models, HF9606 HF9624 HF9606W), you need to unzip it and install it, but the other models don't need to install it.

 tap-windows-9.21.2.zip	2019/10/10 13:22	WinRAR ZIP 压缩...	209 KB
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名称	修改日期	类型	大小
 tap-windows-9.21.2.exe	2018/8/3 14:34	应用程序	251 KB

2. IOTMASTER TOOL BASIC FUNCTION DESCRIPTION

2.1 Functional description of the main interface

- Open the IOTMaster tool, the top left function button is as follows

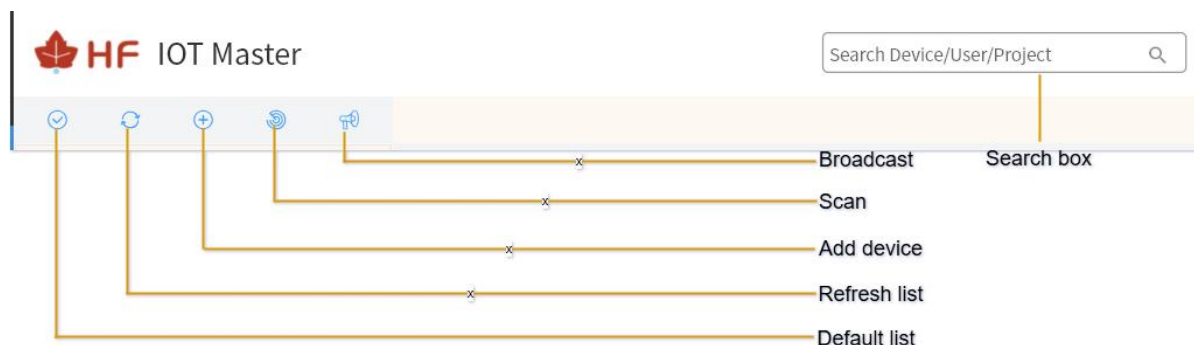


Figure 2. Functional diagram of the buttons in the upper left corner of the tool

- Default list: Used for clicking after the list has been grouped, you can revert to the default list before it was grouped.
- Refresh list: can be used to refresh the current list, update the device offline online status, etc.
- Add device: used to bind the device to the IOTbridge platform when the operation, you need IOTMaster tool to connect to the platform before, This is explained in detail in section 3 of the document
- Scan: When the computer and the device in a LAN, and can ping through the device's IP address, but the IOTMaster tool can not scan to the device you can use this function, in the input box, fill in the device's IP address or the device IP where the network segment interval, for example, the device's IP address is 192.168.1.100, then fill in the inside of 192.168. 1.1~254, so that the tool can scan all the devices under this network segment.
- Broadcast: When the computer and the device are in one LAN, but you are not sure about the device IP, you can click the Full Network Broadcast button, and the tool will scan the device IP through the full band of the broadcast address to help the customer to find out the IP address of the device.
- Search box: When there are more devices in the list, you can quickly find the device you need to configure by fuzzy query of the device's MAC address in the search box.
- The function buttons on the right side, you need the list to have the device, in order to click the operation, the specific function of each button is as follows:

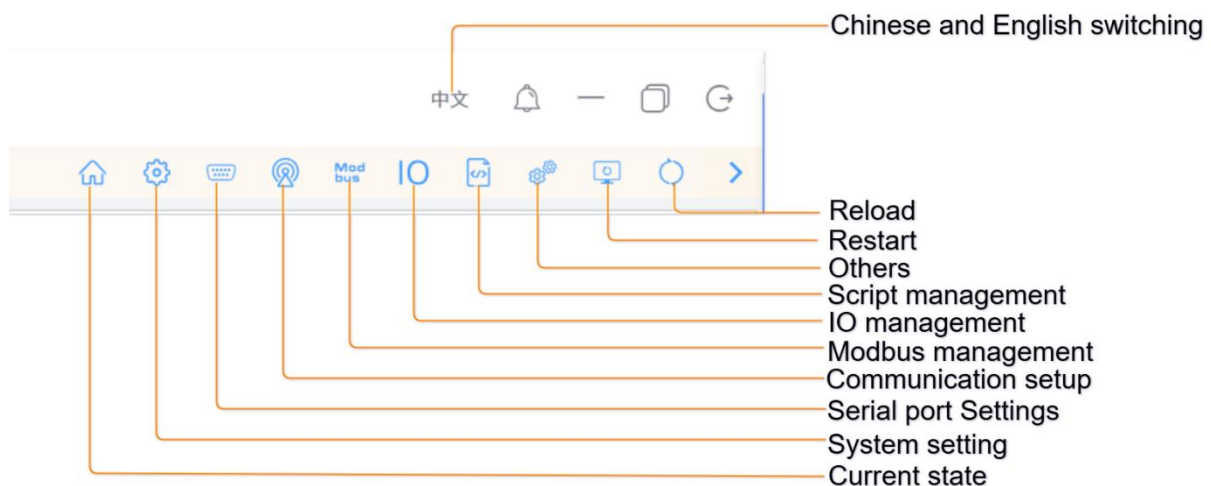


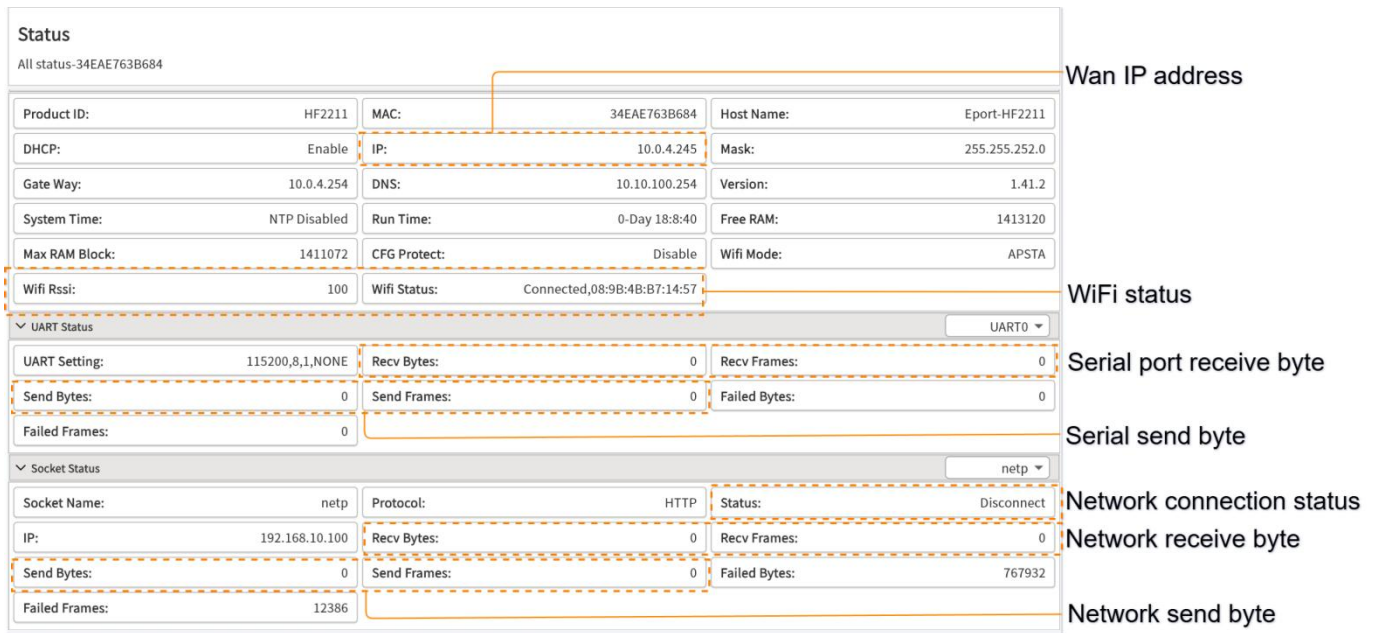
Figure 3. Functional diagram of the buttons in the upper right corner of the tool

- Chinese/English switching: switch between English and Chinese modes of the tool interface
- Reload: Click to restore the device parameters to the factory settings
- Restart: Reboot the device, when the device modifies IP, WiFi and other parameters, it needs to be rebooted to take effect, you can click on the soft reboot device
- Others: Inside there are import and export configuration parameters, upgrade, reboot to restore the device and so on.
- Script management: All models of HF support script function, you can write your own script to do logical processing of the data sent and received by the device, the edited script can be imported into the device through the script setting, script information download address: <http://www.hi-flying.com/download-center-1/application-notes-1/download-item-his-script>
- IO management: supported by some models of devices with IO, can be used to read and write IO parameters
- Modbus management: some models support (specific support models, you can contact HF technical advice), you can use the device as a Modbus master, in which you can configure the station number of the slave to be read, the register address, the number of registers and other parameters, the device will be configured according to the parameters of the command sent to read the slave's data, and then parsed into a JSON format to report to the network side (front). parameters, you need to change the protocol to Device mode in the serial port settings to use it normally).
- Communication setup: You can configure various network communication protocols, such as TCP, UDP, MQTT, HTTP, heartbeat packet registration packet and other functions.
- Serial port settings: you can configure the device baud rate, data bits, stop bits, validation bits, group frame interval and other parameters

- **System Settings:** You can configure the basic software functions of the device, such as IP address, WiFi parameters, etc.
- **Current Status:** Display the current parameter values and connection status of the device, you can judge whether the device is working normally by checking the connection status and the number of bytes sent and received in the current status.

2.1.1 Detailed description of current status

When clicking on a device in the device list, or clicking on the current status button in the upper-right corner, the following interface will appear, mainly to view the following parts of the introduction, you can roughly judge the working condition of the device



Status
All status-34EAE763B684

Product ID:	HF2211	MAC:	34EAE763B684	Host Name:	Eport-HF2211
DHCP:	Enable	IP:	10.0.4.245	Mask:	255.255.252.0
Gate Way:	10.0.4.254	DNS:	10.10.100.254	Version:	1.41.2
System Time:	NTP Disabled	Run Time:	0-Day 18:8:40	Free RAM:	1413120
Max RAM Block:	1411072	CFG Protect:	Disable	Wifi Mode:	APSTA
Wifi Rssi:	100	Wifi Status:	Connected,08:9B:4B:B7:14:57		

▼ UART Status

UART Setting:	115200,8,1,NONE	Recv Bytes:	0	Recv Frames:	0
Send Bytes:	0	Send Frames:	0	Failed Bytes:	0
Failed Frames:	0				

▼ Socket Status

Socket Name:	netp	Protocol:	HTTP	Status:	Disconnect
IP:	192.168.10.100	Recv Bytes:	0	Recv Frames:	0
Send Bytes:	0	Send Frames:	0	Failed Bytes:	767932
Failed Frames:	12386				

Annotations:

- Wan IP address: 10.0.4.245
- WiFi status: Connected
- Serial port receive byte: 0
- Serial send byte: 0
- Network connection status: Disconnect
- Network receive byte: 0
- Network send byte: 0

Figure 4. current state interface diagram

- **WAN IP address:** the IP address obtained by the device from the higher-level network, such as the 4G router connects to 4G and obtains the IP address from the 4G carrier, or the WiFi or Ethernet device connects to the router and obtains the IP address from the higher-level router will be displayed here, and by using this item, you can determine whether the 4G router connects to the 4G network, whether the WiFi or Ethernet device obtains the IP address from the higher-level router, and whether the WiFi or Ethernet device obtains the IP address from the higher-level router. higher-level router

- WiFi connection status: For the connection status and signal quality of the device in STA mode, Connect indicates connection, Disconnect indicates disconnection. The maximum signal quality is 100, the larger the better, the greater than 80 is good, and the less than 30 is bad
- Serial port received bytes: It means the number of bytes sent by the user's serial port device to HF Serial Server, through this status you can judge whether the serial port is working normally or not.
- Serial send byte: It means the number of bytes sent by HF Serial Server to the user's serial device, through this status you can judge whether the serial port is working normally or not.
- Network connection status: the network protocol connection status of the serial server and the host computer or server, which can determine whether the device is successfully connected to the host computer or server when it is used as a server or client.
- Network Receive Bytes: indicates the number of bytes sent from the host computer or server to the serial port server, through this status you can judge whether the network connection is working properly (Note: In the default case of pass-through, the data received by the network side will be sent directly to the serial port, so the number of bytes received by the network and the number of bytes sent by the serial port should be the same, so as to judge whether the pass-through is working properly).
- Network send bytes: indicates the number of bytes sent from the serial port server to the host computer or server, through this status you can judge whether the network is working properly (Note: in the default case of pass-through, the data received by the serial port will be sent directly to the network side, so the number of bytes sent from the network should be the same as the number of bytes received by the serial port, so as to judge whether the pass-through is working properly)

2.1.2 Detailed description of system settings

Select the device you want to set up in the device list, and then click System Settings in the upper-right corner, you can see the following system settings interface, click Edit button in the upper-right corner, you can set up the parameters of the interface, mainly set up the part described below, other configurations can keep the default parameters.

System Setting

Update system settings-34EAE763B684

Edit

Basic Info	WAN Setup
User: admin	DHCP: Disable
Password: admin	IP Address: 10.0.4.245
Host Name: Eport-HF2211	Mask: 255.255.252.0
Longitude: 0.000000	Gate Way: 10.0.4.254
Latitude: 0.000000	DNS: 10.10.100.254
LAN Setup	Network Mode: Router
IP Address: 192.168.10.254	Telnet Setup
Mask: 255.255.255.0	Enable: Enable
DHCP: Enable	Telnet Port: 23
Ethernet WAN/LAN: LAN	Echo: Enable
Web Setup	NTP Setup
Enable: Enable	Enable: Disable
Web Port: 80	Wifi Mode: APSTA
Wifi Roaming	AP Hide: 显示

Figure 5. System setup interface diagram

■ WAN settings

WAN Setup

DHCP:	Enable
DNS:	10.10.100.254
Network Mode:	Router

▼ WAN Setup	
DHCP:	Disable ▼
IP Address:	10.0.4.245 ✎
Mask:	255.255.252.0 ✎
Gate Way:	10.0.4.254 ✎
DNS:	10.10.100.254 ✎
Network Mode:	Router ▼

- DHCP: Here you can set the device WAN IP, the default is DHCP mode, when the device Wan port or WiFi STA mode connects to the higher-level router, the higher-level router automatically assigns the IP, if you need to use a static IP, change DHCP to Disable mode to configure the static IP, subnet mask, gateway, and other parameters, and you need to be in the same network segment as the higher-level router. (Note: This parameter needs to be rebooted to take effect).
- DNS: Default is usually sufficient
- Network Mode: Parameters specific to some WiFi devices.
Router mode: the device WAN IP from the higher-level router to get IP address, at the same time, its own LAN IP address, will be connected to the lower level of the network port device assigned IP address, as a router, the lower level of the network port device can not communicate directly with the higher-level router device. Bridge mode: the device is like a network cable, connected to the higher-level network through WiFi, while the lower-level network port device, directly transferred to the higher-level network, so that the lower-level devices directly bridge to the higher-level LAN (Note: This parameter needs to be rebooted to take effect).

■ LAN setup

▼ LAN Setup	
IP Address:	192.168.10.254
Mask:	255.255.255.0
DHCP:	Enable
Ethernet WAN/LAN:	LAN

- LAN IP address: the device as a router, to the subordinate connected WiFi or network interface devices, where the IP address is assigned, you can arbitrarily set the IP network segment, can not be the same network segment with the WAN IP as described above (**Note: This parameter needs to be rebooted to take effect**).
- DHCP: Enabled by default, the subordinate WiFi or network port device, connected to the LAN port of the serial server, or AP, will automatically assign an IP address to the subordinate device, change it to Disable to turn it off (**Note: this parameter needs to reboot the device to take effect**)
- Ethernet WAN/LAN: you can set the working mode of the network port, the default is WAN port

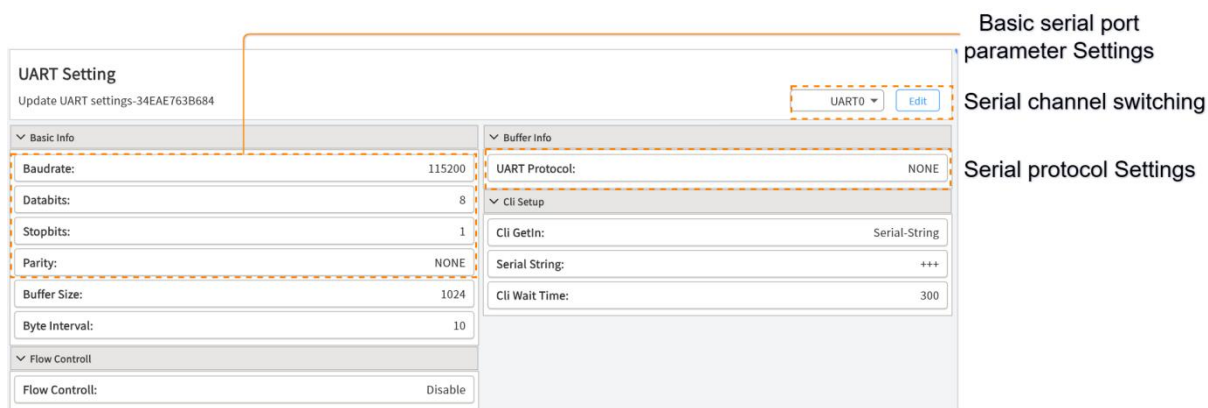
■ WIFI settings

▼ NTP Setup	
Enable:	Disable
Wifi Mode:	APSTA
AP Hide:	显示
AP SSID:	HF2211_B684
AP KEY:	
AP CH:	CH6
STA WifiSSID:	HF_Office_AP
STA WifiKey:	hiflying

- WIFI mode: there are three modes (**the parameter needs to be rebooted to take effect after setting**) AP mode (default): that is, the device itself will release the WIFI signal to the terminal device to connect STA mode: the device will turn off its own AP to scan and connect to the surrounding WiFi signals APSTA mode: the device's own AP is released normally, and at the same time, it will also scan and connect to the surrounding WiFi signals
- AP SSID and AP KEY: set the name and password of the WiFi signal released by the device itself
- STA WIFISSID and STA WIFKEY: set the name and password of the device to connect to the surrounding WiFi signals (you can click the scan button to scan automatically)

2.1.3 Detailed description of serial port settings

Select the device and click the Serial Port Settings button to enter the Serial Port Settings interface, and the main setting functions are shown in the following figure.



UART Setting
Update UART settings-34EAE763B684

Basic serial port parameter Settings

Serial channel switching

Serial protocol Settings

Basic Info

Baudrate: 115200

Databits: 8

Stopbits: 1

Parity: NONE

Buffer Size: 1024

Byte Interval: 10

Flow Control

Flow Control: Disable

Buffer Info

UART Protocol: NONE

CLI Setup

CLI Getin: Serial-String

Serial String: +++

CLI Wait Time: 300

Figure 6. Serial port setting interface diagram

- Basic serial port parameter Settings: set the baud rate of the device, data bits, stop bits, parity bits and other parameters, need to be connected to the user's device to match the normal communication, the baud rate of different models to support different ranges, check the product manuals.
- Serial channel switching: support for dual-serial devices, click here to select the serial port one or serial port two parameter settings
- Serial protocol settings: four modes
 - NONE mode (default): pass-through mode, the device does not do any processing of the data sent and received from both sides, it is only responsible for pass-through data
 - Modbus mode: the device opens the Modbus TCP and Modbus RTU inter-transfer function (**Note: Modbus TCP needs to be the master, and the 485 device needs to be the slave**)
 - Frame mode: the free frame grouping mode, the data sent from the serial port to the network side can be set the length of each packet or be sent in packets according to the specific frame header and footer. The data sent from the serial port to the network side can be set the length of each packet, or sent in packets according to the specific header and footer of the frame.
 - Device mode: Modbus master function, after opening, you can configure Modbus master function, so that the device automatically collects the data from 485 devices regularly, and parses and reports them to the server (**Note: some models support this, contact technical support for details**).

2.1.4 Detailed description of communication settings

Select the device and click the Communication Setting button to enter the communication setting interface, the main setting functions are shown in the following figure.

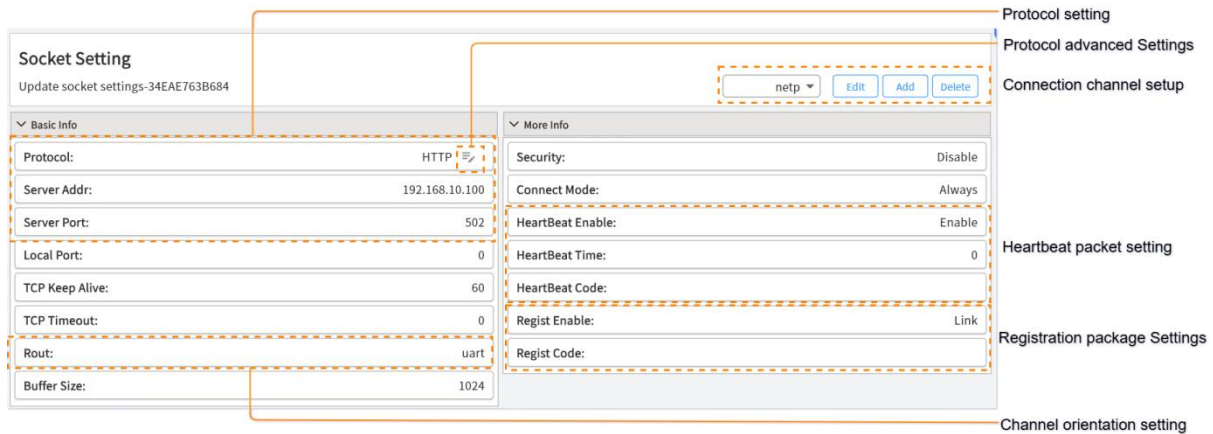


Figure 7. Communication Setting Screen Diagram

- **Protocol Settings:** Configure the network communication protocol, the default is TCP Server mode, port 8899, supports TCP UDP Server/Client, HTTP, MQTT, Websocket, Aliot and other network communication protocols.
- **Protocol advanced settings:** such as HTTP, Websocket protocol, need to configure the request method, path, Header and other parameters can be configured in the protocol advanced settings.
- **Connection channel setup:** HF Serial Server supports multiple socket channels, through the add and delete buttons, you can create or delete any new connection channel, the default connection name is netp channel can be used all the way!
- **Heartbeat packet setting:** heartbeat packet function, the device can be configured when doing client, the default is off, after turning on, you can customise the heartbeat packet to send heartbeat data to the server at regular intervals, heartbeat interval unit seconds
- **Registration Packet Settings:** The registration packet function can be configured when the device is a client, which is closed by default, and supports three modes to choose from
 Link Mode: the device sends a registration packet every time the device connects to the server
 Data Mode: the device does not send the registration packet when connecting to the server, but adds a registration packet in front of the data every time the data is reported to the server
 Both Mode: the device sends the registration packet when connecting to the server, and adds a registration packet in front of the data every time
- **Channel pointing settings:** you can set the connection channel, the output port for data sending, for example, dual serial port devices, you can choose to send data to the serial port one or two, you can also create two connection channels, pointing to each other, you can achieve the function of two connection channels to transmit data to each other.

2.1.5 Detailed description of Modbus management

Select the device, click the Modbus Management button to enter the Modbus management interface, configure this function, you can let the device as a Modbus RTU or Modbus TCP master, automatically according to the configuration information, collect the corresponding Modbus register data regularly, and then parse it into JSON format to report to the server. (Some models have this feature, models that do not support this feature do not have this configuration button. It should be noted that when using the Modbus RTU master function, you need to go to the serial port settings first and change the serial port protocol to Device mode).

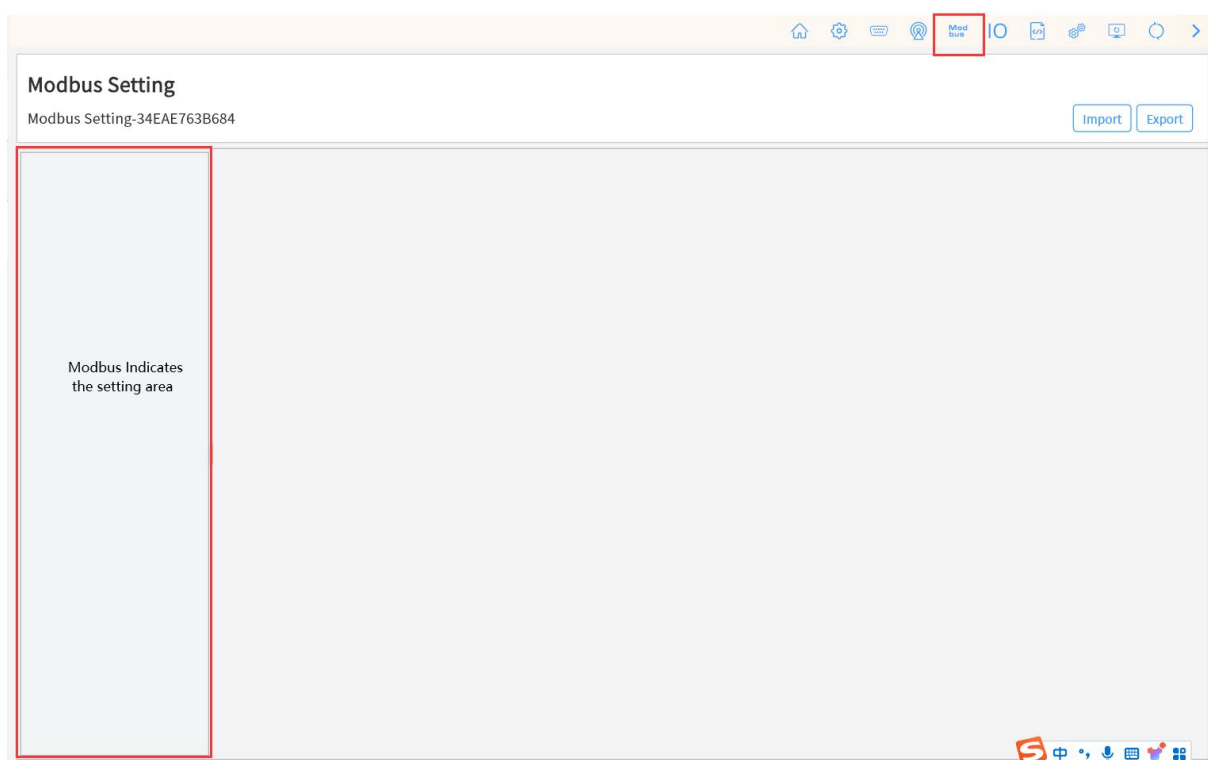
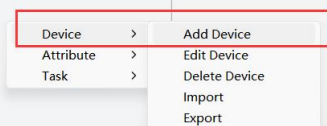


Figure 8. Modbus Management Interface Diagram

Step1. Right mouse button click Modbus setting area, you can see Modbus detailed settings, select Add Device, add Modbus device interface appears, as follows

Modbus Setting

Modbus Setting-34EAE763B684

[Import](#) [Export](#)

Modbus Setting
Modbus Setting-34EAE763B684

Add Modbus Device

Device Name:

Protocol:

Port:

Device ID:

Device Address(IP:Port):

[Confirm](#) [Cancel](#)

- Device name: can be configured arbitrarily, no more than 8 bytes
- Protocol: For collected serial devices, select Modbus RTU, and for collected network devices, select Modbus TCP.
- Port: For dual serial devices, select serial port one or serial port two.
- Device ID: Modbus station address of the corresponding acquisition device

- Device address: Configurable when Modbus TCP protocol is selected, set the IP address and port of the network interface device to be collected, separated by colons, for example, 192.168.1.100:502

Step2. After adding the device, the Modbus setting interface will appear on the right side, next add properties, configure the register address and number to be read, etc., as follows

Modbus Setting

Modbus Setting-34EAE763B684

ImportExport

CGQ

Device >

Attribute >

Task >

Add Attribute

Edit Attribute

Delete Attribute

Attribute Setting

Basic Info

Device Name: CGQ

Protocol: MODBUS-RTU

Attribute

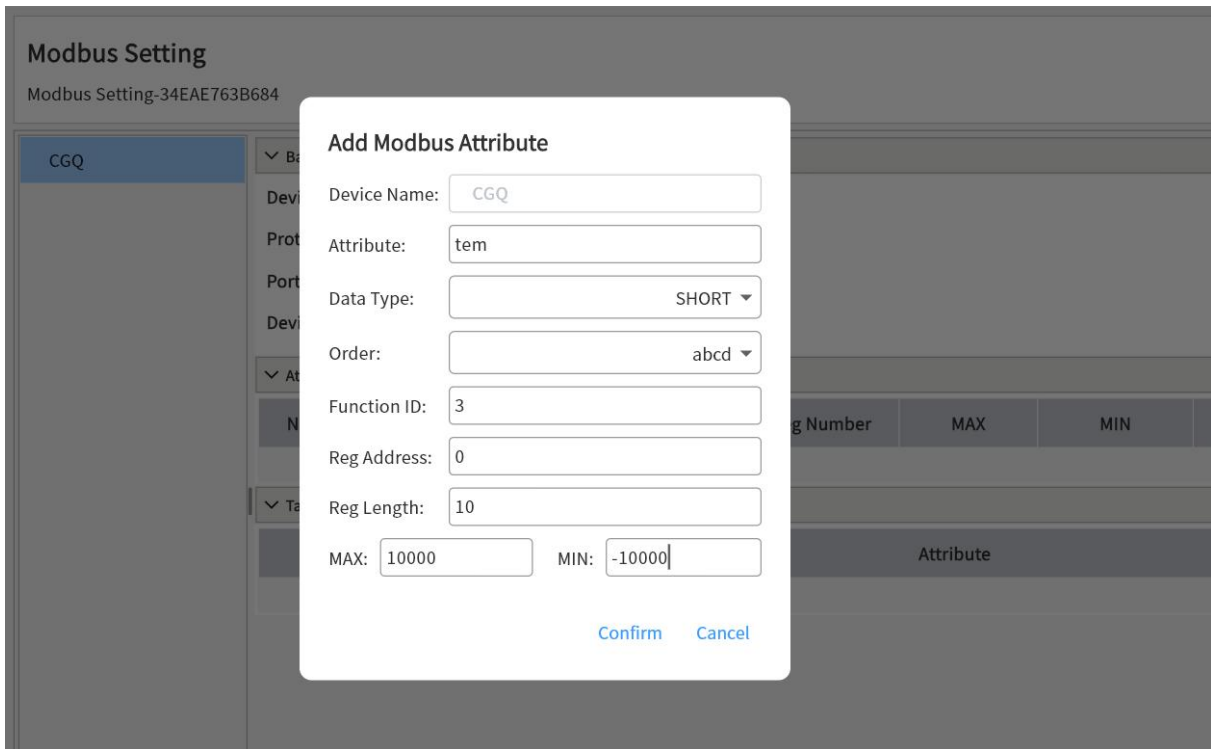
+

Name	Data Type	Function ID	Reg Address	Reg Number	MAX	MIN	Actions
------	-----------	-------------	-------------	------------	-----	-----	---------

Task

+

ID	Interval	Attribute	Actions
----	----------	-----------	---------



Modbus Setting
Modbus Setting-34EAE763B684

Add Modbus Attribute

Device Name:

Attribute:

Data Type:

Order:

Function ID:

Reg Address:

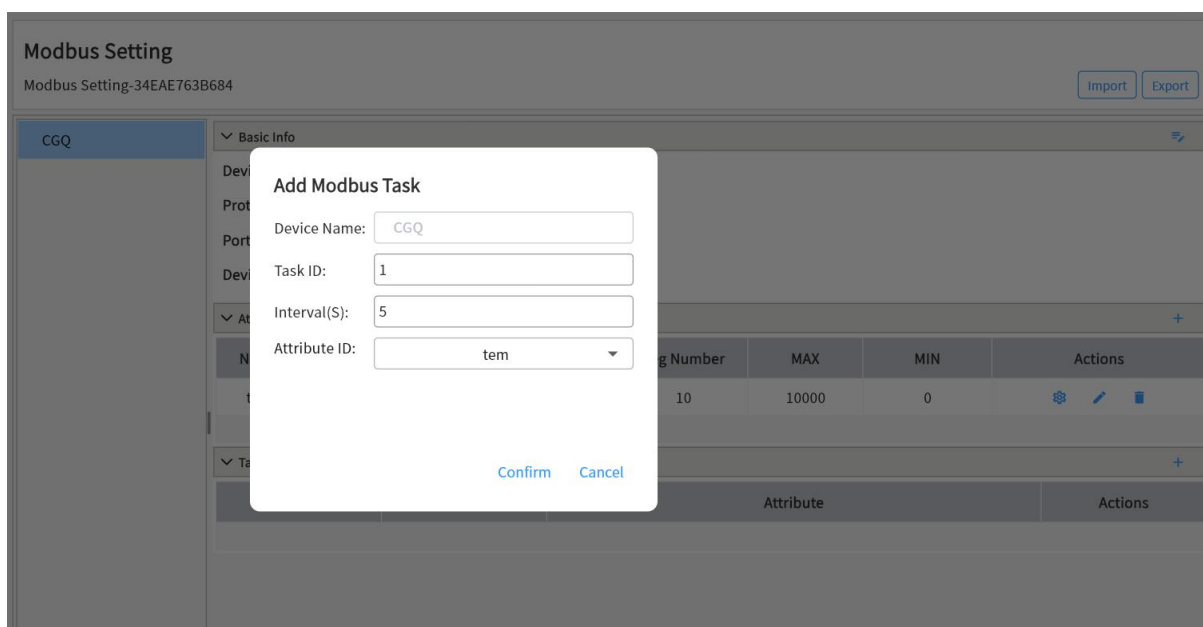
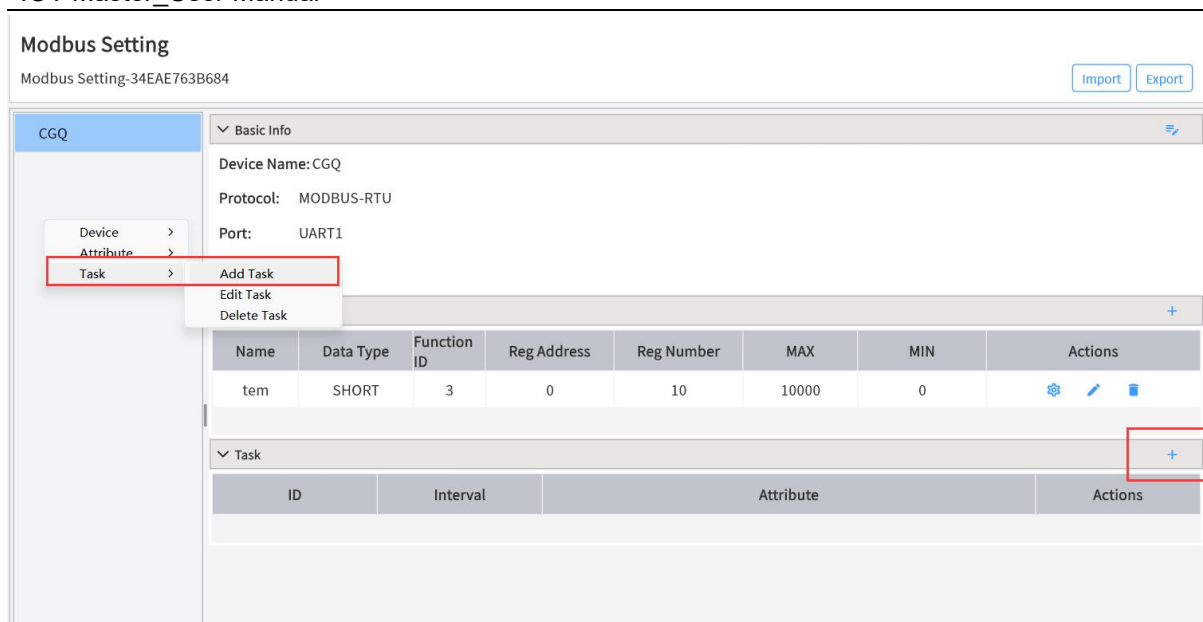
Reg Length:

MAX: MIN:

[Confirm](#) [Cancel](#)

- Attribute: arbitrary settings, can not use Chinese, the length of no more than 32 bytes
- Data type: Selected according to the data type of the acquisition registers
- Order: When FLOAT or LONG is selected as the data type, the byte order of the data is parsed.
- Function ID: Modbus protocol function code, set according to the captured registers
- Register address: starting address of the captured register data, decimal
- Register length: the number of registers to be captured at one time, which should be consecutive registers starting from the start address (**Note: when the data type is LONG or FLOAT, the length setting of 1 means capturing two registers**)
- Maximum and minimum values: set the upper and lower limits for collecting register data, and data not within the range will not be reported.

Step3. After setting the properties, the next step is to start configuring the task parameters, which are used to control the frequency of timed acquisition, as shown below:

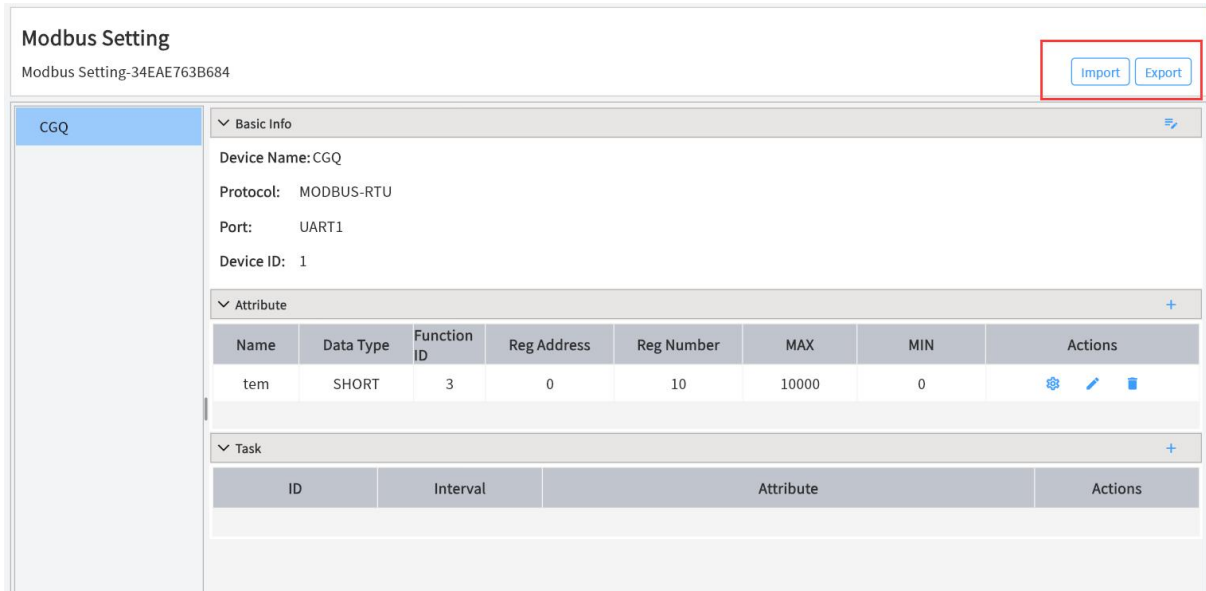


- Task ID: Task ID, a field in the Json format of the composition report, used to distinguish the task, can only be filled with numbers.
- Interval time: set the polling time of the capture register, in seconds
- Attribute ID: set the attribute to be executed under this collection task

Step4. After configuration, reboot the device, the device will automatically send Modbus acquisition commands to the serial port, and then send the acquired data to the host computer or server through the network protocol.

Remarks:

1. Currently up to 8 Modbus devices can be added to each Serial Server
2. Each Modbus device can have thousands of acquisition attributes set.
3. Modbus devices can be quickly configured via the import/export button on the configuration screen.



Modbus Setting
Modbus Setting-34EAE763B684

Import Export

CGQ

▼ Basic Info

Device Name: CGQ
Protocol: MODBUS-RTU
Port: UART1
Device ID: 1

▼ Attribute

Name	Data Type	Function ID	Reg Address	Reg Number	MAX	MIN	Actions
tem	SHORT	3	0	10	10000	0	  

▼ Task

ID	Interval	Attribute	Actions
----	----------	-----------	---------

2.1.6 Detailed description of IO settings

Some model-specific configuration interfaces, which are still under development, are supported in the future.

2.1.7 Detailed description of script management

All HF devices support the script function, you can write your own script, import the device, so that the device send and receive data, in accordance with the script logic processing, script function details can be downloaded from the following link: <http://www.hi-flying.com/download-center-1/application-notes-1/download-item-his-script>

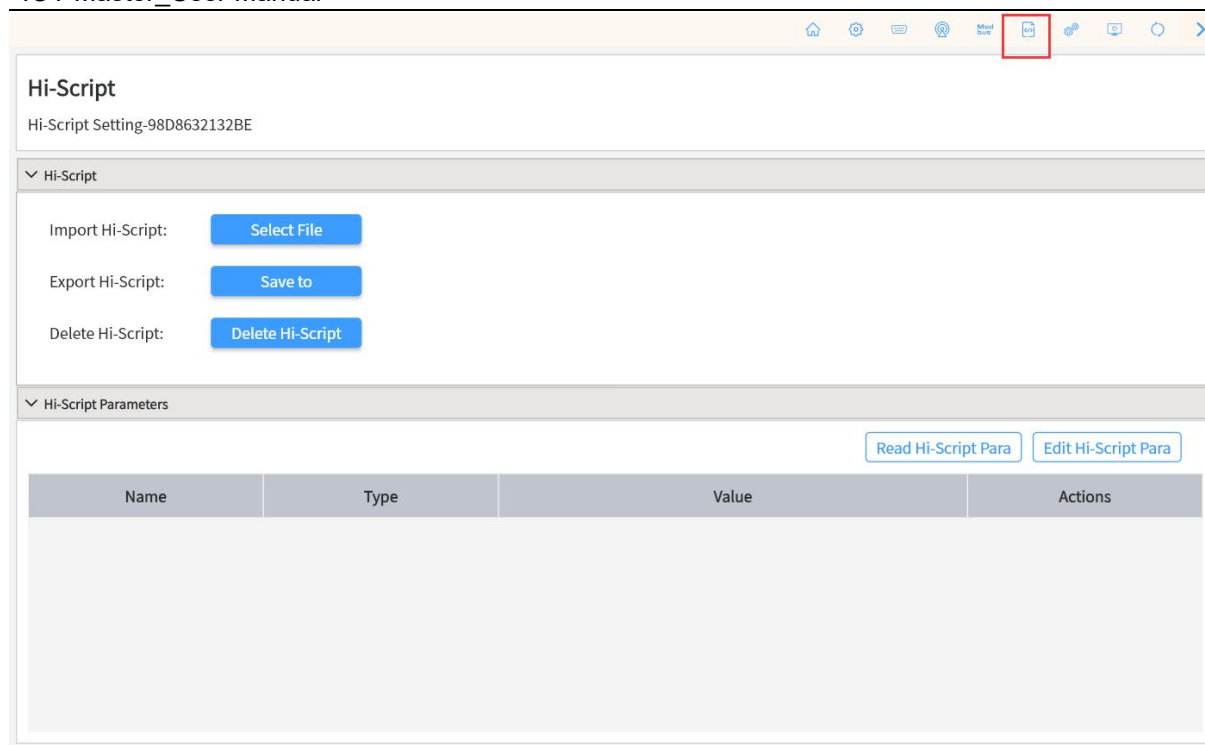


Figure 9. Script Management Interface Diagram

- Hi-Script: Edited script, through the script file operation area of the import script, you can import the script into the device, you can also export the script from the device that already has a script, delete the script can delete the script inside the device, the operation will be prompted to restart the device.
- Hi-Script Parameters: General scripts do not support reading script parameters through the Script Parameter Operation Area, only scripts that use Flash parameters can be read and written here, for details, you can check the script documentation or contact technical support.

2.1.8 More detailed description of settings

Select the device you want to operate, click the More Settings button, you can enter the following interface

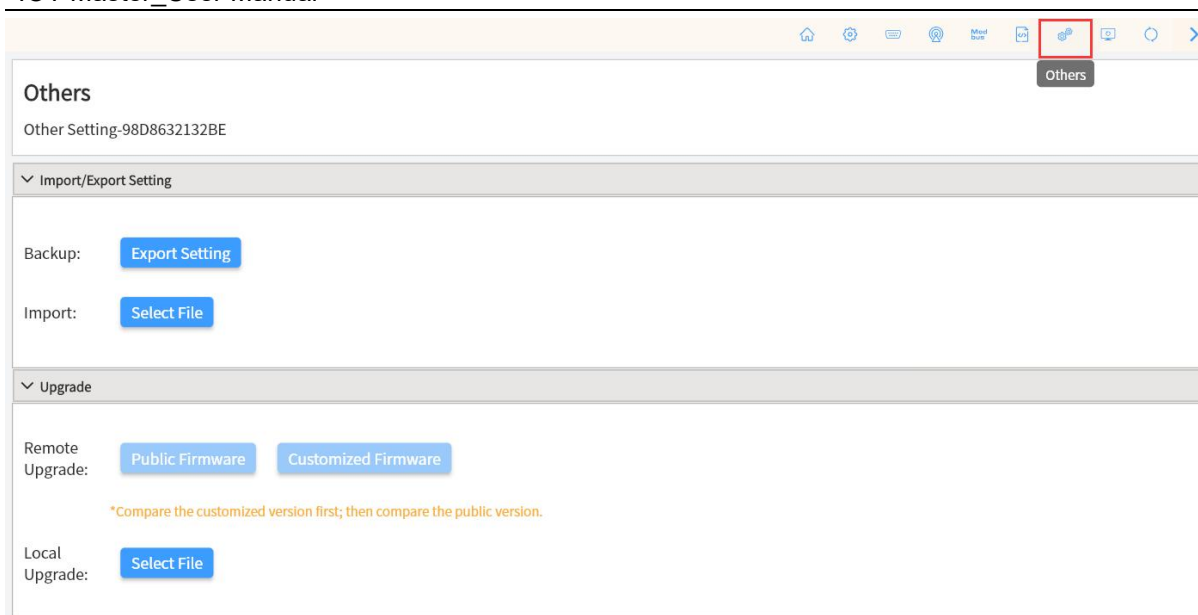


Figure 10. More Settings Screen Map

- Import/Export Settings: Export Settings can export the current configuration parameters of the device to an XML file, which can then be imported into the new device via the Import Settings button, achieving the function of quick setup for new devices.
- Upgrade firmware: remote upgrade and local upgrade, remote upgrade needs to connect to the cloud platform, please check section 3, local upgrade, select the file to be upgraded, click to confirm, and then wait for the upgrade to be successful, the device can't be powered off during the operation.

2.2. Description of the serial configuration tool

For the 4G DTUs without LAN configuration function in HF product series, such as HF2411, EG41 and so on, IOTMaster also integrates the serial AT command configuration tool, which is convenient for customers to configure 4G DTU series products more quickly through the serial port, and the specific use steps are as follows:

Step1. Click the "More Applications" button at the bottom left corner of the main interface of IOTMaster tool to enter the serial port configuration tool, as shown below:

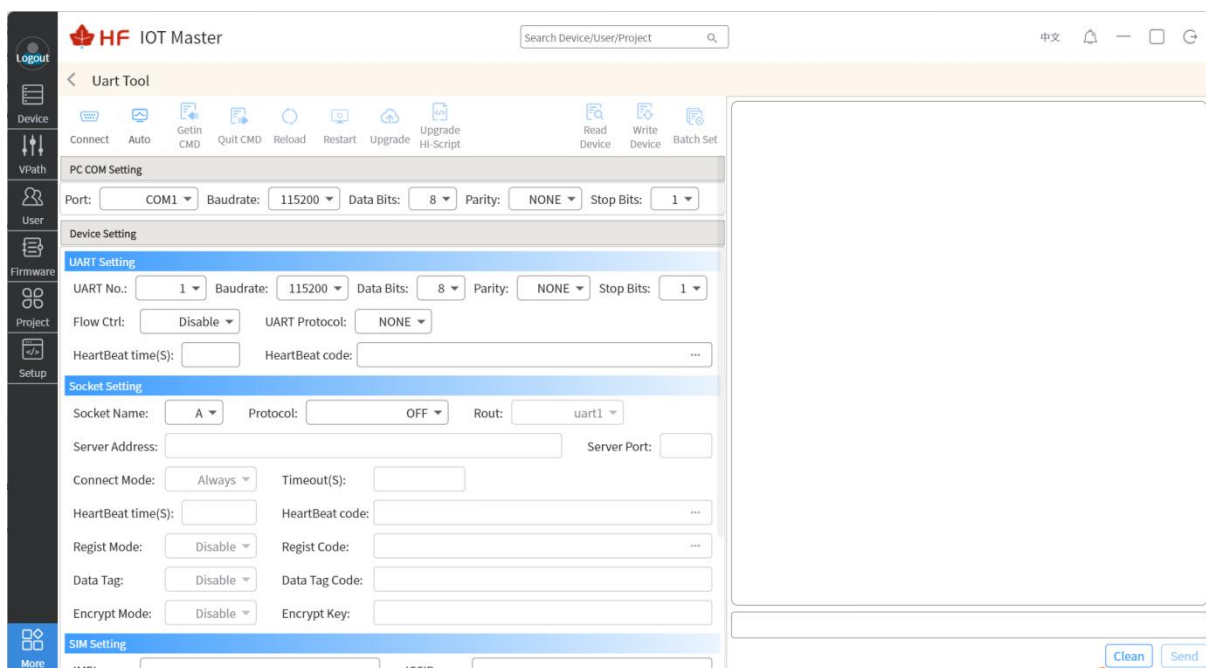
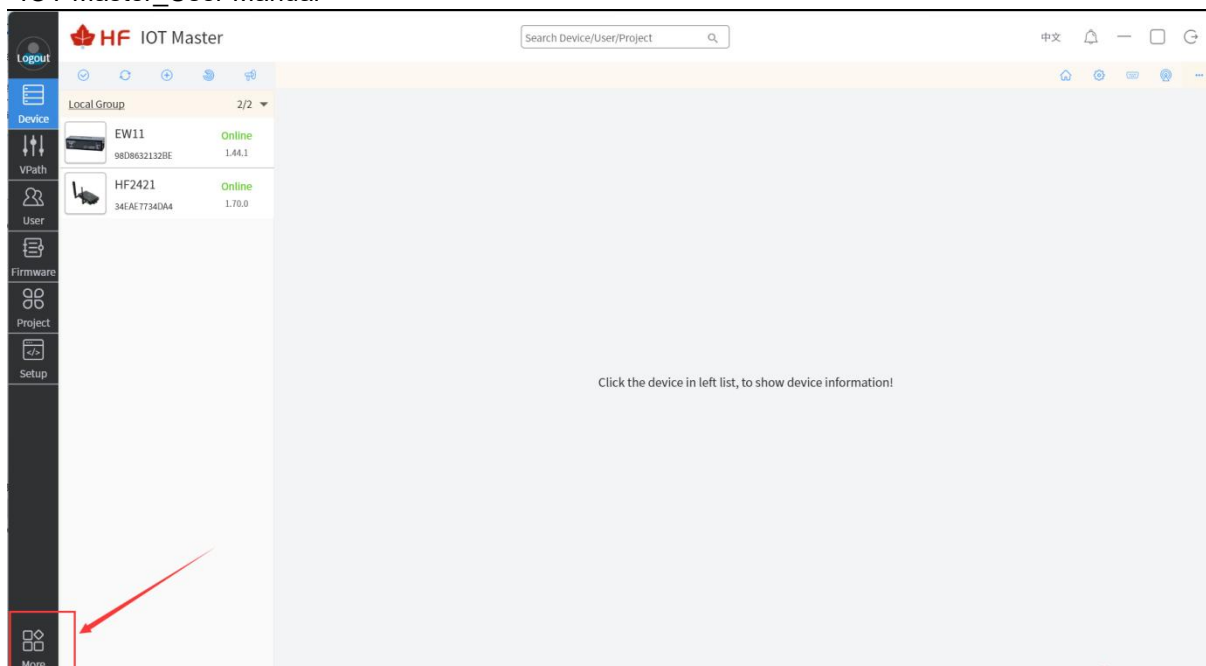
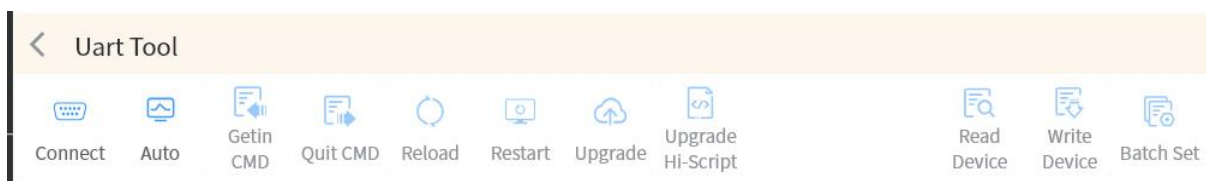


Figure 11. Serial Tools Configuration Interface Diagram

The functions of the tool interface are as follows

■ Pushbutton Functions



- Auto-detection: for automatic detection of DTUs
- Enter/Exit Command: The device is in pass-through mode by default, and will enter the AT command mode through AT tool configuration, after using it, you need to click the exit command to let the device exit the AT command mode, and then you can pass the data normally.
- Restore/Restart Device: Restore Factory Settings and Restart Device
- Upgrade Firmware: Serial port upgrade 4G DTU firmware version way
- Upgrade Script: Import Script Function
- Read and write parameters: read and write device parameters
- Batch Configuration: After configuring a DTU and replacing it with a new one, you can click this button, which allows the new DTU to be quickly configured with the same parameters as the previous DTU

■ Serial port settings

UART Setting									
UART No.:	1 ▼	Baudrate:	115200 ▼	Data Bits:	8 ▼	Parity:	NONE ▼	Stop Bits:	1 ▼
Flow Ctrl:	Disable ▼	UART Protocol:	NONE ▼						
HeartBeat time(S):		HeartBeat code:					...		

- Baud rate and other parameters: the basic parameters of the serial port, need to be set and connected to the user's serial device to match the
- UART protocol: There are two modes NONE mode (default): Transmission mode, the serial port and network data, directly transmitted to each other, without any processing Modbus mode: Modbus TCP to Modbus RTU transfer function is enabled, which requires the host computer server to be the master, and send Modbus TCP data to read the following data from the serial port. This mode is used when reading data from the following serial port Modbus RTU device.
- Serial port heartbeat: after setting, DTU sends heartbeat data to serial port regularly according to heartbeat interval.

■ Network Interface Settings

Socket Setting			
Socket Name:	A	Protocol:	OFF
		Route:	uart1
Server Address:			Server Port:
Connect Mode:	Always	Timeout(S):	
HeartBeat time(S):		HeartBeat code:	...
Regist Mode:	Disable	Regist Code:	...
Data Tag:	Disable	Data Tag Code:	
Encrypt Mode:	Disable	Encrypt Key:	

- Network Interface Name: Default A, DTU support 3-way connection channel, you can establish a maximum of 3-way connection with the server, the connection name were ABC, you can switch here to set the other two channels
- Protocol: default off, support for TCP, UDP, HTTP, MQTT, Websocket, Aliot and other network communication protocols, according to the docking server protocol configuration
- Server address and server port: the address and port of the server to connect to
- Connection Mode: default Always, for long connections, Burst for short connections
- Network heartbeat packets: according to the heartbeat interval, send heartbeat packets to the host computer server at regular intervals.
- Registration Packet Function: There are 3 modes Link Mode: DTU sends once every time it connects to the server Data Mode: Every time the data is reported, the registration packet is added in front of the data Both Mode: It is sent once when connecting, and every time the data is reported, the registration packet is added in front of the data.
- Data tag: After setting, the server will send data with a data tag in front of the data.
- Encryption: Currently only supports AES and 3DES encryption, after setting, the data reported from the serial port will be encrypted and then sent to the server.

■ SIM card parameters

SIM Setting			
IMEI:		ICCID:	
Status:		RSSI:	
			Refresh

- IMEI: Unique identification number of the 4G module inside the DTU
- ICCID: SIM card number inserted into the 4G DTU
- Status: Corresponding to the 4G DTU networking status, Connect means successfully residing in the network, Disconnect means not connected to the network.
- Signal Strength: Corresponds to the current signal value of 4G DTU, range 1~31, above 25 is good, below 12 is very bad.

■ Other setting information

Other Setting			
Device Serial:		Welcome:	
Host Name:			
APN:		APN User:	
APN PWD:			
Version:		Latitude:	
Longitude:		Detail >>	

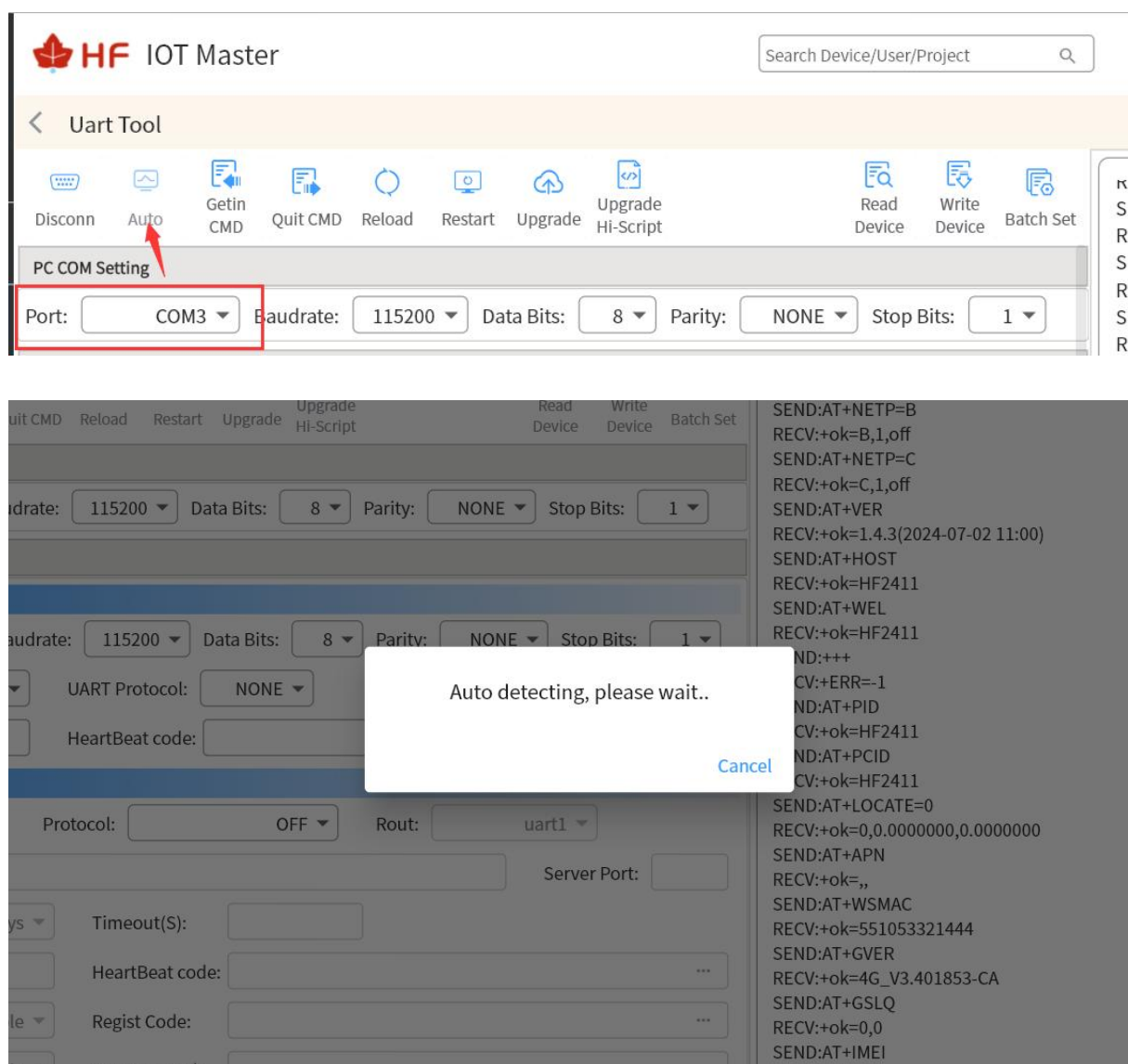
- APN parameters: general SIM cards do not need to be set, such as SIM cards have special requirements, such as private network cards, etc., you can configure the corresponding APN information according to the requirements of the operator to go in.
- Latitude and longitude: 4G DTUs all support base station positioning, you can also set the detailed latitude and longitude manually through here.

■ AT command transceiver area

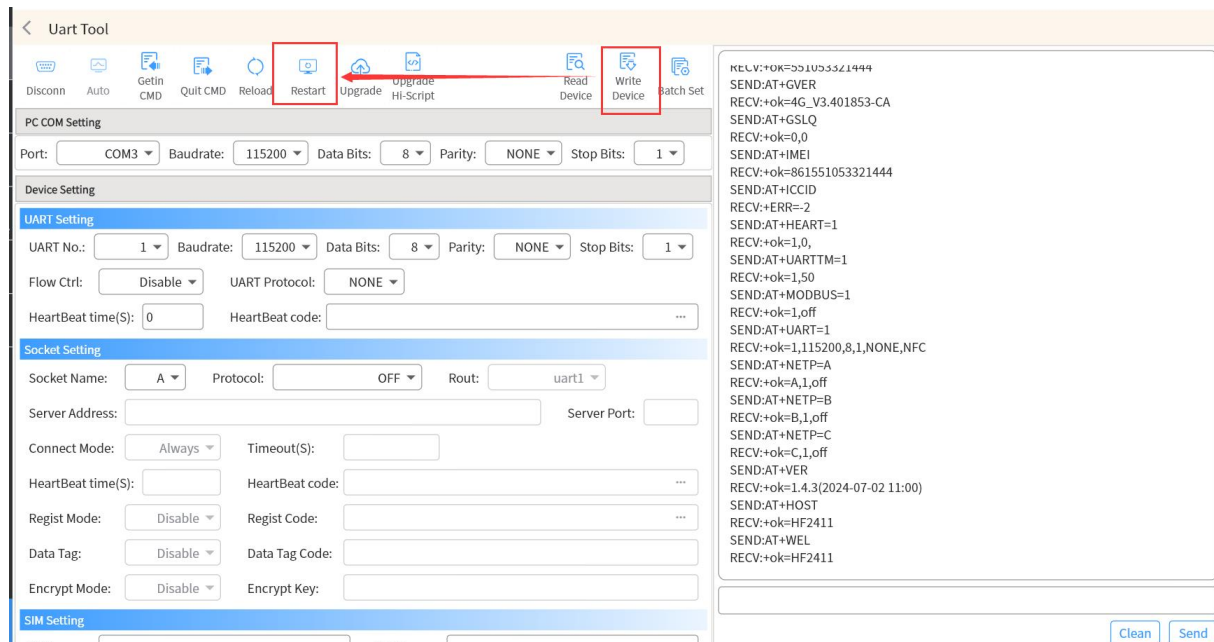
<pre>SEND:AT+NETP=C RCV:+ok=C,1,off SEND:AT+VER RCV:+ok=1.4.3(2024-07-02 11:00) SEND:AT+HOST RCV:+ok=HF2411 SEND:AT+WEL RCV:+ok=HF2411</pre>	AT Command Display Area
	Manually send AT commands area
Clean Send	

- AT Command Display Area: For all the read/write operations of the software, there will be corresponding AT command display and result display here, through which you can judge whether the read/write operation is successful or not.
- Manually send AT commands area: you can send any AT commands here to read or write device parameters, so please refer to the manual for AT commands.

Step2. Use serial port to USB to connect the hardware serial port of 4G DTU to the computer, click the serial port selection button of the tool, select the COM port of the computer, and then click the auto-detect button, the tool will automatically match the 4G DTU, and when the detection is successful, it will automatically send AT commands to read the current parameters of the device (if you have not been able to detect it, it suggests that detection of the device has failed, please test the serial port to USB and 4G DTU wiring is correct) as shown in the figure below. USB and 4G DTU wiring is correct) as follows



Step3. After reading the parameters, you can modify the parameters in the serial port settings and network interface settings according to your needs. After modification, click the Write Parameters button, and then click Restart Device to complete the parameter settings.



3.IOTMASTER REMOTE FEATURE DESCRIPTION

3.1. IOTBridge Cloud Platform

IOTbridge cloud platform is the management cloud platform of HF, which can be connected by IOTMaster tool to bind the device to the cloud platform and realise the functions of remote configuration, management and upgrade, etc. The specific docking operation is as follows steps:

Step1. Open your browser and enter the following link to register an account (if you have registered an account on the old platform before, you can log in directly without re-registering your account): <https://cloud.platform.iotworkshop.com/#/login>

Step2. After registering your account, click the following button on the IOTMaster tool to enter the login interface, enter the account and password you just registered, and then you can connect the tool to the IOTBridge platform.

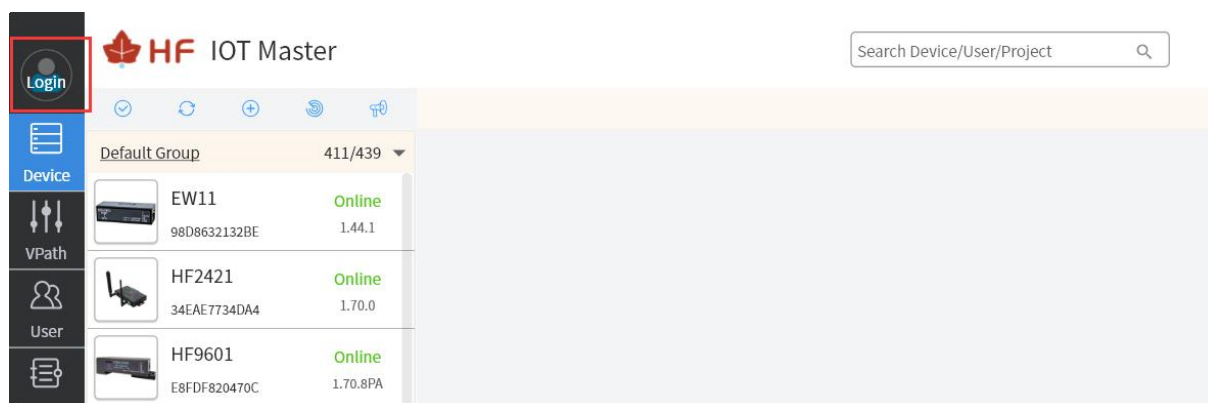
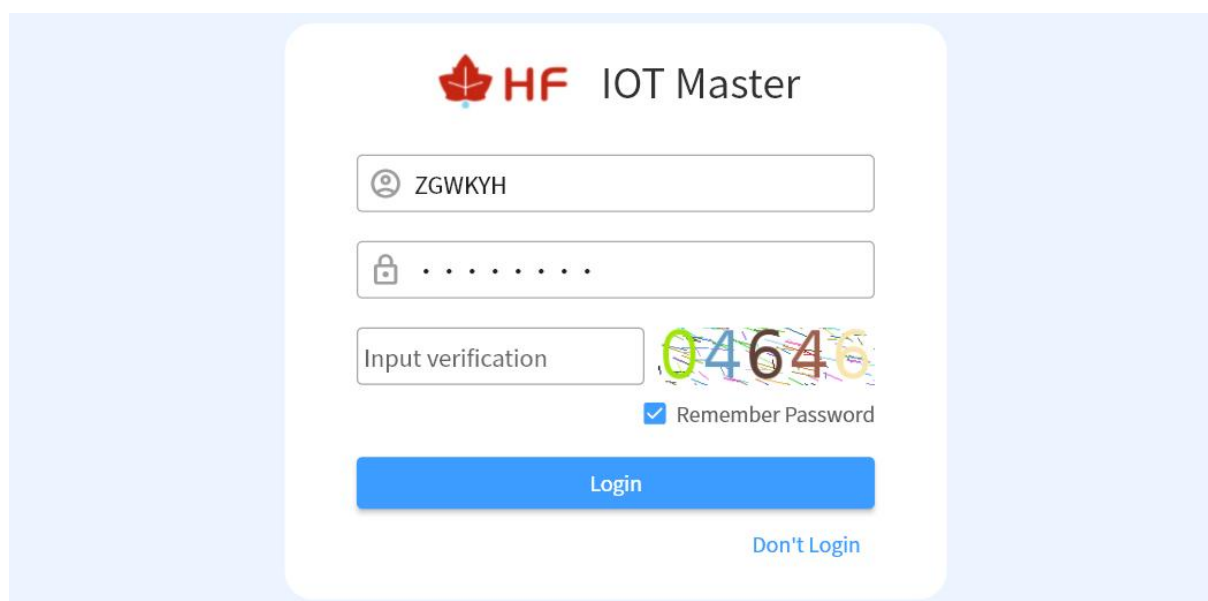
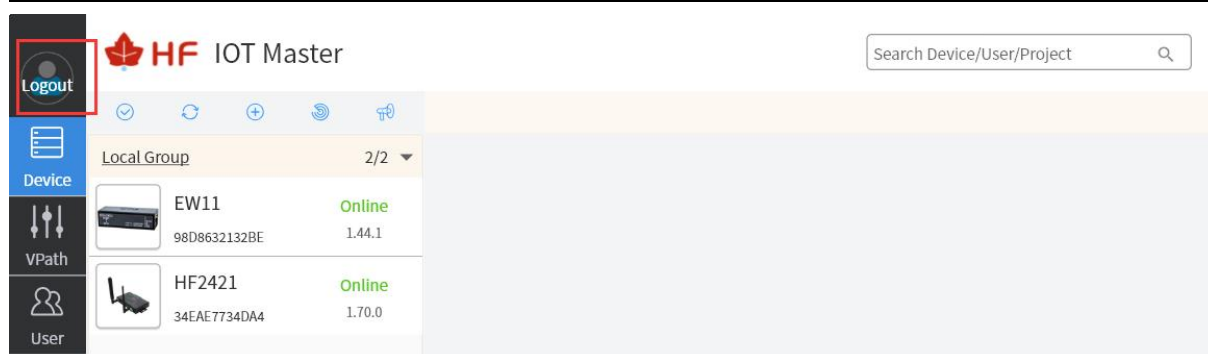
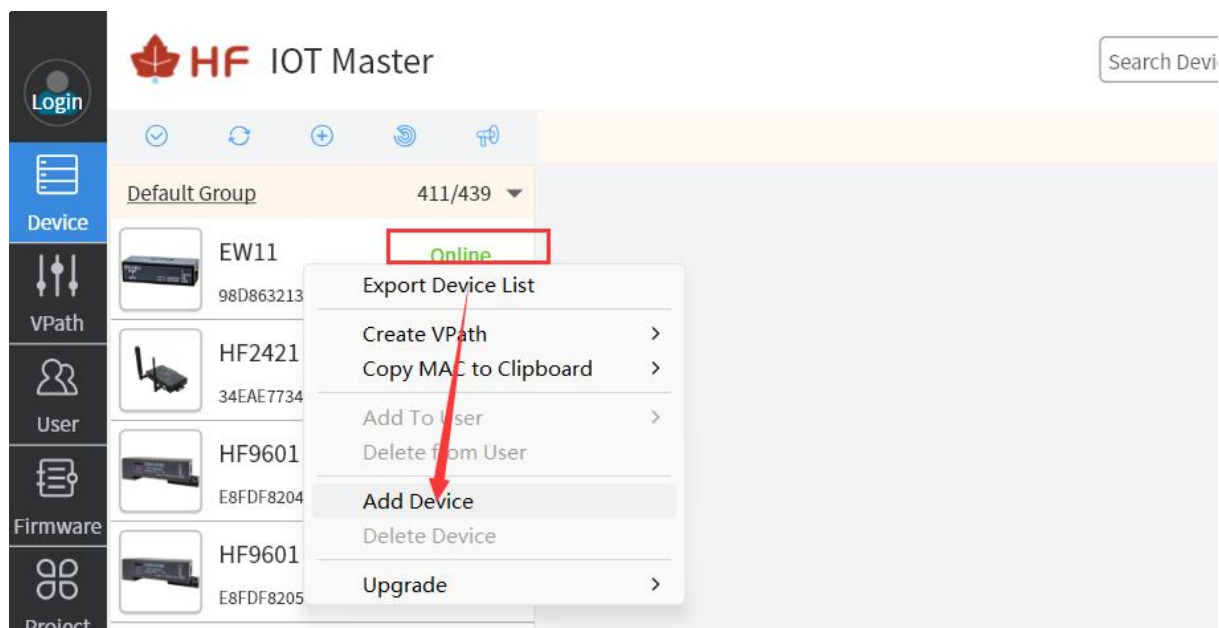
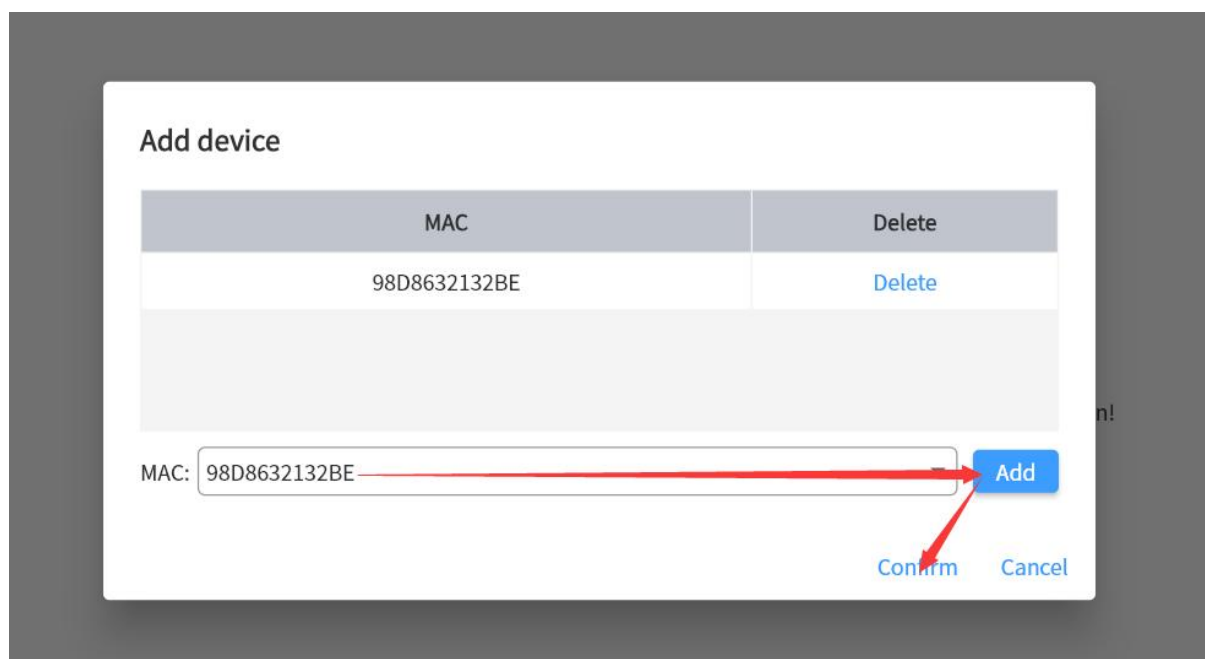
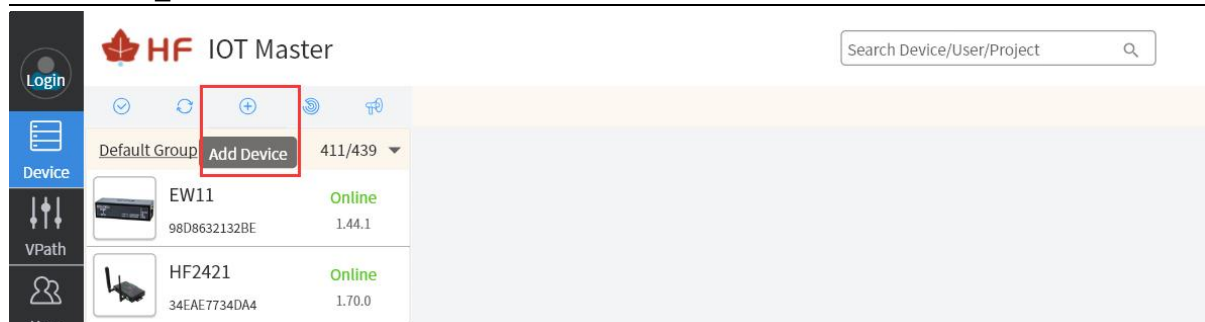
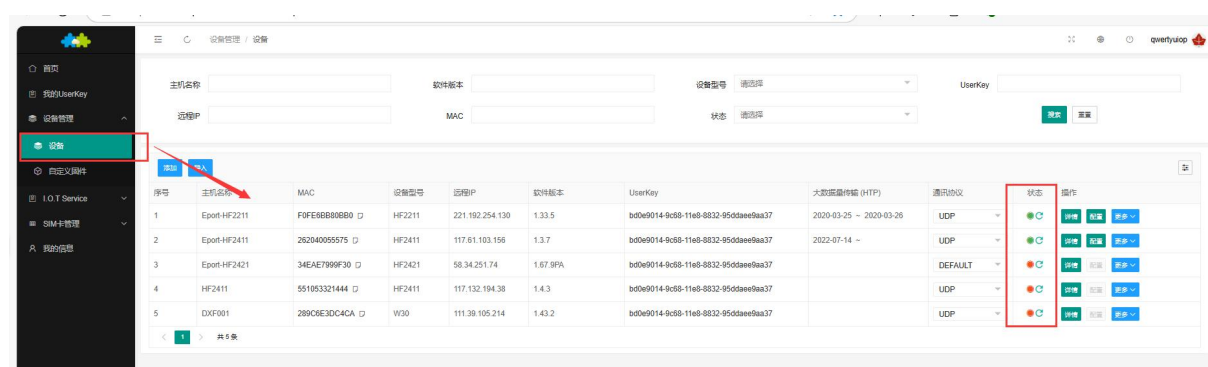
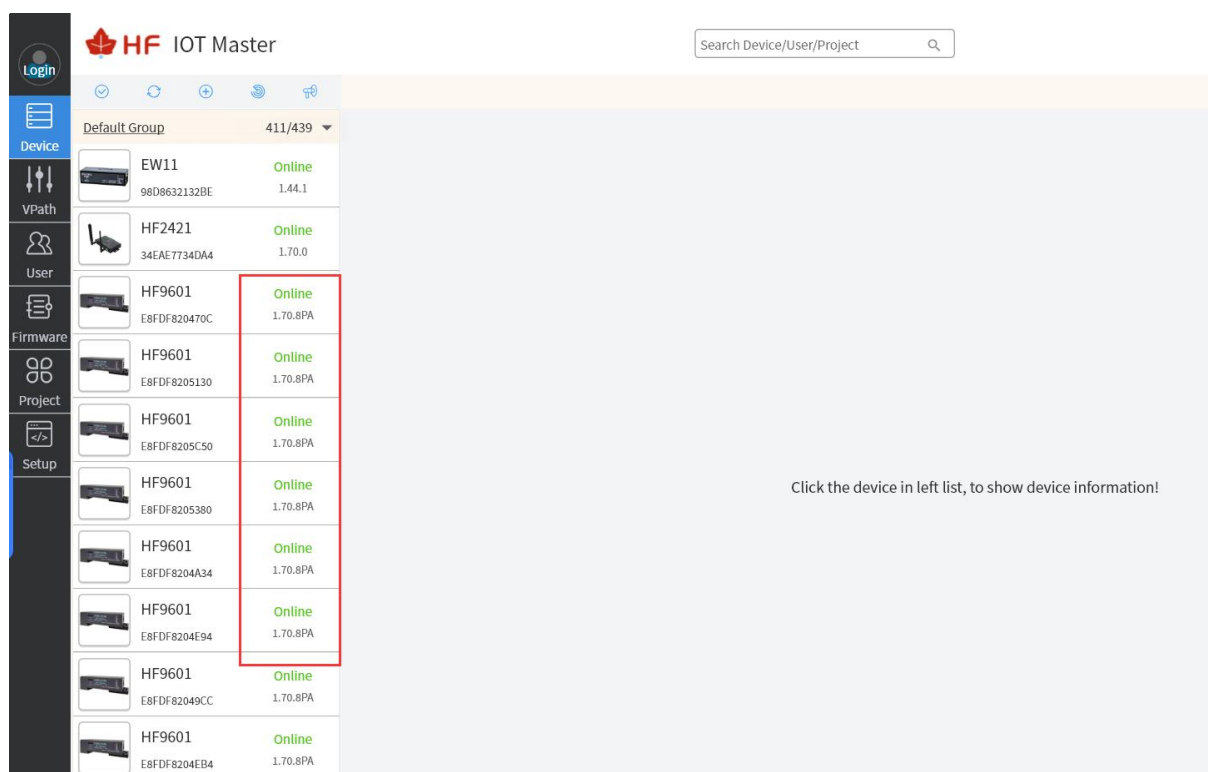


Figure 12. Step-by-step diagram of IOTMaster connecting to the cloud platform

Step3. Click the Add button of the tool and enter the MAC address of the device that needs to be bound to the cloud platform (the device MAC address is posted on the device casing). If there is a local online device in the LAN, you can also add it by directly right clicking on the device, as shown below:



Step4. After adding, you can see the newly added devices on the IOTMaster tool, or you can log in to the platform through the link in the first step, and click on the device management of the platform to check whether the devices have been added to the platform, as shown below.



Remarks:

1. The offline and online status of the remote device depends on whether the device is networked or not, if it is offline, please check whether the device is networked or not first.
2. The device can only be bound to one account, if you add the device and find that it is not bound successfully, please test whether there are other colleagues bound, you can contact HF technical support query!

3.2. Virtual channel function

Such as the following application link diagram, for some need to use the local computer in the communication software and serial/network port device LAN or remote communication scenarios, you can use the IOTMaster tool's virtual channel function, the current support for the virtual channel function, virtual serial port, virtual TCP, virtual NIC (special model support), D2D channel, which the virtual serial port and virtual NIC function, no matter LAN or remote can be used, virtual TCP and D2D channel is generally used in remote state. Virtual serial port and virtual network card functions, no matter LAN or remote can be used, virtual TCP and D2D channel is generally used in the remote state.

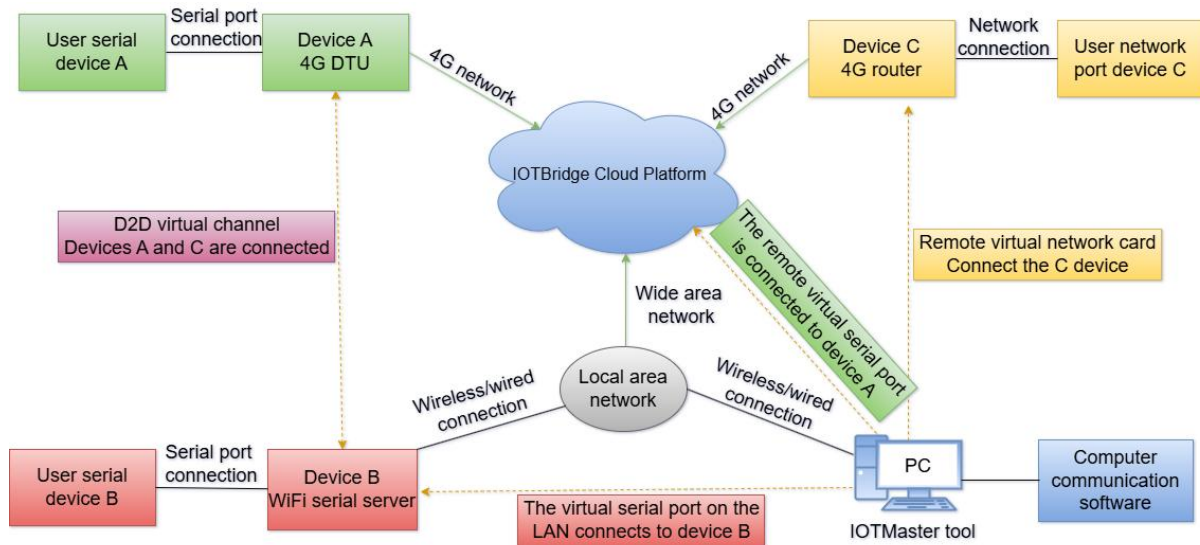


Figure 13. Virtual Channel Application Link Schematic

3.2.1. virtual serial port (computing)

After the IOTMaster tool connects to the device remotely via LAN or IOTBridge cloud platform, you can create a virtual serial port by following the steps below

Step1. Select the device you want to use, and then right-click, you can see the virtual channel function, and then select the virtual serial port, as follows

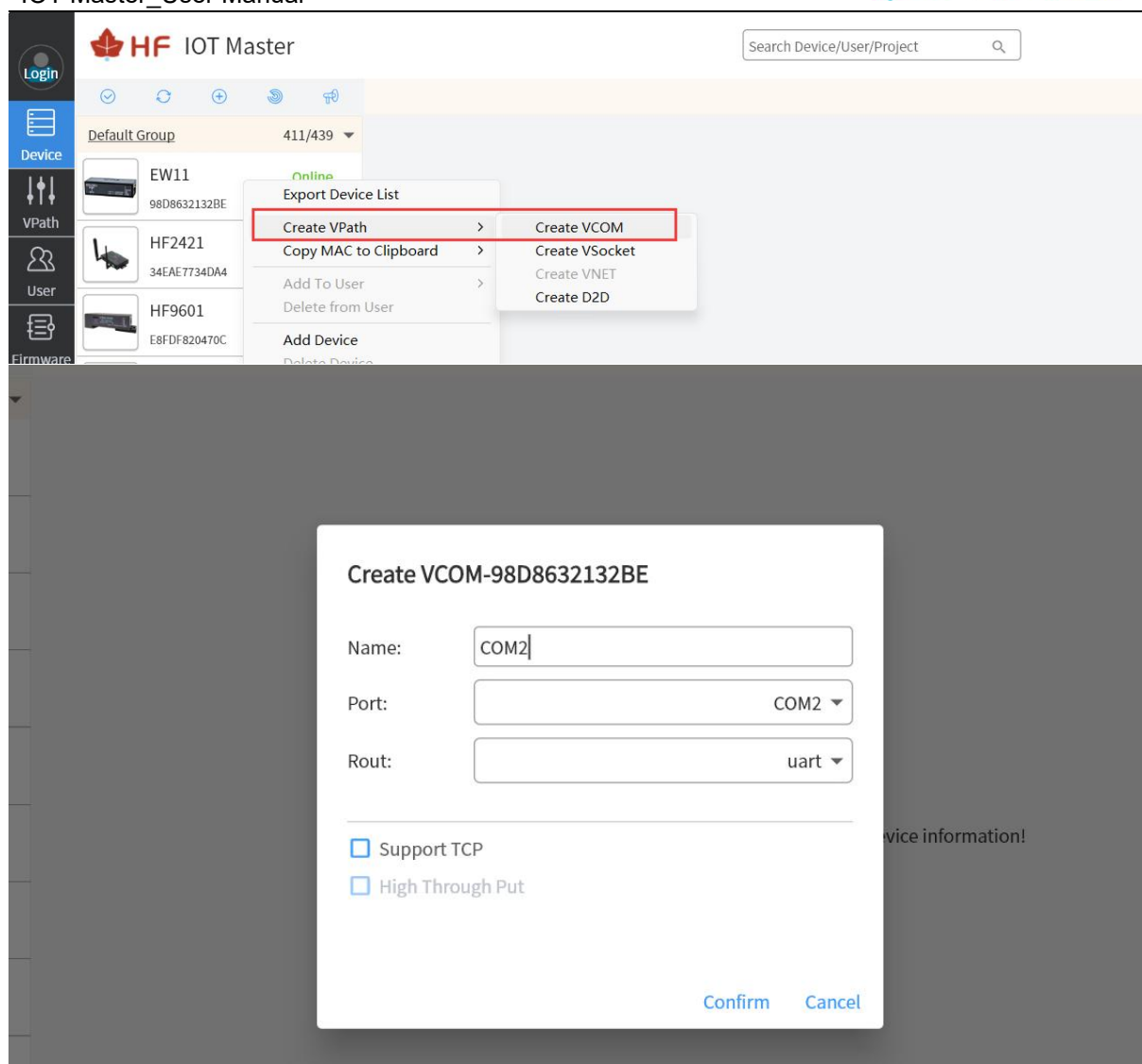
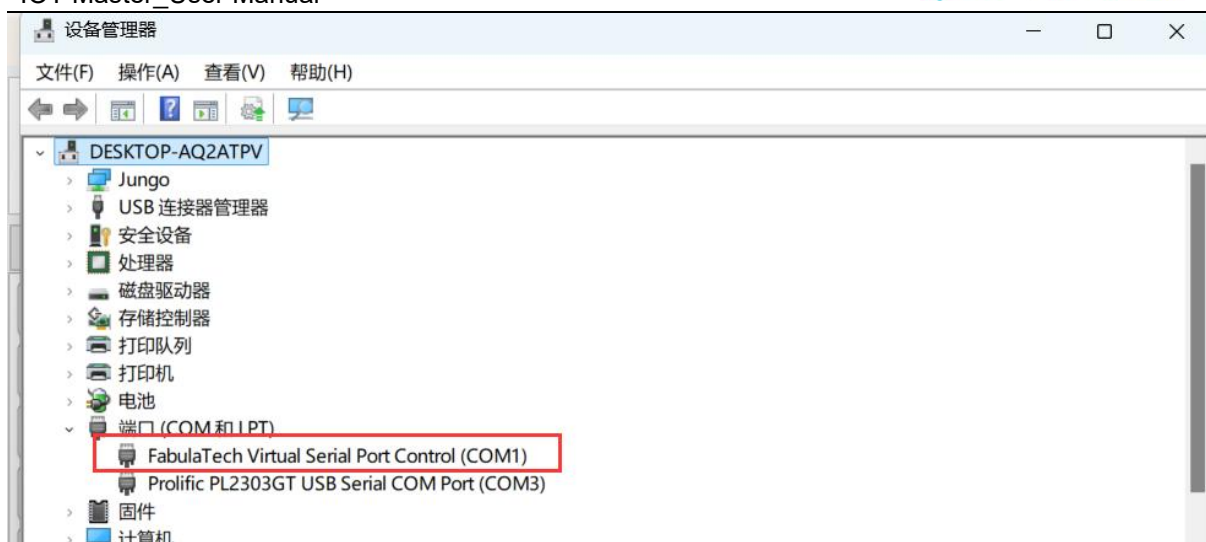


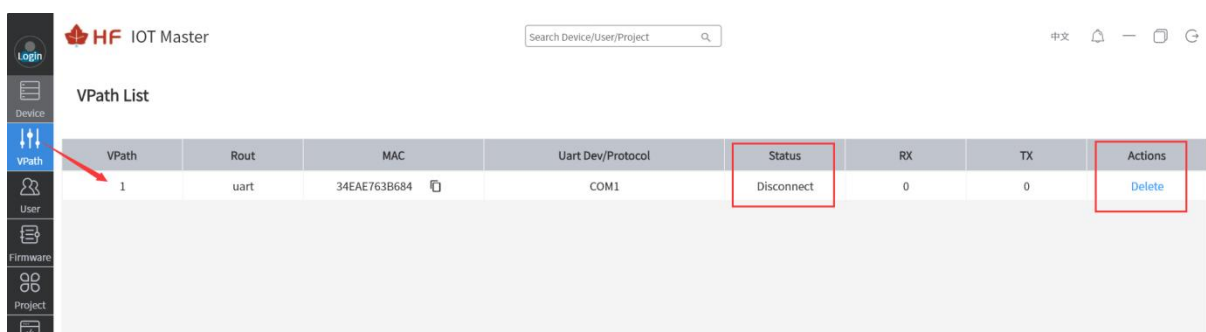
Figure 14. Virtual serial port configuration interface

- Name: Any setting
- Port: Select the COM port number to be created, it needs to be an unused COM port of the computer.
- Route: Dual Serial Device, you can choose to have Serial Port 1 or Serial Port 2

Step2. After clicking Confirm, prompting the creation of successful, and then open the computer device manager, check whether there is a virtual COM port generated (if not, please contact the HF technical support to get the virtual serial port driver)



Step3. Then open the computer serial communication software, connect the virtual COM port, you can communicate with the following serial devices, click on the following interface to view the working status of the virtual serial port, and delete the virtual serial port and so on.



Note: The status needs to be connected to work properly, if it is not connected, you need to delete and re-create it.

3.2.2. virtual TCP channel

When the computer's local software is to use the TCP protocol to communicate remotely with the serial device under the scenario, other cases are generally not used, the specific setup steps are as follows

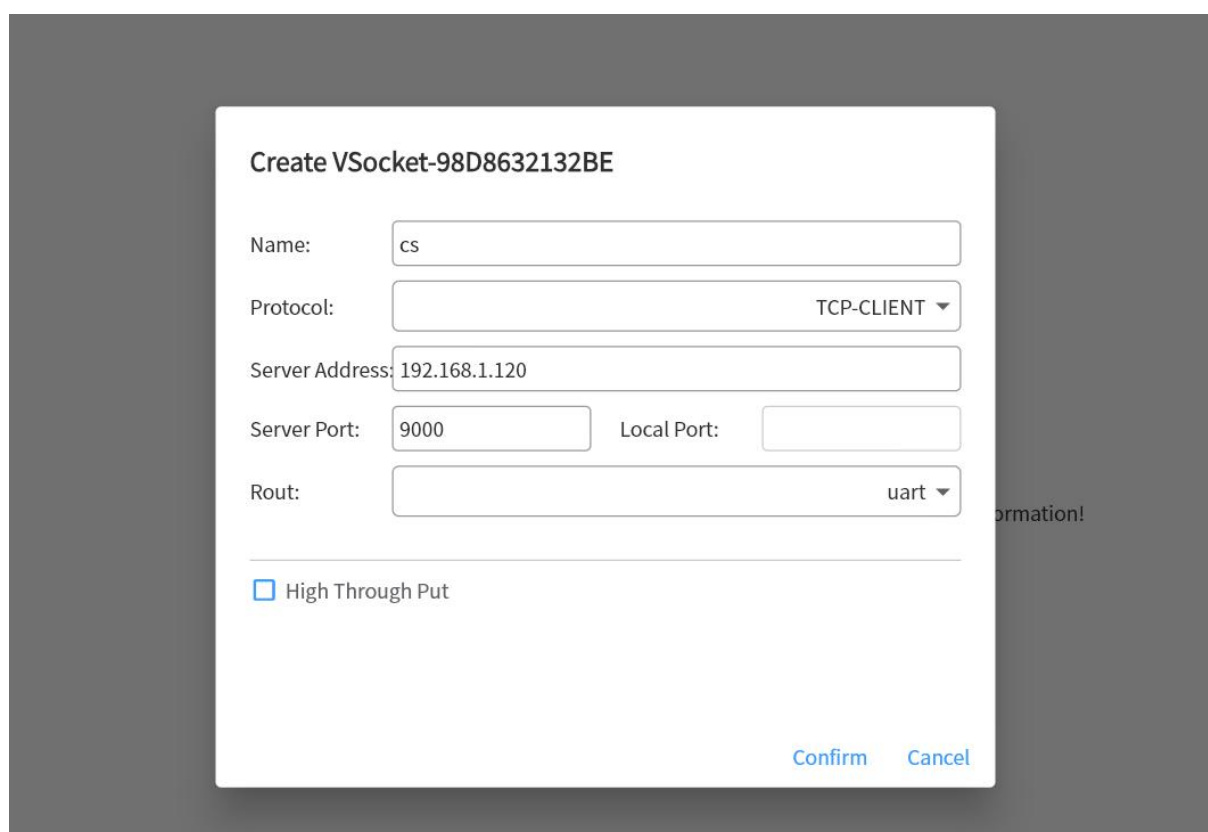
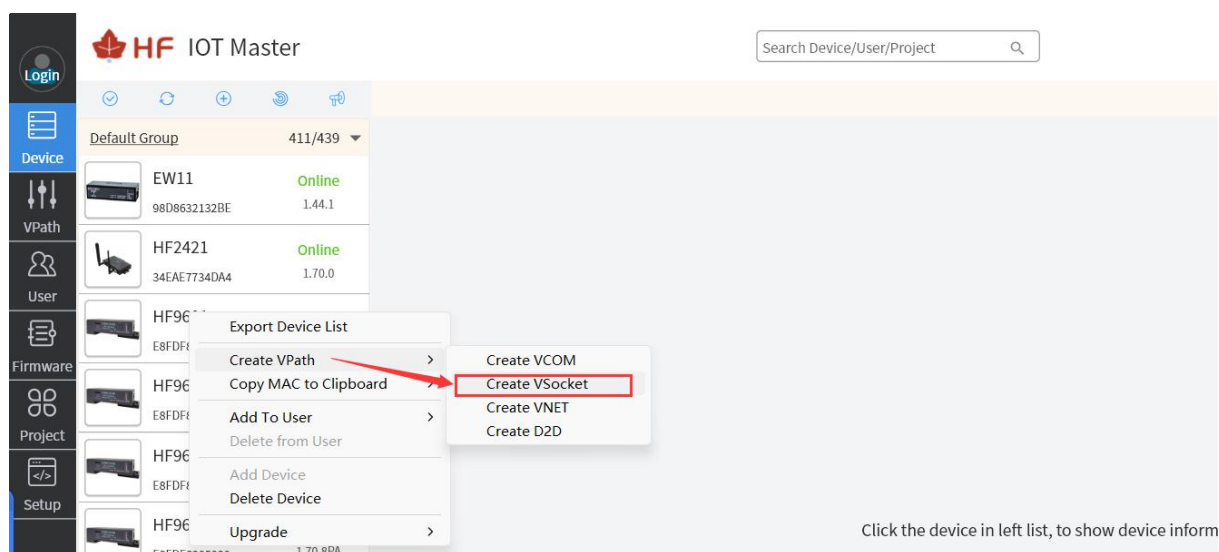


Figure 15. Setting the virtual TCP channel

- Name: Any setting
- Protocol: Support TCP SERVER (server-side) and TCP CLIENT (client-side) two modes, according to the remote computer end of the communication software protocol selection, computer software to do the client, then choose TCP SERVER, computer software to do the server-side, then choose TCP CLIENT mode here.

- Server address and server port: protocol selection TCP CLIENT mode can be configured, fill in the remote communication computer's IP address and computer's TCP communication software listening port
- Local port: protocol selection TCP SERVER mode can be configured, indicating that the device is mapped to the computer's server port number, the computer's TCP communication software connection, connecting the computer's own local network card's IP address and the port to establish a TCP connection
- Route: select the output port of the channel, default output to serial port 1, and the device's serial port 1 bidirectional transmission

3.2.3. D2D channel

This function is applicable to two or more serial devices need long-distance point-to-point or point-to-multipoint communication with each other, the specific configuration is as follows (the premise requires that the devices are normal networking work, and bound to the IOTBridge PTZ can be used):

Step1. After binding the HF devices that need to communicate with each other remotely to the cloud platform, open the IOTMaster tool, select one of the devices that is the master, right-click and select the virtual channel, D2D channel, as shown below:

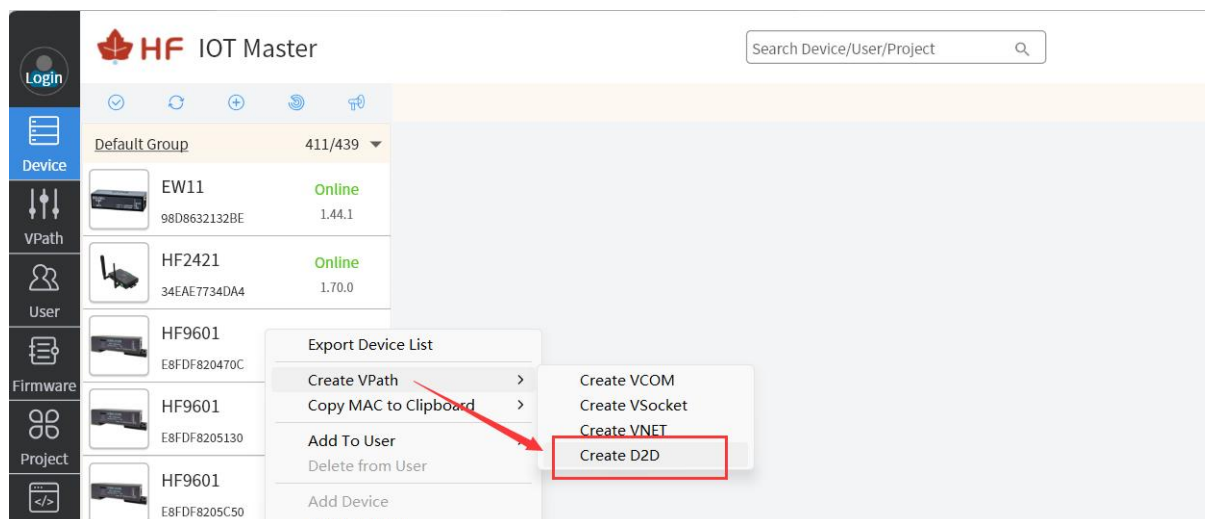
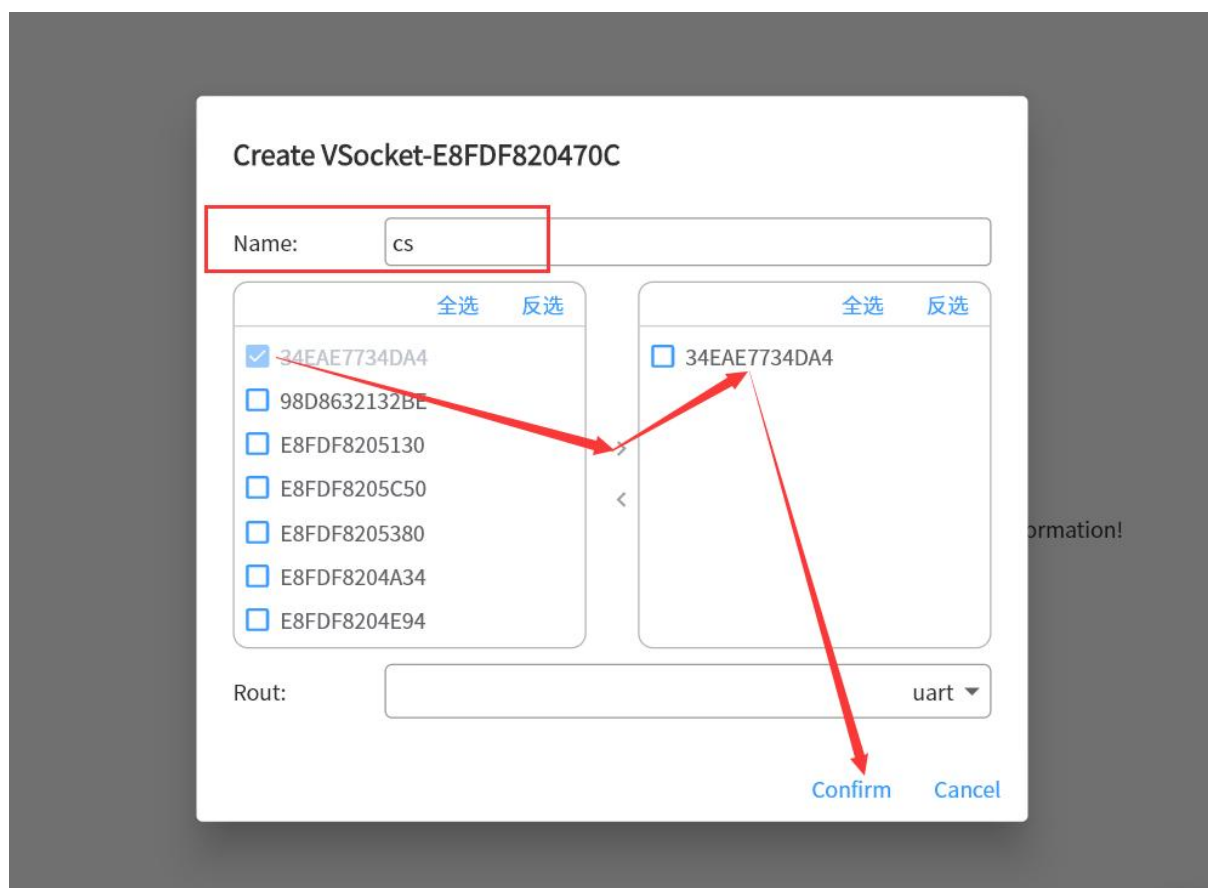


Figure 16. D2D channel configuration page

Step2. Enter the D2D channel setting interface, fill in any name, and then the left selection box, will need to communicate with each other remotely in another device to check the box, point to the middle

of the conversion button, switch to the right selection box, if you need to communicate with multiple devices, you can then check the other devices MAC address and finally click on the Confirm button as shown below:



Step3. created, the two sides of the Han Feng device serial port can communicate with each other, you can directly connect the device to test, you can also use two computers connected to each other to test.

3.2.4. virtual network card

Just function is only supported by HF9606, HF9606W, HF9624, HF9601, which is applicable to the use of computer software to remotely connect to the site of the network port device scenarios (you need to install the virtual network card driver, refer to the first section of the installation operation), the specific configuration steps are as follows:

Step1. After binding the device that supports virtual NIC to the cloud platform, open the IOTMaster tool, right-click on the device, and select Virtual NIC Channel, as shown in the following figure:

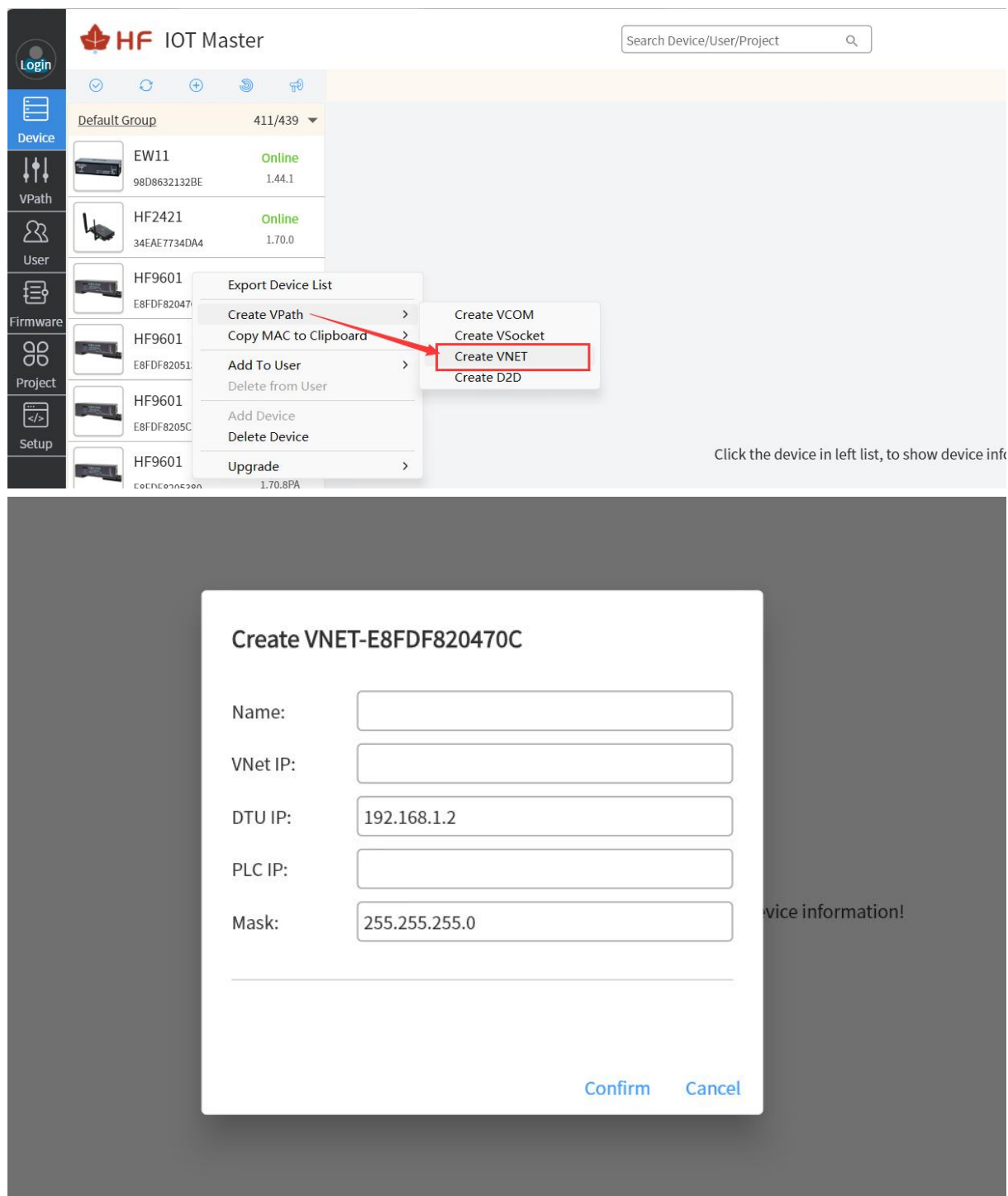


Figure 17. Virtual NIC configuration page

- Name: Arbitrary Configuration
- VNET IP: arbitrary configuration, need to communicate with the remote user network port device in a network segment

- DTU IP: the IP address of the network port of the HF device, which also needs to be in a network segment with the user's NIC device for remote communication, and can be configured inside the System Settings - LAN Settings.
- PLC IP: the IP address of the user's network interface device for remote communication, if there are multiple network interface devices that need to communicate at the same time, you can specify multiple addresses here, separated by English commas, such as 192.168.1.100,192.168.1.101.

3.3. Sub-account management function

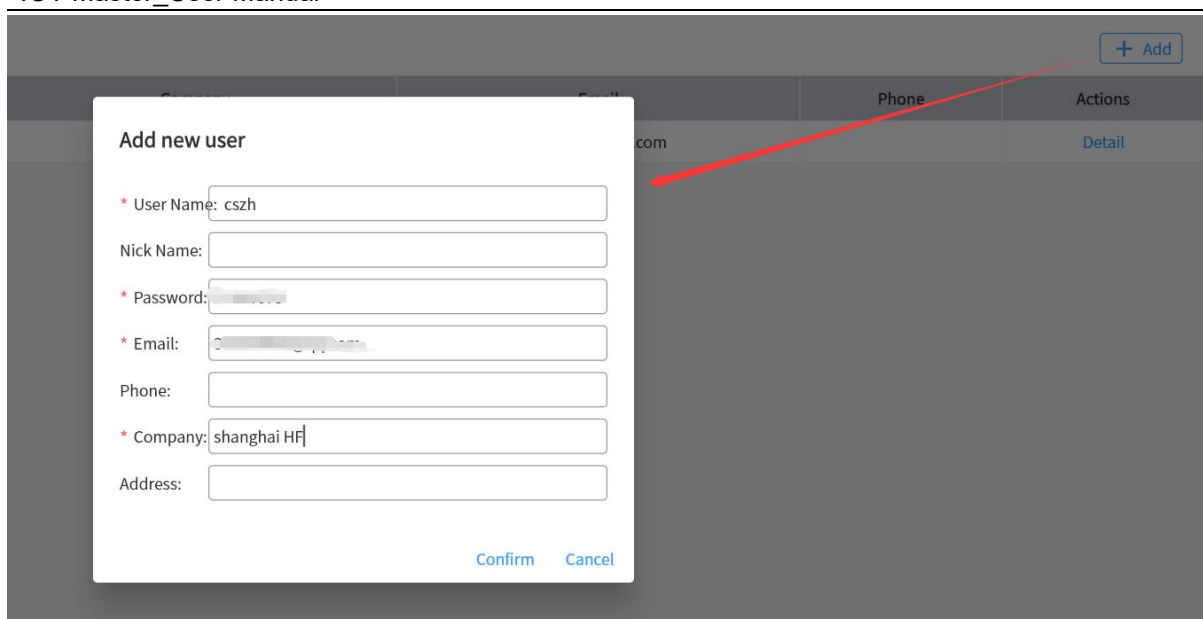
When there are too many devices bound to the platform and need to be managed by separate personnel, you can use the sub-account management function to assign the devices under the lower-level sub-account, and then when the IOTMaster tool logs into the sub-account, it can only manage the devices assigned to the sub-account, as follows:

Step1. After logging in to the platform with the IOTMaster tool, click on the People Management button to enter the following interface

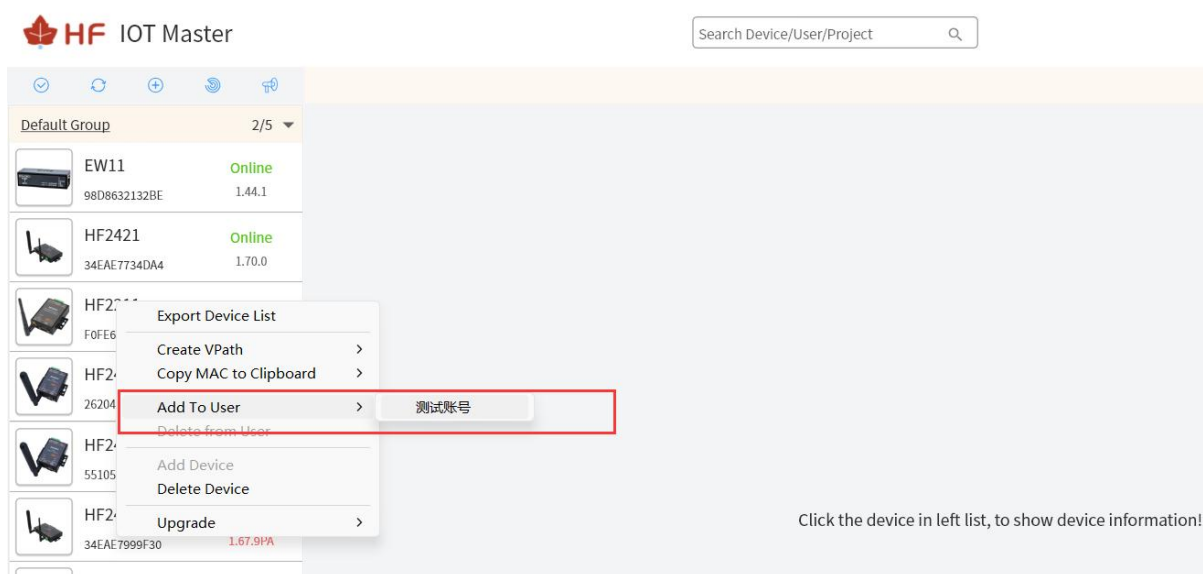


Figure 18. Sub-account Function Interface Diagram

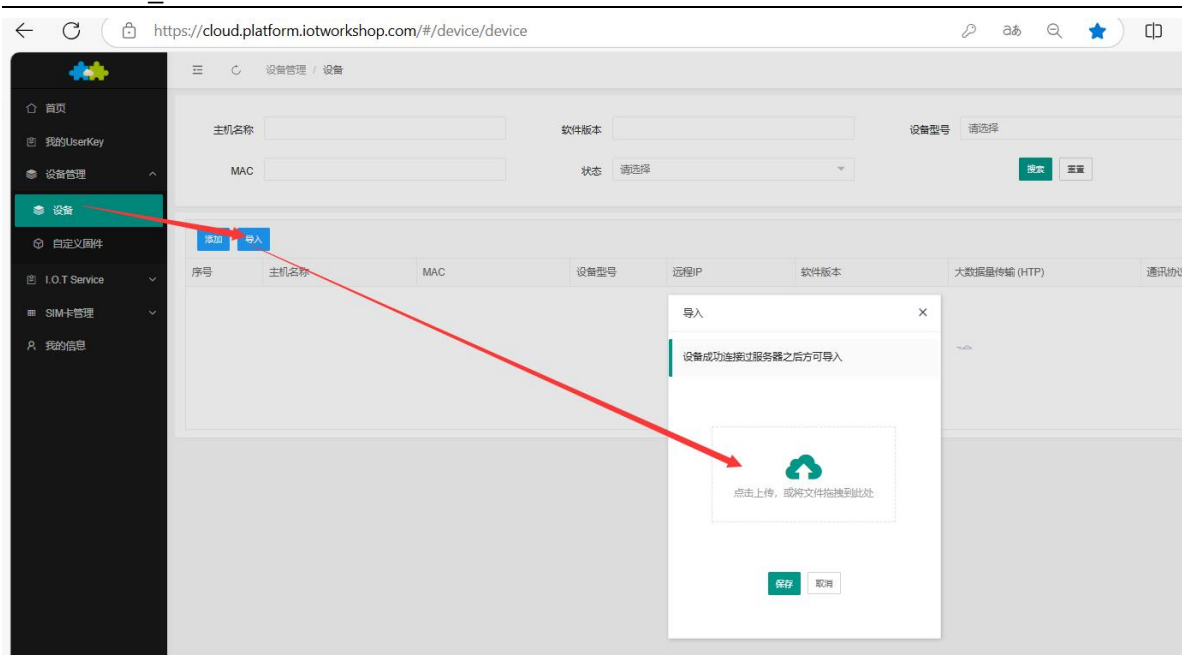
Step2. Click the Add button to add a sub-account, fields marked with * are required.



Step3. Return to the device list, right-click the device you want to assign to the sub-account and select Add to Sub-account, as shown below:



Step4. If there are more devices to be assigned, you can use the sub-account you just added, log in to the cloud platform, and batch import the devices to be assigned to the sub-account through the cloud platform, as shown below:



Note: The bulk import platform requires the use of an XLS form, with each line filled in with the MAC address of the device to be imported.

	A	B	C	D	E
1	F0FE6BB80BB0				
2	262040055575				
3	551053321444				
4					
5					

3.4. Remote upgrade function

When HF devices are on site and need to upgrade the firmware, after binding the device to the IOTBridge cloud platform, you can upgrade the device remotely through the IOTMaster tool (provided that the device needs to be remotely networked and online), the specific operation steps are as follows:

Step1. Open the IOTMaster tool, log in to the cloud platform, then click Firmware Management, click the Add button on the right side to upload the local firmware to the cloud, as shown below:

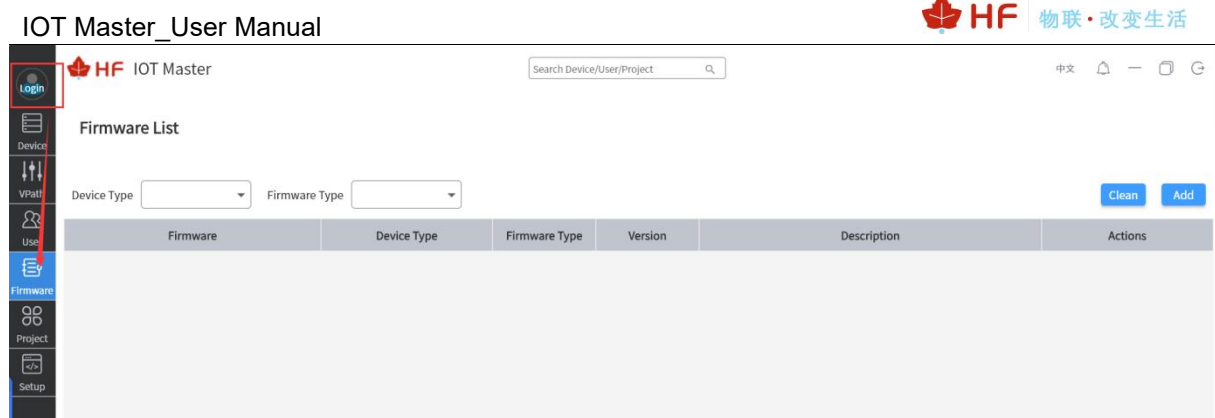
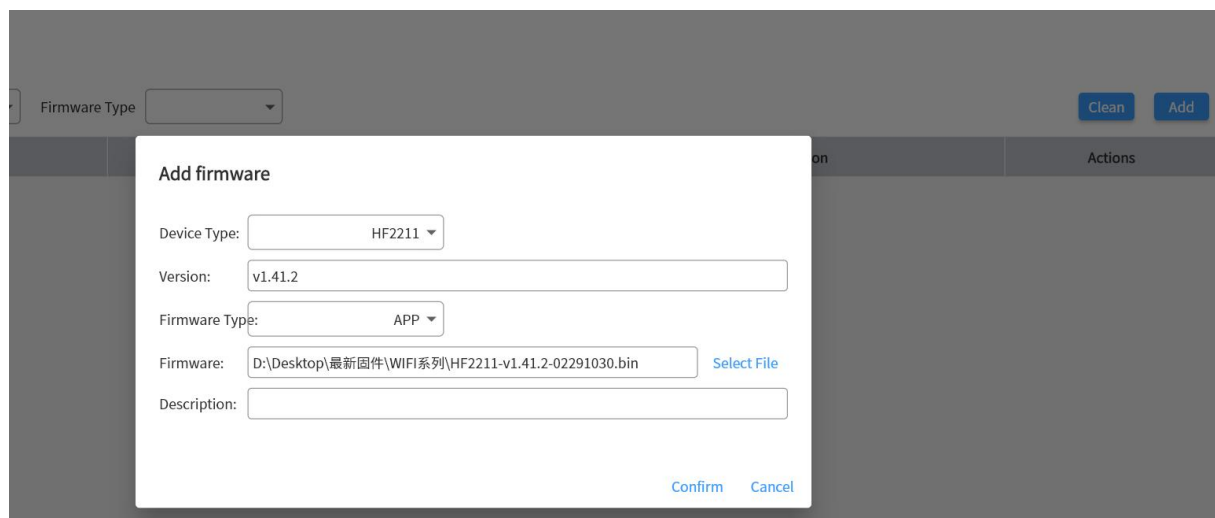
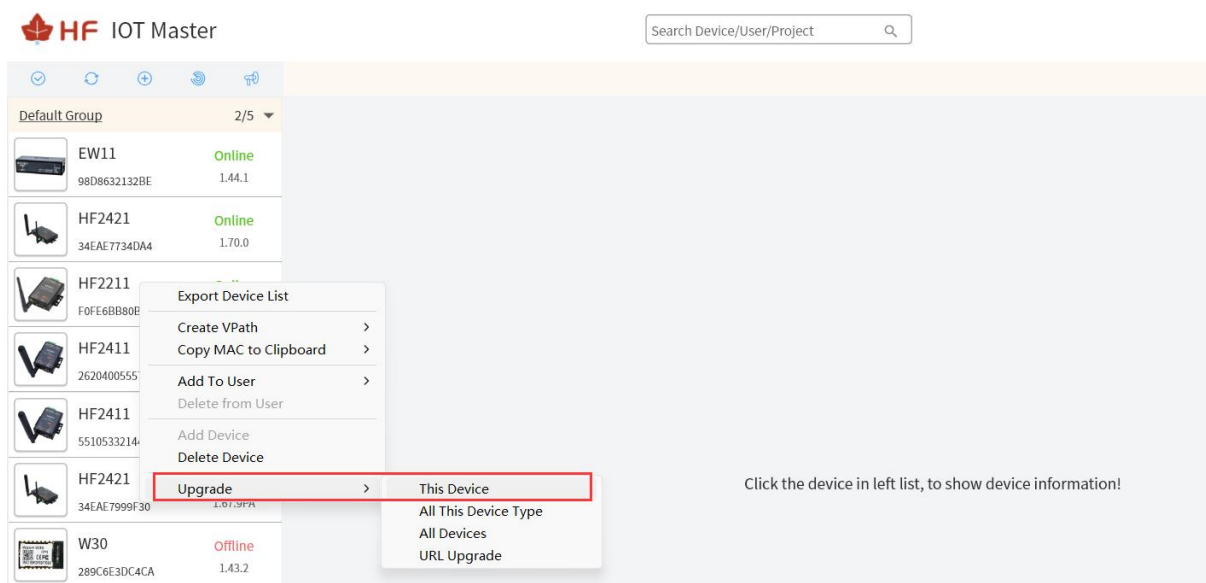


Figure 19. Remote upgrade function interface

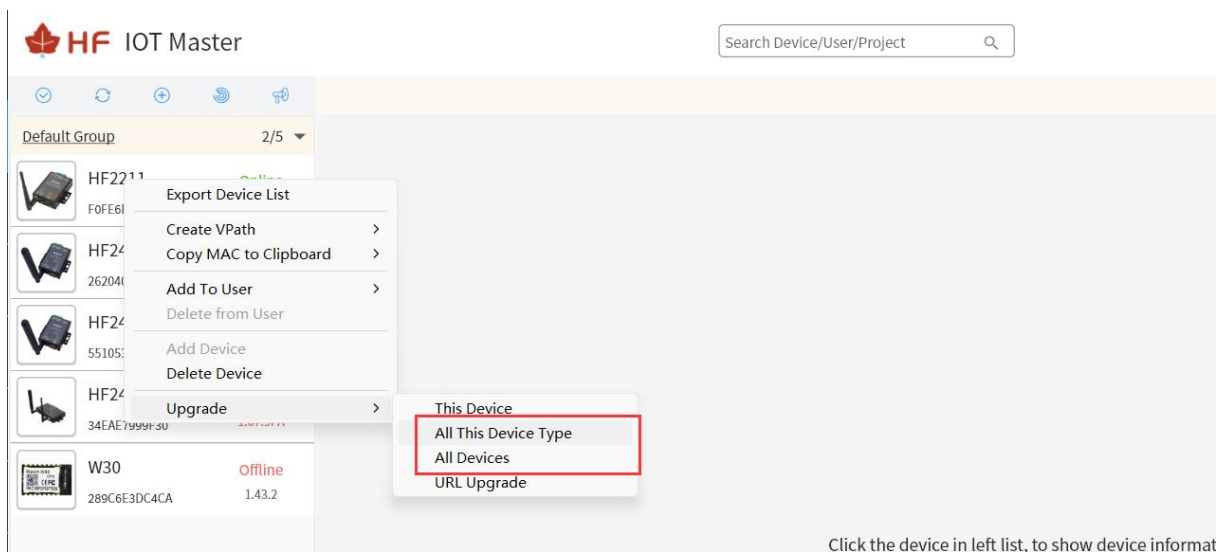


- Device type: select the model of the device to be upgraded
- Version: Enter the version number to be upgraded, e.g. v1.41.1
- Firmware type: upgrade firmware all choose APP can be
- Firmware : Click the Select File button to upload the local upgrade firmware, you can contact HF technical support to get the specific upgrade firmware.

Step2. After uploading the firmware, go to the device list and right click on the device you want to upgrade, then select Upgrade this device, as shown below:



Step3. If you need to upgrade in bulk, you can click Upgrade all devices of this type, or Upgrade all devices.



APPENDIX A: REFERENCES

Address: Building 17, No.1500, Zuchongzhi Road, Pudong New Area, Shanghai, China 201202

Company's official website address: www.hi-flying.com

Business Email: sales@hi-flying.com

Technical support email: support@hi-flying.com

For more information about the products, please visit the website: www.hi-flying.com