HF2211

Serial Server Device User Manual

V 1.0

Overview of Characteristic

- ✧ **MIPS MCU with 4MB Flash and 8MB SRAM. Run on eCos**
- ✧ **Support TCP/IP/Telnet /Modbus TCP Protocol**
- ✧ **Support RS232/RS422/RS485 to Ethernet/Wi-Fi Conversion, Serial Speed Upto 460800 bps**
- ✧ **Support STA/AP/AP+STA Mode**
- ✧ **Support Router or Bridge Network Working Mode.**
- ✧ **Support 10/100M Ethernet Auto-Negotiation**
- ✧ **Support Easy Configuration Through a Web Interface or PC IOTManager Tool**
- ✧ **Support Security Protocol Such AsSSL/AES/DES3**
- ✧ **Support Web OTA Wirelss Upgrade**
- ✧ **Wide DC Input 5~36VDC**
- ✧ **Size: 95x 65 x 25 mm (L x W x H)**
- ✧ **FCC/CE/RoHS Certificated**

TABLE OF CONTENTS TABLE OF CONTENTS

TABLE OF CONTENTS TABLE OF CONTENTS 2
LIST OF FIGURES 4
LIST OF TABLES 6
HISTORY 6
1. PRODUCT OVERVIEW 7
1.1. General Description 7
1.2. Device Features 7
1.3. Device Paremeters 8
1.4. Key Application 9
2. HARDWARE INTRODUCTION 10
2.1. Pins Definition 11
2.2. RS232 Interface 12
2.3. RS485 Interface 13
2.4. RS422 Interface 13
2.5. RJ45 Interface 13
2.6. Mechanical Size 14
2.7. Rail Mounting 14
2.8. Order Information 15
2.9. Package Information 15
3. FUNCTIONAL DESCRIPTION 16
3.1. Basic Network Protocol 16
3.2. Wireless Network 16
3.2.1. AP Network 17
3.2.2. STA Wireless Network 18
3.2.3. AP+STA Wireless Network(Reserved) 18
3.2.4. AP and STA Combination Application(Reserved) 20
3.2.5. IOTManager Software 20
3.2.6. Webpage Configuration 21
3.3. Ethernet Interface Function 22
3.3.1. Ethernet Port with Wi-Fi 22
3.3.2. Ethernet Interface Function(Router) 23
3.3.3. Ethernet Port Function(Bridge) 23
3.4. Working Mode 24
3.4.1. Transparent Transmission Mode 24
3.4.2. TCP Server 25
3.4.3. HTTP Mode 26
3.4.4. Telnetd Mode 28
3.5. AES/DES3/TLS Data Encryption 29
3.6. Keepalive 30
3.7. Timeout 30

3.8. Route Setup **31**
3.9. UART Frame Scheme **32**
3.9.1. UART Free-Frame 32
3.9.2. UART Auto-Frame 32
3.9.3. Tag Function 33
3.10. Modbus Protocol **33**
3.11. Cli Command **34**
3.12. UART Flow Control and RS485 Function **34**
3.13. Firmware Upgrade **35**
3.14. Web Page Function **36**
3.15. Auto-IP Function **36**
3.16. NTP Function **36**
3.17. Heartbeat Function **37**
3.18. UART Fast Config **37**
3.19. Other Function **37**

LIST OF FIGURES

Figure 1. HF2211 Appearance 10
Figure 2. HF2211 Interface 11
Figure 3. HF2211 Side View 12
Figure 4. RS232 Pin Defination(Male/Needle Type) 13
Figure 5. HF2211 RS422 Connection 13
Figure 6. RJ45 Pin Defination 14
Figure 7. HF2211 Mechanical Dimension 14
Figure 8. HF2211 Rail 15
Figure 9. HF2211 Product Order Information 15
Figure 10. HF2211 Software Protocol Structure 16
Figure 11. HF2211 Function Structure 17
Figure 12. General AP Network 17
Figure 13. STA Application 18
Figure 14. AP+STA Wireless Network 19
Figure 15. AP and STA Combination Application 20
Figure 16. Configure Wi-Fi Parameter 21
Figure 17. STA Scan Parameter 21
Figure 18. Configure the Wi-Fi Parameter 22
Figure 19. STA Scan 22
Figure 20. Ethernet Interface Function(AP) 23
Figure 21. Ethernet Interface Function(Router) 23
Figure 22. Ethernet Port Function(Bridge, reserved) 24
Figure 23. Transparent data transmission example 24
Figure 24. TCP Server data transmission example 25
Figure 25. Multi Socket data transmission example 25
Figure 26. Webpage set up multi Socket channel 26
Figure 27. IOT Manager Software Configure 26
Figure 28. Web Page Configure 27
Figure 29. HTTP transmit example 27
Figure 30. IOTManager Software Configure Protocol 28
Figure 31. Web page configure protocol 28
Figure 32. Telnet details example 29
Figure 33. IOTManager Software Configure Encryption 29
Figure 34. Web Page Configure Encryption 30
Figure 35. Web Page Config Keepalive 30
Figure 36. Web Page Configure Timeout 31
Figure 37. Route function setup example 31
Figure 38. Route Function Data Flow Example 32
Figure 39. UART free-frame function 32
Figure 40. UART Auto-Frame Function 33
Figure 41. UART Auto-Frame Function 33
Figure 42. UART Auto-Frame Tag Function 33
Figure 43. UART Modbus Function 34

Figure 44. Cli Command Setting....34
Figure 45. UART Flow Control....34
Figure 46. UART Half Duplex Function....35
Figure 47. External web page....35
Figure 48. Internal web page....35
Figure 49. Web Page Function Setting....36
Figure 50. AUTO-IP Connection....36
Figure 51. IOTManager Tools NTP Setting....37
Figure 52. Cli Command NTP Setting and Query....37
Figure 53. Heartbeat Function....37
Figure 54. Other Function....38

LIST OF TABLES

Table 1. HF2211 Technical Specifications 8
Table 2. HF2211 Interface Definition 12
Table 3. RS232 Interface.....13
Table 4. RJ45 Interface 14

HISTORY

Ed.V1.008-03-2017 First Version

1. PRODUCT OVERVIEW

1.1. General Description

The HF2211 provides RS232/RS485/RS422 interface to Ethernet/Wi-Fi connectivity to web enable any device. The HF2211 integrate TCP/IP controller, memory, 10/100M Ethernet transceiver, high-speed serial port and integrates a fully developed TCP/IP network stack and ECos OS.The HF2211 also includes an embedded web server used to remotely configure, monitor, or troubleshoot the attached device.

The HF2211 using highly integrated hardware and software platform,It has been optimized for all kinds of applications in the industrial control, smart grid , personal medical application and remote control that have lower data rates, and transmit or receive data on an infrequent basis.

The HF2211 integrates all serial to Ethernet functionality with 95 x 65 x 25mm size..

1.2. Device Features

- MIPS MCU with 4MB Flash and 8MB SRAM
- Support ECos Operation System
- Support TCP/IP、UDP、DHCP、DNS、HTTP Server/Client、ARP、BOOTP、AutoIP、ICMP、Telnet、FTP、TFTP、uPNP、NTP、ModbusTCPProtocol
- Support Serial to 10/100M Ethernet Conversion, Serial Speed Upto 460800 bps
- Support 10/100M Ethernet Auto-Negotiation
- Support STA/AP/AP+STA Wireless Working Mode
- Support Easy Configuration Through a Web Interface
- Support Security Protocol Such As SSL/AES/DES3
- Support Web Wireless Upgrade
- Wide 5~36VDC Power Supply
- Size: 95 x 65 x 25mm (L x W x H)
- FCC/CE/RoHS Certificated

1.3. Device Paremeters

Table 1. HF2211 Technical Specifications

Item	Parameters
System Information	
Processor/Frequency	MIPS/320MHz
Flash/SDRAM	4MB/8MB
Operating System	ECos
Ethernet Port	
Port Number	1 RJ45
Interface Standard	10/100 Base-T Auto-Negotiation
Protection	8KV Isolation
Transformer	Integrated
Network Protocol	IP，TCP，UDP，DHCP，DNS，HTTP Server/Client，ARP, BOOTP, AutoIP，ICMP，Web socket, Telnet, FTP,TFTP, uPNP, NTP, SNMP,Modbus TCP
Security Protocol	SSL v3 AES 128Bit DES3
IPV6 Support	Plan to Support
Wi-Fi Interface	
Standard	802.11 b/g/n
Frequency	802.11b, 802.11g , 802.11n-HT20:2412-2462MHz;802.11n-HT40:2422-2452MHz
Network Mode	STA/AP/STA+AP
Security	WEP/WPAPSK/WPA2PSK
Encryption	WEP64/WEP128/TKIP/ AES
Output Power	802.11b:10±0.5dBm 802.11g:6±0.5dBm 802.11n-HT20:4.5±0.5dBm 802.11n-HT40:4.5±0.5dBm
Antenna	3dBi Stick Antenna
Serial Port	
Port Number	1 RS232/RS485/RS422
Interface Standard	RS232: DB9 RS485/RS422: 5.08mm connector Support one channel of RS232/RS422/RS485.
Data Bits	8
Stop Bit	1,2
Check Bit	None,Even,Odd,Space,Mark
Baud Rate	TTL: 600 bps~460800 bps
Flow Control	No Flow control Hardware RTS/CTS、DSR/DTR Software Xon/ Xoff flow control
Software	

Web Pages	Http Web Configuration Customization of HTTP Web Pages
Configuration	Web CLI XML import Telnet IOTManager PC Software
Firmware Upgrade	Web
SDK For Dev.	Plan to Provide
Basic Parameter	
Size	95 x 65 x 25 mm
Operating Temp.	-45 ~ 70°C
Storage Temp.	-45 ~ 105°C, 5 ~ 95% RH（no condensation）
Input Voltage	5~36VDC
Working Current	~200mA
Power	<700mW
Other Information	
Certificate	CE, FCC, RoHS

1.4. Key Application

The HF2211 device connects serial device to Ethernet networks using the TCP/IP protocol:

- Remote equipment monitoring
- Asset tracking and telemetry
- Security Application
- Industrial sensors and controls
- Medical devices
- ATM machines
- Data collection devices
- Universal Power Supply (UPS) management units
- Telecommunications equipment
- Data display devices
- Handheld instruments
- Modems
- Time/attendance clocks and terminals

2. HARDWARE INTRODUCTION

The HF2211 unit is a complete solution for serial port device connecting to network. This powerful device supports a 10/100BASE-T Ethernet connection, a reliable and proven operating system stored in flash memory, an embedded web server, a full TCP/IP protocol stack,and standards-based (AES) encryption.

Through Ethernet cable connect router with HF2211 serial server for data transfer, which makes the data transformation very simple. HF2211 meet EMC Class B security level,It can pass every countries relevant certification test

Figure 1. HF2211 Appearance

2.1. Pins Definition

Figure 2. HF2211 Interface

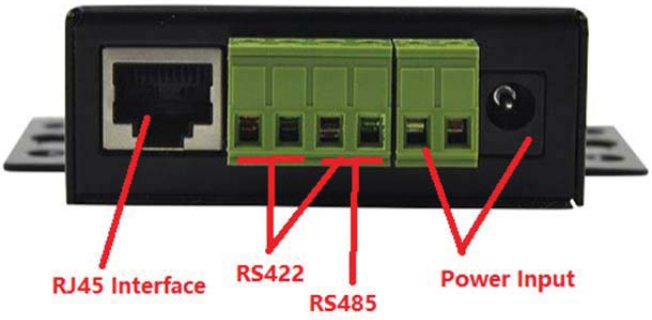

Figure 3. HF2211 Side View

Table 2. HF2211 InterfaceDefinition

Function	Name	Description
External Interface	RJ45 Ethernet	10/100M Ethernet
	SMA	Antenna SMA Interface
	RS232	RS232 Communication
	RS485/RS422	RS485/RS422 Communicaton
	Earth	Protect Earth
	DCInput	DC Power 5~36V
LED Indicator	Power	Internal Power Supply Indicator On：Power is OK Off：Power is NG
	Link	Connection Indicator On: Ethernet connection is OK Off: No Ethernet connection
	Active	Data transfer Indicator On：Data is transfering. Off：No data transfer
Button	Reset	Reset device
Switch	Protect	Device parameter protect On: Enable protect, working parameter can not be modified. Off: Disable protect.

2.2. RS232 Interface

Device serial port is male(needle), RS232 voltage level(can connect to PC directly), Pin Order is cosistent with PC COM port. Use cross Cable connected with PC(2-3 cross, 7-8 cross, 5-5 direct, 7-8 no connection), see the following table for pin defination.

Figure 4. RS232 Pin Defination(Male/Needle Type)

Table 3. RS232 Interface

Pin Number	Name	Description
2	RXD	Receive Data
3	TXD	Send Data
5	GND	GND
7	RTS	Request to Send
8	CTS	Clear to Send

2.3. RS485 Interface

RS485 use two wire links, A(DATA+), B(DATA-). Connect A(+) to A(+), B(-) to B(-) for communication.

The RS485 interface support maximum 32 485 device, special hardware version can support max 255 device. The cable maximum length is 1200 meters. Need to add 120Ohm terminal resistor for over 300 meters.

2.4. RS422 Interface

RS422 interface use T+/T-/R+/R-, cross connect to device as the following picture.

Name	Description
TX+	Transfer Data+
TX-	Transfer Data-
RX+	Receive Data+
RX-	Receive Data-

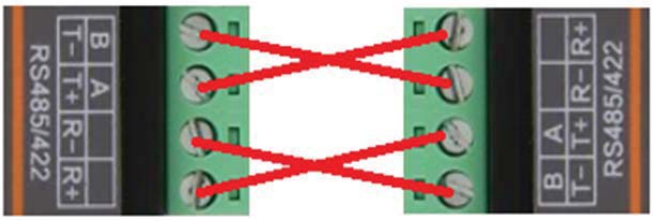

Figure 5. HF2211 RS422 Connection

2.5. RJ45 Interface

Ethernet port is 10M/100M adaptive, support AUTO MDI/MDIX which means it support direct connecting to PC with Ethernet cable.

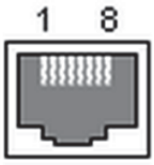

Figure 6. RJ45 Pin Defination

Table 4. RJ45 Interface

Pin Number	Name	Description
1	TX+	Transfer Data+
2	TX-	Transfer Data-
3	RX+	Receive Data+
4	PHY-VCC	Transformer Tap Voltage
5	PHY-VCC	Transformer Tap Voltage
6	RX-	Receive Data-
7	N.C.	None Connect
8	N.C.	None Connect

2.6. Mechanical Size

The dimensions of HF2211 are defined as following picture (mm):

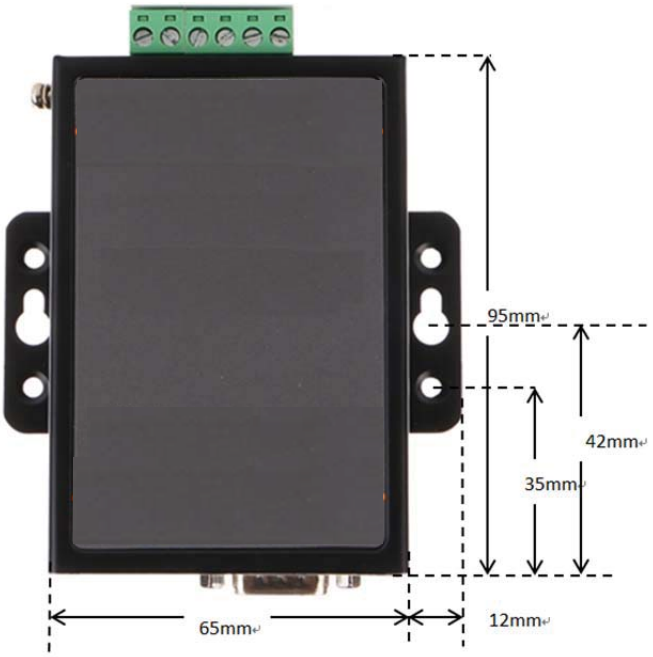

Figure 7. HF2211 Mechanical Dimension

2.7. Rail Mounting

We support to provide rail for mounting as the following picture.

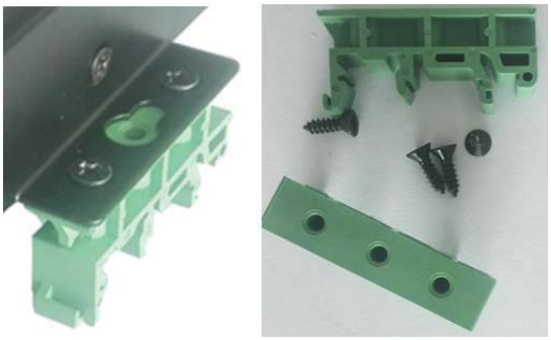

Figure 8. HF2211 Rail

2.8. Order Information

Base on customer detailed requirement, HF2211 provide different configuration version, Details as below:

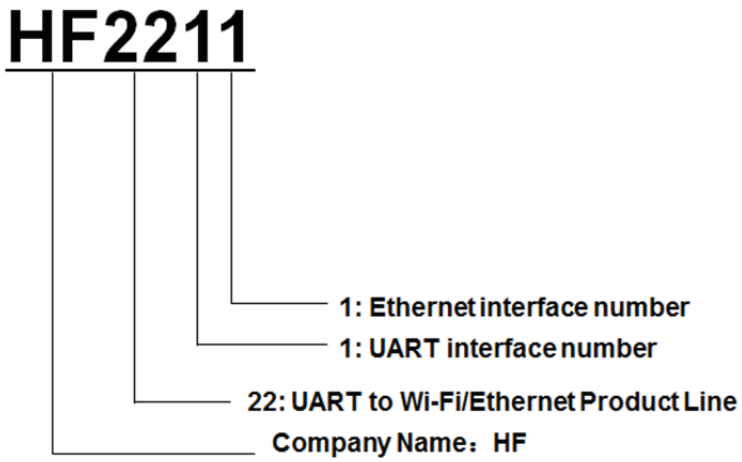

Figure 9. HF2211 Product Order Information

2.9. Package Information

1 * HF2211

1 * RS232 cable

1 * Ethernet cable

1 * SMA Antenna

3. FUNCTIONAL DESCRIPTION

The HF2211 has the following feature:

- Connect customer's device with PC or server via TCP/UDP/Telnet.
- Contain a HTTP web server allow user to configure through browser with PC or phone.
- Have multi-programmable I/O pins used to monitor or control device directly.

3.1. Basic Network Protocol

The HF2211 device uses the IP address for network communications. If uses the TCP to assure that no data is lost or duplicated. If use UDP to assure that data can be fast and effective to Destination address.

Supported protocols include:

- ARP, UDP, TCP, ICMP, DHCP, Telnet, DHCP, HTTP Server/Client Web socket
- Telnet command configuration, Web server configuration
- Security Protocol: TLS, AES, DES3encryption

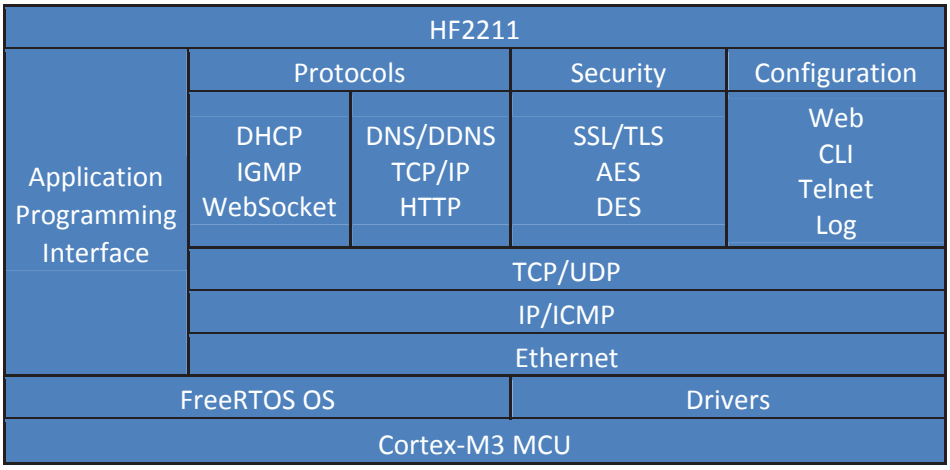

Figure 10. HF2211 Software Protocol Structure

3.2. Wireless Network

HF2211 can be set as a wireless STA and AP as well. And logically, it supports two wireless interfaces, one is used as STA and the other is AP. Other STA devices can join into the wireless network through AP interface. So the it can provide flexible networking method and network topology. Functions is as follow:

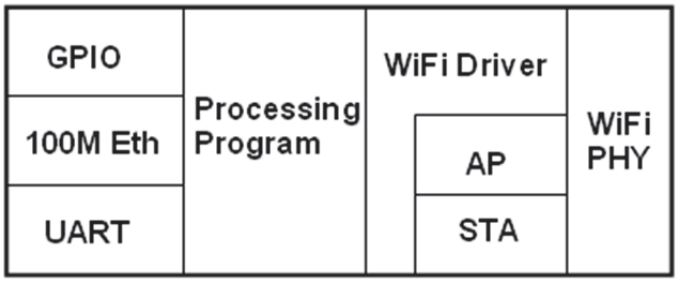

Figure 11. HF2211 Function Structure

<Introductions>

AP: Wireless access point which is the central joint. Usually, wireless router is a AP, other STA devices can connect with AP to join the network.

STA: Wireless station which is terminal of a wireless network. Such as laptop and pad etc.

3.2.1. AP Network

HF2211 can construct a wireless network as AP. All the STA devices will consider the AP as the centre of the wireless network. The mutual communication can be transponded by AP,shown as follow:

Figure 12. General AP Network

3.2.2. STA Wireless Network

Take the following picture as example. When router works in AP mode, HF2211 connects to the user’s devices by RS232/RS485 interface. In this topology, the whole wireless network can be easily stretched.

r

Figure 13. STA Application

3.2.3. AP+STA Wireless Network(Reserved)

HF2211 can support AP+STA method. It can support AP and STA interface at the same time.Shown as follow:

Figure 14. AP+STA Wireless Network

In this picture, HF2211 open the AP+STA function and the STA interface can be connected to the remote server by the router. Similarly, the AP interface can also be used. Phone/PAD can be connected to the AP interface and to control the serial devices or set itself.

Through AP+STA function, it is convenient to use Phone/PAD to monitor the user’ s devices and not change its original settings.

Through AP+STA function, it is convenient to configure the product.And it solves the problem that the formal product can only configure by serial port.

Notes that:

When the AP+STA function is opened, the STA interface needs to connect to other router. Otherwise, STA interface will endlessly scan the router information nearby. When it is scanning, it will bring bad effects to the AP interface, like losing data etc.

3.2.4. AP and STA Combination Application(Reserved)

Figure 15. AP and STA Combination Application

Notes:

AP and STA parts must set to the different sub-network.

3.2.5. IOTManager Software

Open the IOTManager after connect to the AP hotspot generated by HF2211 and configure the parameter.

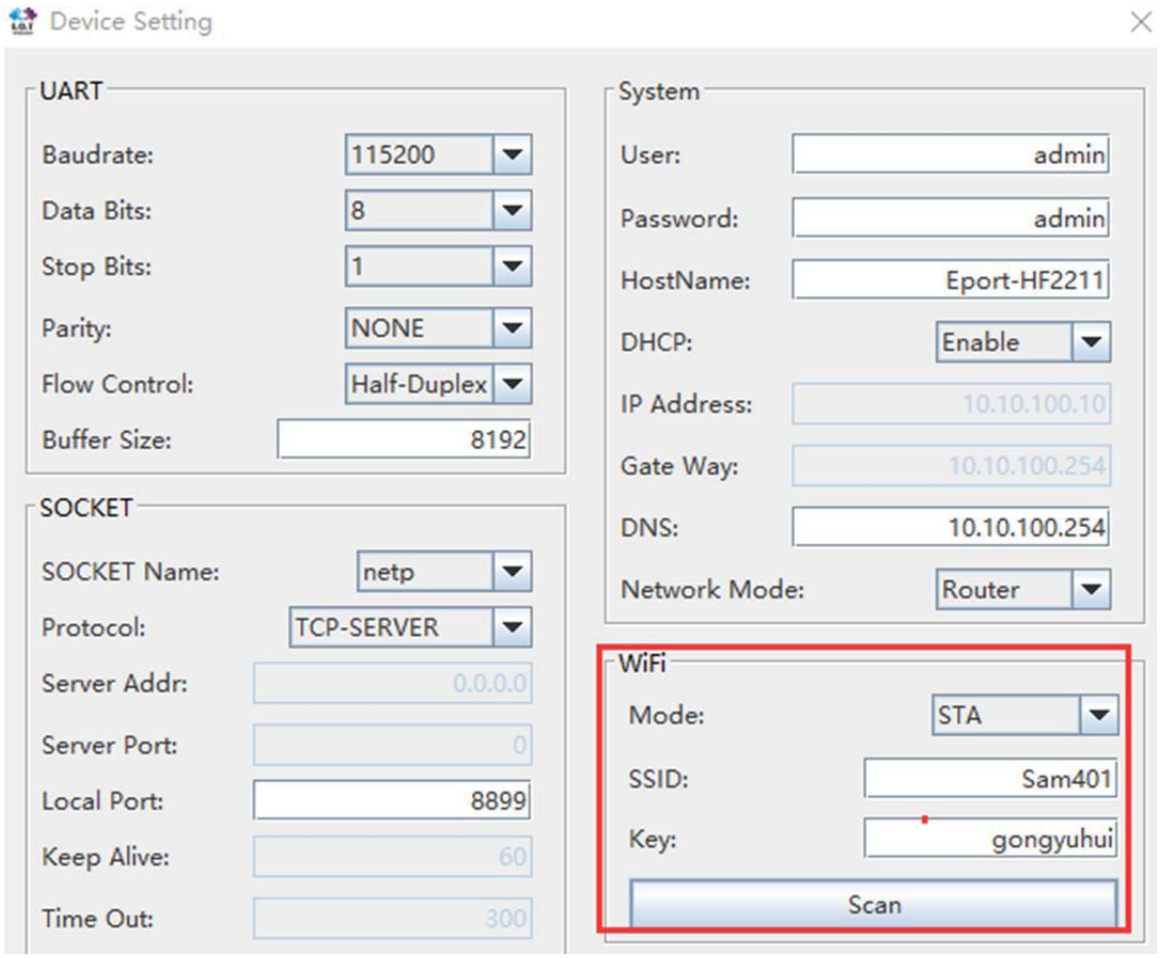

Figure 16. Configure Wi-Fi Parameter

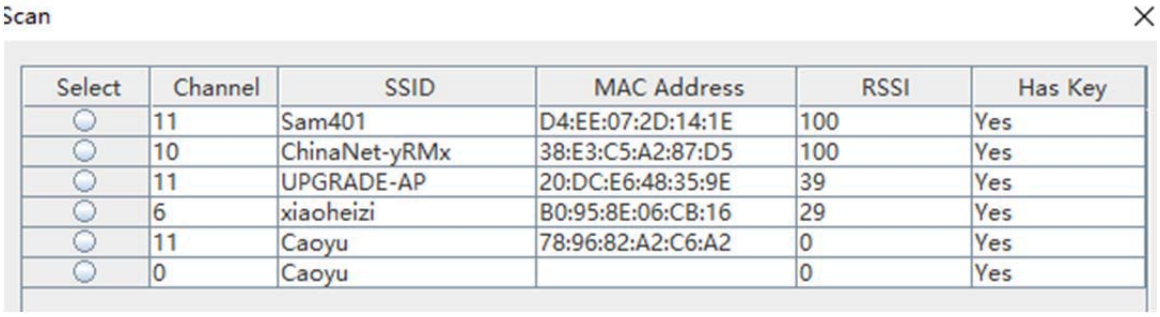

Figure 17. STA Scan Parameter

3.2.6. Webpage Configuration

Use PC to connect with HF2211 through its AP hotspot or Ethernet connection. Type the default IP(10.10.100.254, default username and password: admin/admin) to login the webpage to configure the parameter.

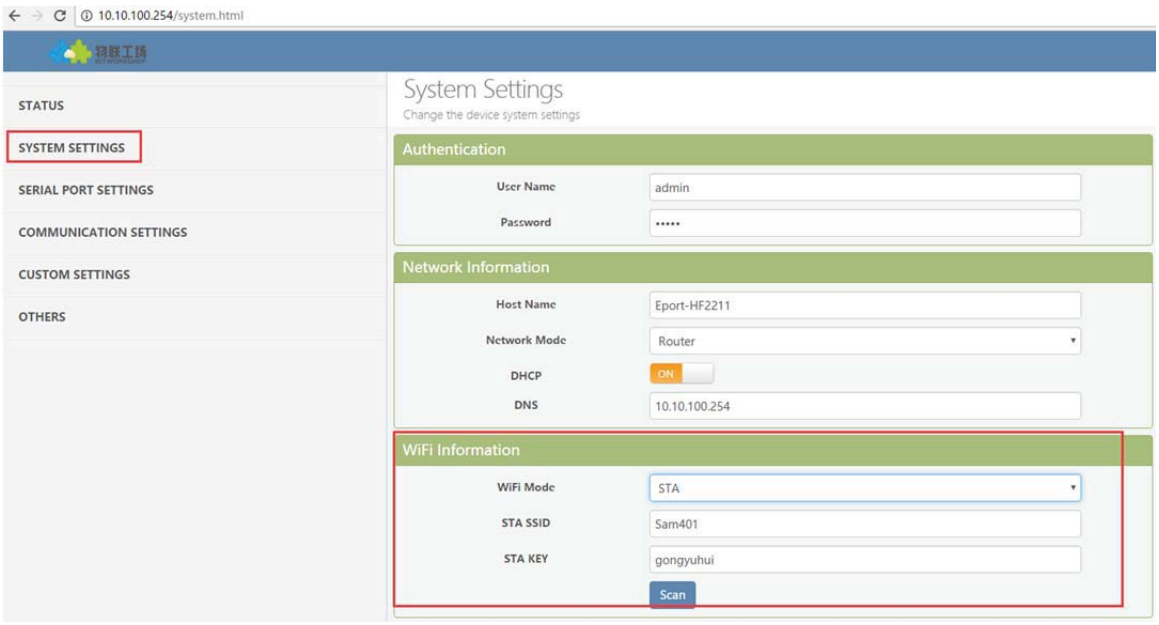

Figure 18. Configure the Wi-Fi Parameter

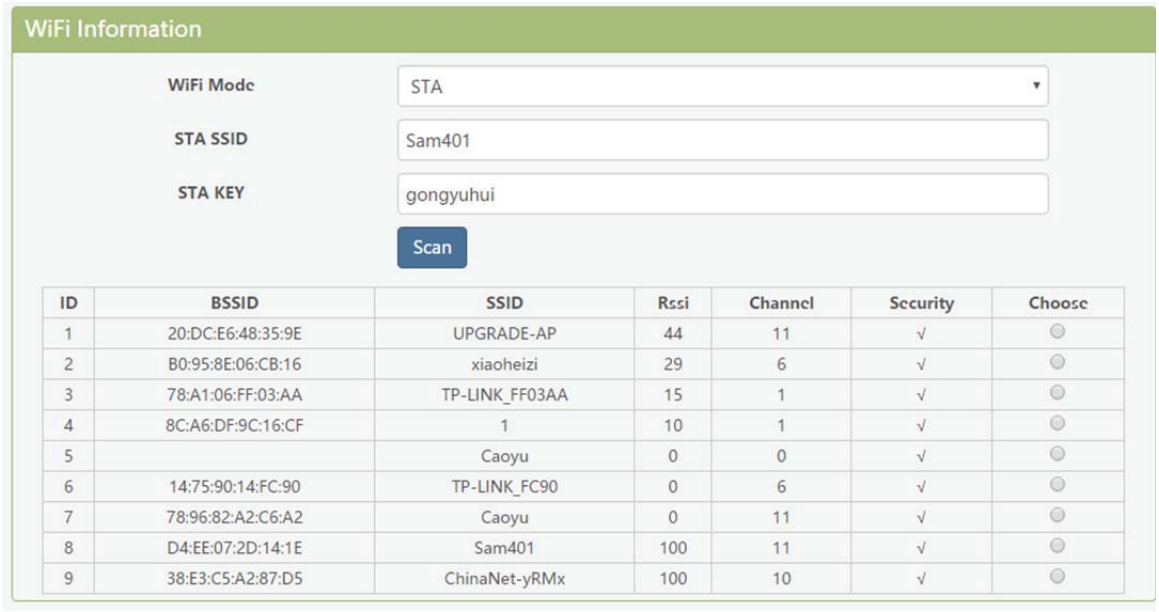

Figure 19. STA Scan

3.3. Ethernet Interface Function

HF2211 provides with a 100M Ethernet interface. Through the 100M Ethernet interface, user can achieve the connection among WIFI, serial port and Ethernet port.

3.3.1. Ethernet Port with Wi-Fi

Figure 20. Ethernet Interface Function(AP)

HF2211 servers as AP and generate a central network. The IP addresses of all the devices and module's are in the same network segment.

3.3.2. Ethernet Interface Function(Router)

Figure 21. Ethernet Interface Function(Router)

The HF2211 device Ethernet interface work in router mode. When connect to router, it will get IP address from router(as picture 192.168.1.100).The product itself generate a subnet(10.10.100.254 default). The device from the Ethernet interface is assigned with IP address by module (10.10.100.101).Then the device and the PC1 are in the same subnet for network communication. A connection fro PC1 to PC2, but PC2 cannot actively connect to PC1.

3.3.3. Ethernet Port Function(Bridge)

Figure 22. Ethernet Port Function(Bridge, reserved)

The HF2211 device Ethernet interface work in router mode. When connect to router, it will get IP address from router(as picture 192.168.1.101). AT the whole network, the product is like an invisible device. PC1 ad PC2 can communicated mutually without any constraint. But if product needs to connect with other devices, it needs set LAN IP address(192.168.1.10 as picture)

Notes:

Webpage, IOTManager, or Cli command to set working mode, by default is router mode.

3.4. Working Mode

3.4.1. Transparent Transmission Mode

The HF2211 Device support transparent transmission mode of serial interface, In this mode, User only need to set some necessary parameter(network communication parameter). After power on, the device can auto connect to default socket setting(TCP/UDP). Use web page or PC IOTManager software to set commucation parameter.

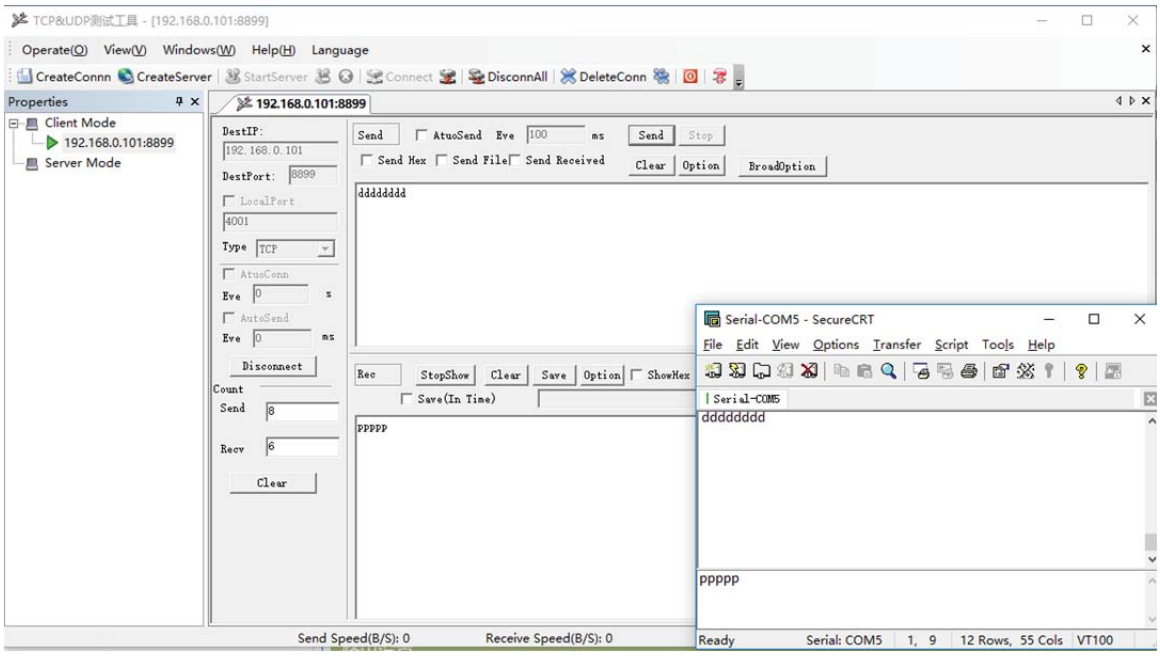

Figure 23. Transparent data transmission example

3.4.2. TCP Server

Transparent transmission mode support TCP Server、TCP Client、UDP Server、UDP Client communication application, UDP Server is special function, Details see following Cli instruction. There is a default tcp server socket created. The Socket can be modified to work at one of the above working mode. When Socket works as TCP server, It will support multiple TCP connection(max 5 TCP client). Multiple TCP connection will work in below structure:

Upload data flow: All the different TCP connection or the Client's data will be continuously transmitter to UART.

Download data flow: All data received from UART will be copied and broadcast to every TCP client.

Detailed multiple TCP connection structure drawing as below:

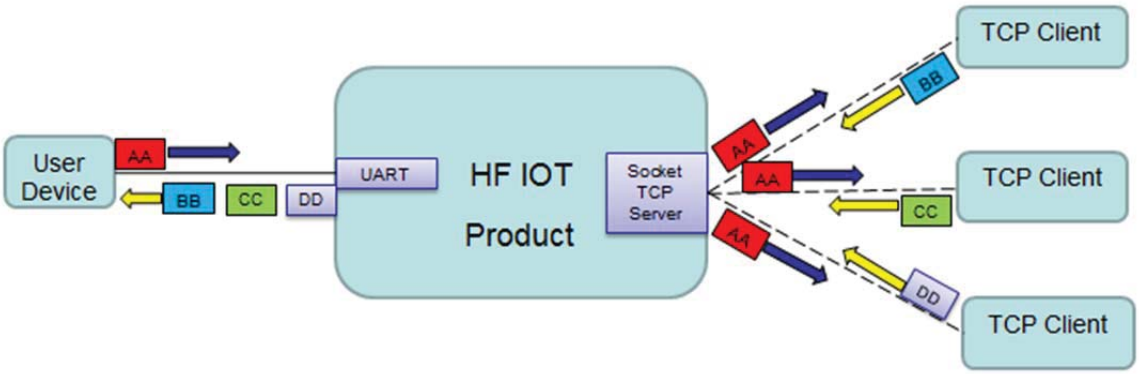

Figure 24. TCP Server data transmission example

The device support max 5 Socket channel, each socket can work individual at TCP/UDP, Multi Socket simultaneous communication of data stream is as following.

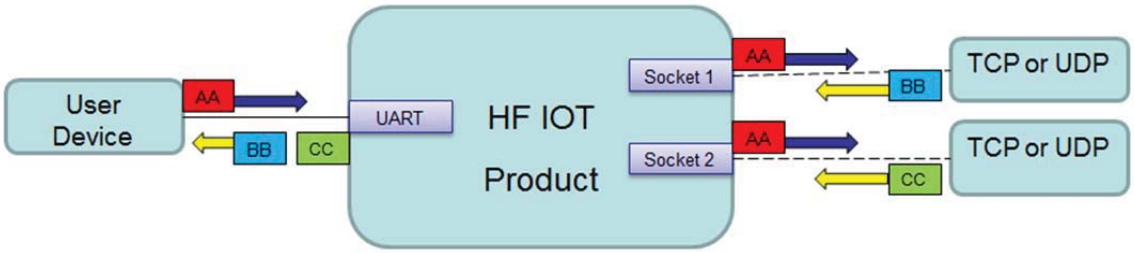

Figure 25. Multi Socket data transmission example

Multi Socket can be created through software configure or webpage configure. The below set up 3 socket channel.

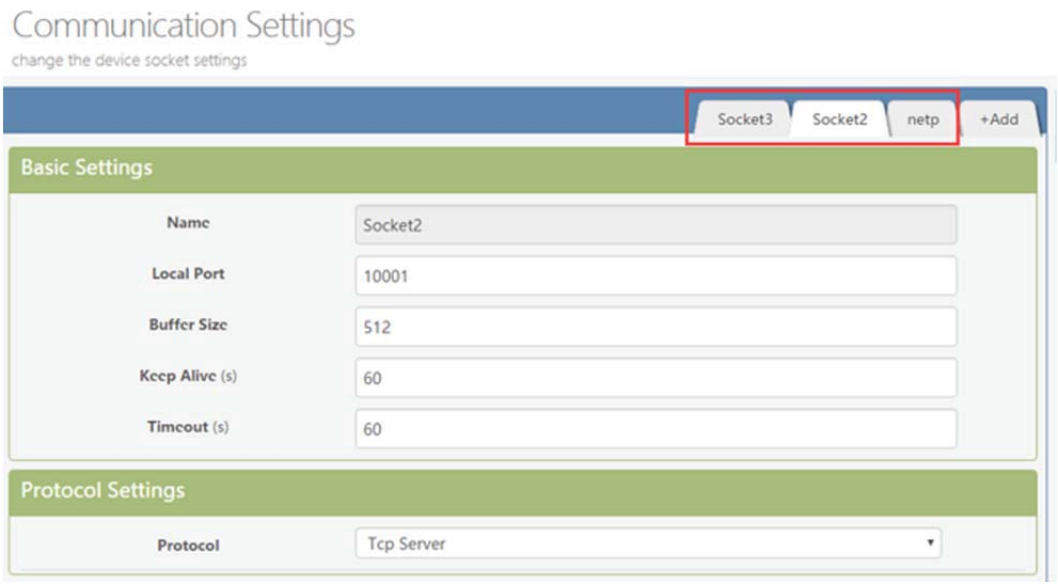

Figure 26. Webpage set up multi Socket channel

3.4.3. HTTP Mode

HF2211 device support sending data in HTTP format to HTTP server(Set product working mode by IOTManager software or webpage). When device socket works in HTTP mode, All received UART data will automaticly transform to HTTP format(add HTTP header) and transmit to HTTP server. For the received HTTP data from HTTP server, will automatically remove HTTP header and only output the data packet to UART.

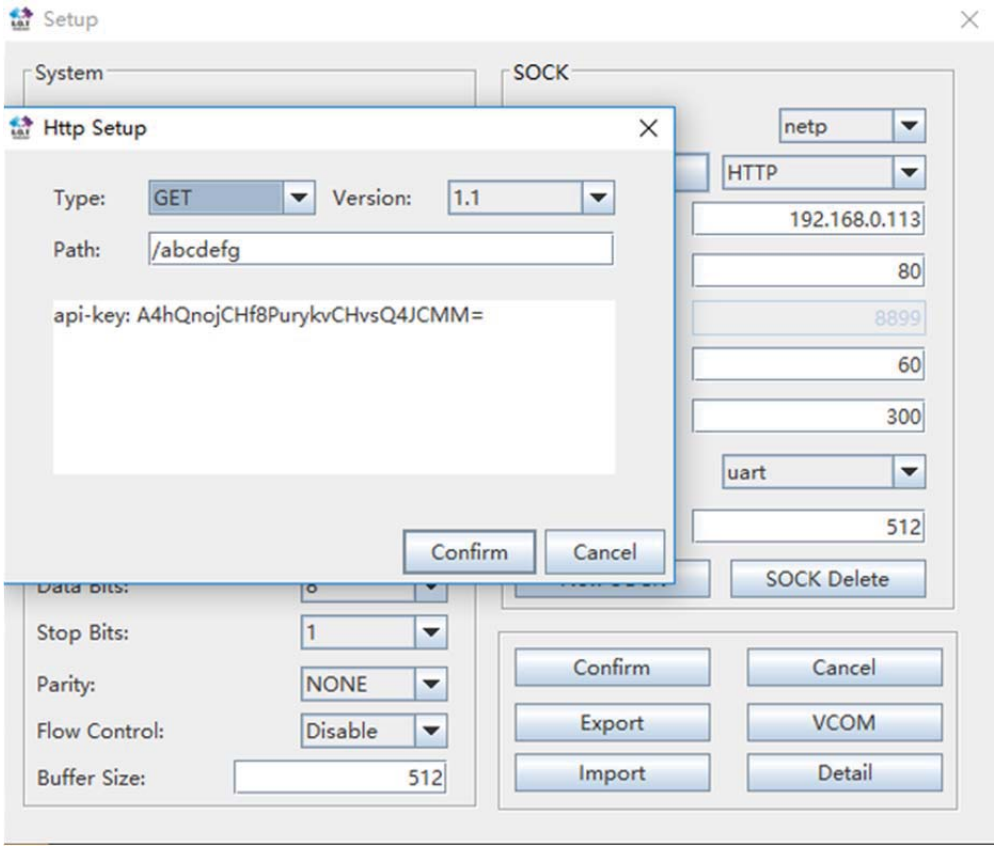

Figure 27. IOTManager Software Configure

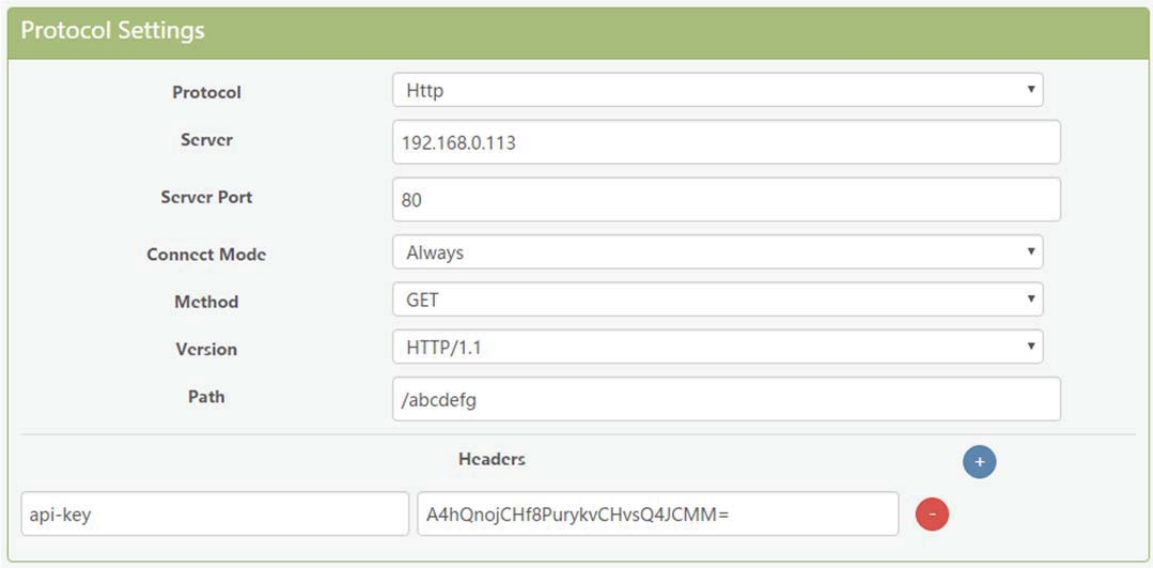

Figure 28. Web Page Configure

HF2211 UART received“pppp”data, send below data to HTTP Server.

GET /abcdefg HTTP/1.1

api-key: A4hQnojCHf8PurykvCHvsQ4JCMM=

pppp

HTTP Server send below data, HF2211 serial output“abcde”

GET /abcdefg HTTP/1.1

api-key: A4hQnojCHf8PurykvCHvsQ4JCMM=

abcde

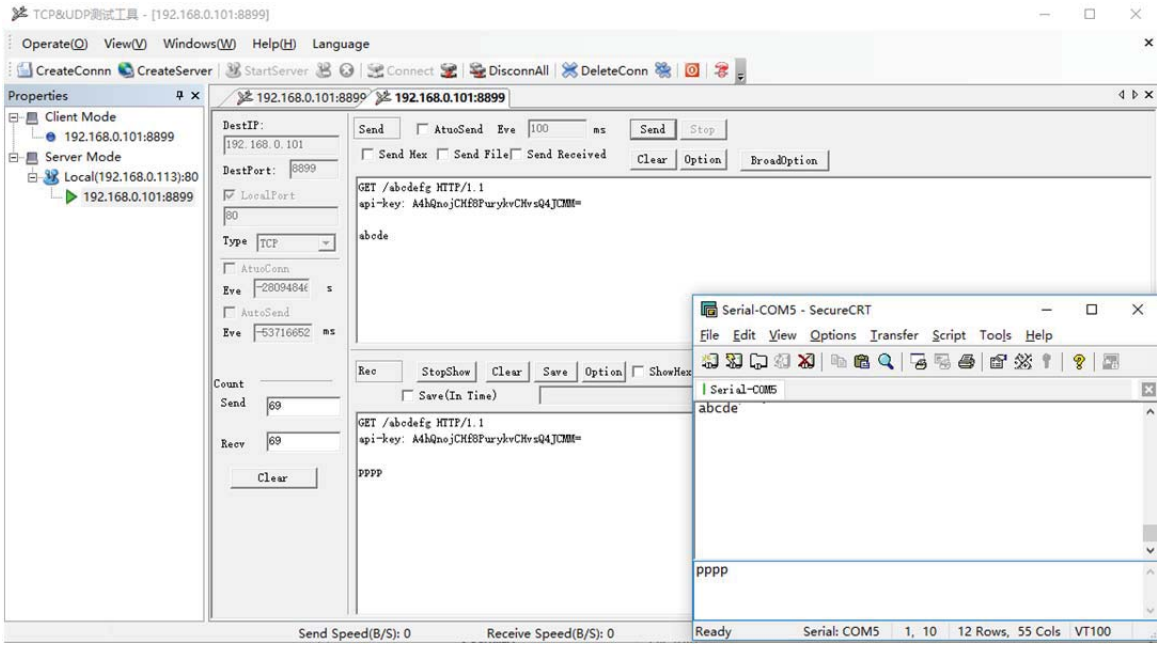

Figure 29. HTTP transmit example

3.4.4. Telnetd Mode

When device work in Telnetd mode, UART port can connect to user device console port(some gateway and switch device may have this console port to set parameters of its working mode). May use HF2211 to config user device via Telnetd mode.

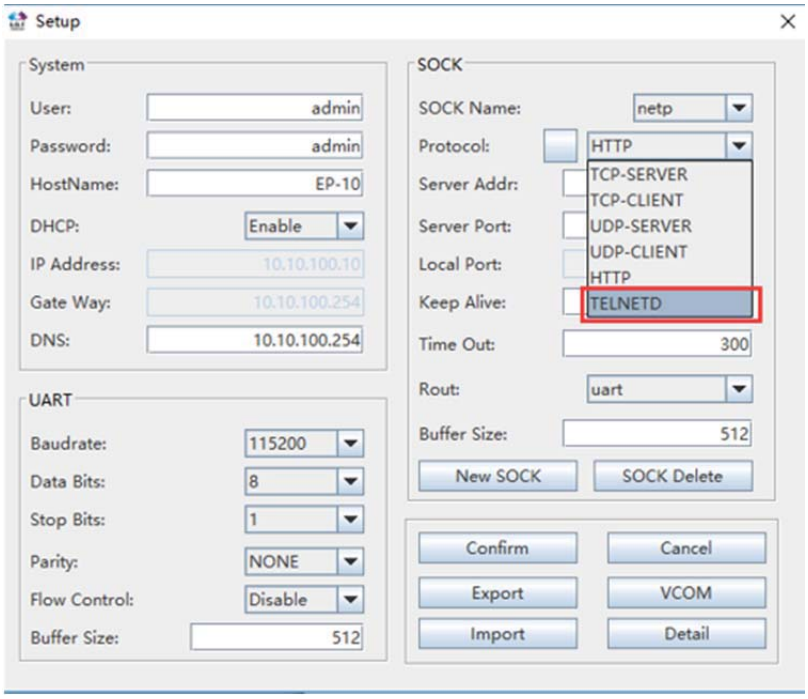

Figure 30. IOTManager Software Configure Protocol

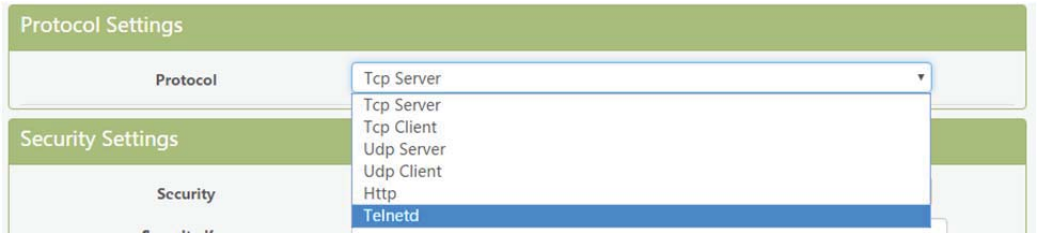

Figure 31. Web page configure protocol

Connect device UART to user device console port(The example use NC916) and create Telnet connection. Then It can directly configure user device.

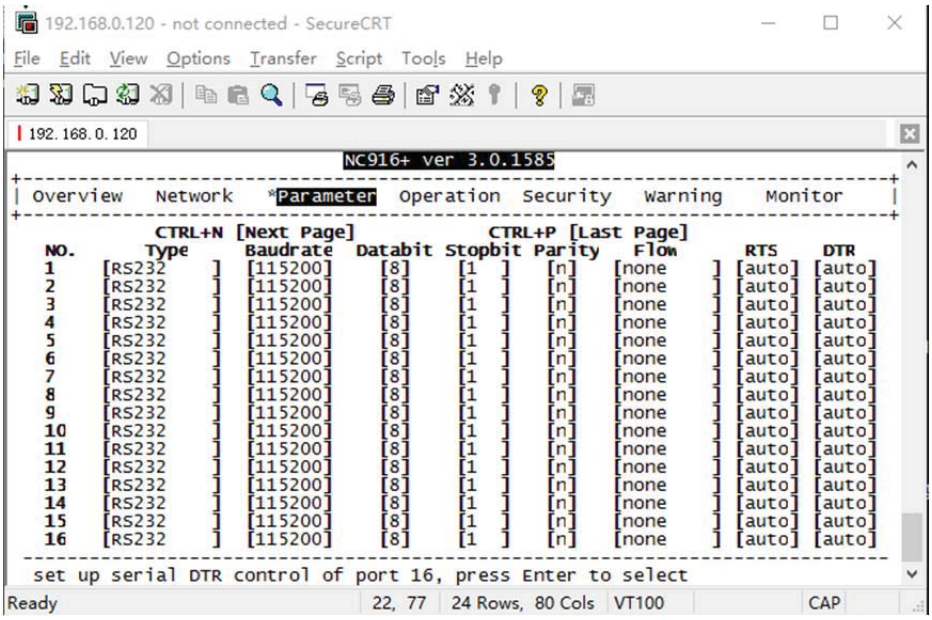

Figure 32. Telnet details example

3.5. AES/DES3/TLS Data Encryption

To improve device security and ensure the data won't be cracked and illegal used, The HF2211 device can do encryption to UART data before transmit to network.

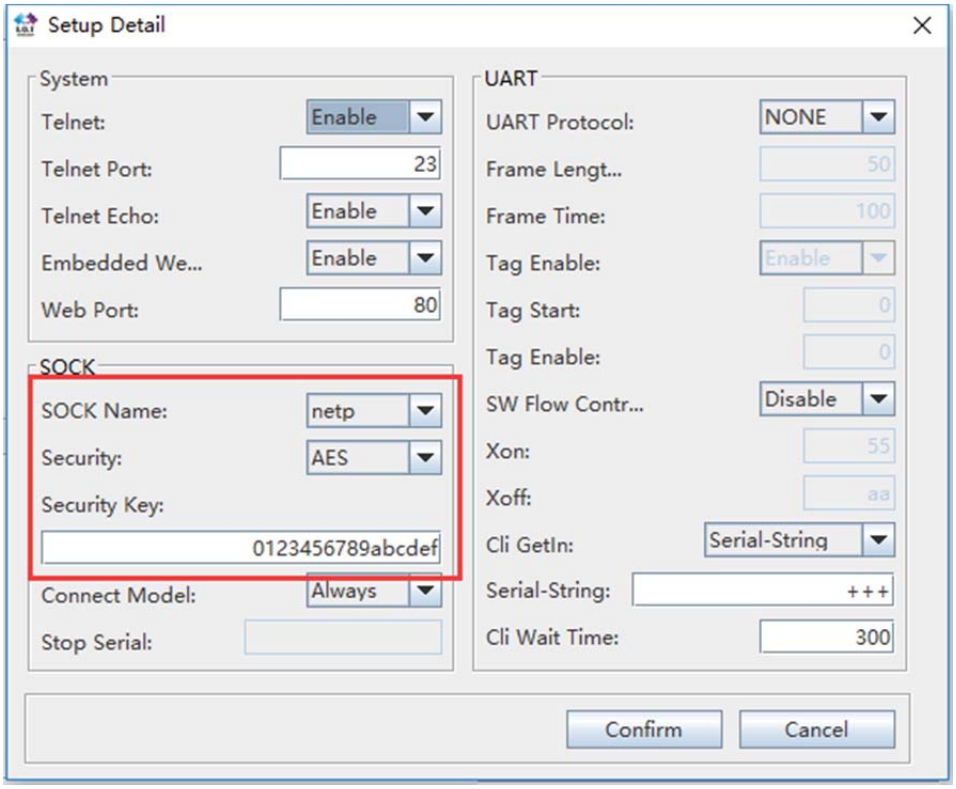

Figure 33. IOTManager Software Configure Encryption

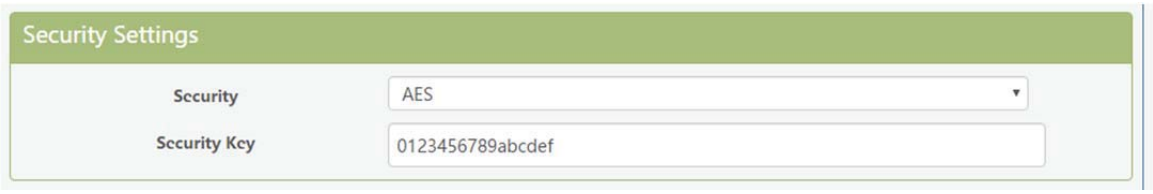

Figure 34. Web Page Configure Encryption

3.6. Keepalive

When TCP connection between device and server became abnormal. The device will check the obnormal status and reconnect to server (when the device working in TCP Client Mode), When the device working in TCP Server, It will break the TCP client and wait for next connection.

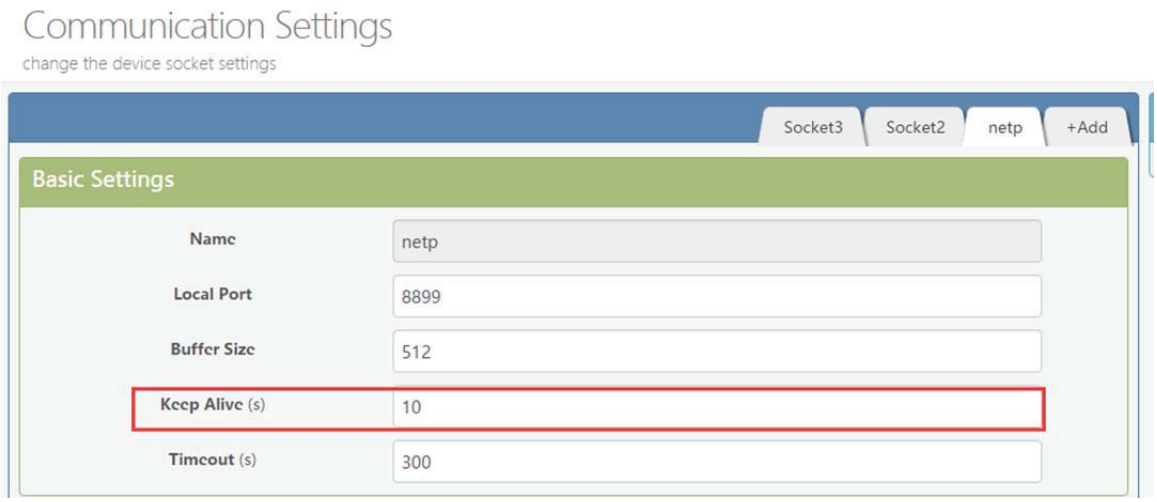

Figure 35. Web Page Config Keepalive

3.7. Timeout

The device will break the TCP connection after some time(default is 300 seconds and it can be modified)if there is no data packet received from Destination TCP target . It will reconnect to server(When device works in TCP Client mode). When device working in TCP Server, It will disconnect with TCP Clien.This mechanism can effectively restore TCP abnormal connection.If set it to “0”, this function will be close.

Figure 36. Web Page Configure Timeout

3.8. Route Setup

The data received from Socket channel can be set to another socket channel. (Default: socket Destination channel is UART, It also can be other Socket channel, Or take the Socket as log print usage)

The below example shows the default netp Socket channel route setting to Socket1, Socket1 configure as TCP Server mode and route setting to UART. So the netp Socket channel received UART data will output to Socket1, and Socket1 channel will output to serial output.

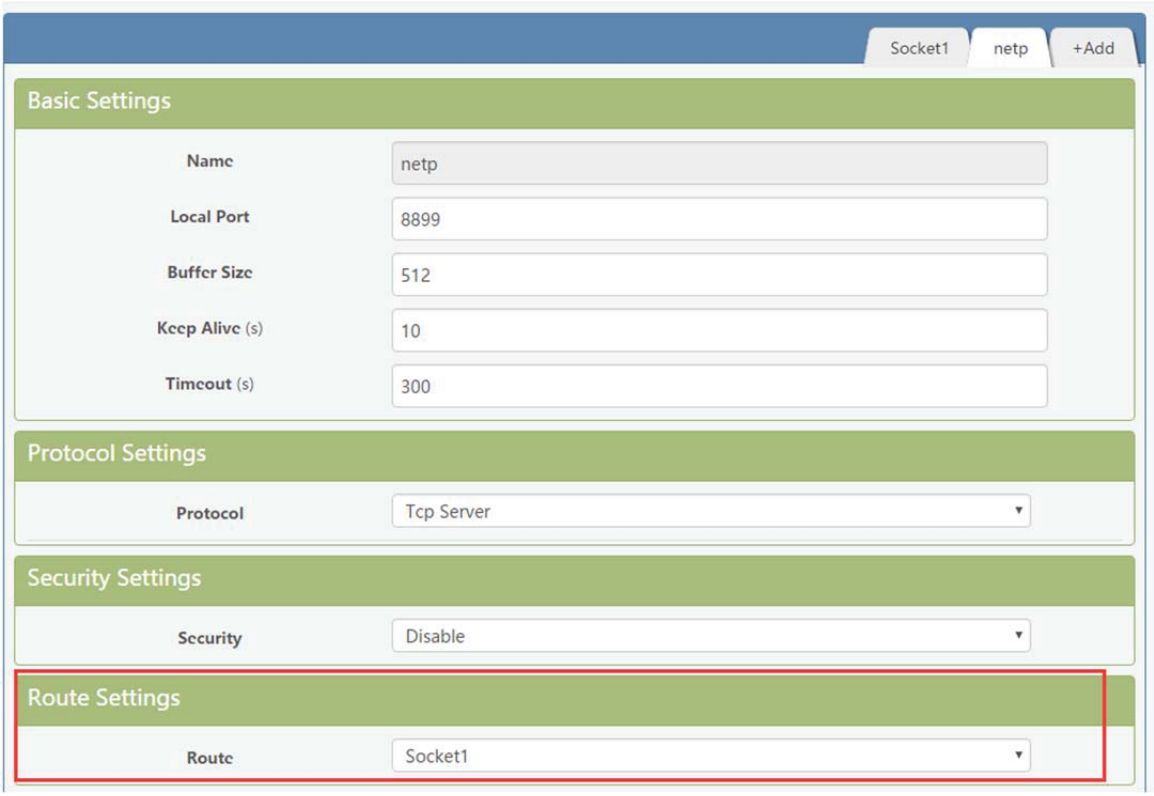

Figure 37. Route function setup example

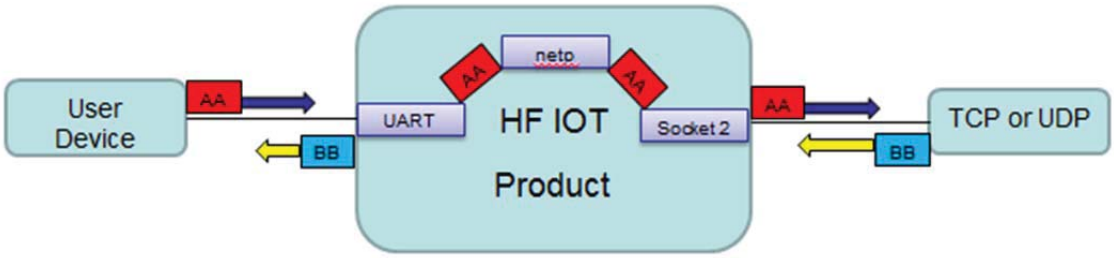

Figure 38. Route Function Data Flow Example

3.9. UART Frame Scheme

3.9.1. UART Free-Frame

HF2211 support UART Free-Frame function, If user select to open this function,Module will check the intervals between any two bytes when receiving UART data, If the interval time exceed the setting value, It will think it as the end of one frame, Or it will receive data until greater than internal buffer bytes(Default: 512, the largest 1400 bytes), then transfer to Socket Channel.

Module default UART Free-Frame interval time is 50ms, it will packaged into another frame if received UART data interval time is greater than 50ms. User also can set this interval time to minimum 10ms through Cli command and webpage.

If interval time is set to 10ms and customer MCU cannot send next byte within 10ms, The serial data will be break into two frame.

Figure 39. UART free-frame function

3.9.2. UART Auto-Frame

HF2211 support UART Auto-Frame function, If user select to open this function,setting frame tigger length and auto frame trigger time parameters, Then the product will auto framing the data which received from UART port and transmitting to the network as pre-defined data structure.

Auto-Frame trigger length: The fixed data length that product used to transmitting to the network.

Auto-Frame trigger time: After the trigger time, If UART port received data cann't reach auto-frame trigger length, Then product will transmitting available data to network and bypass the auto-frame trigger length condition.

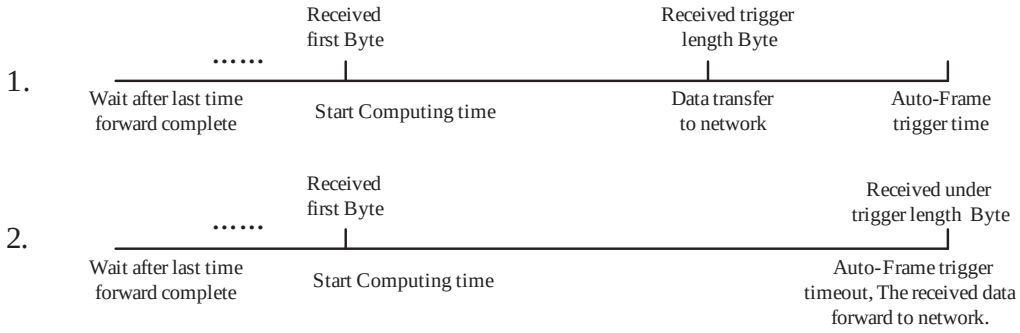

Figure 40. UART Auto-Frame Function

Figure 41. UART Auto-Frame Function

3.9.3. Tag Function

Eport E10 support lable function, If user select to open this function, The UART port will send all suitable one frame data to network.

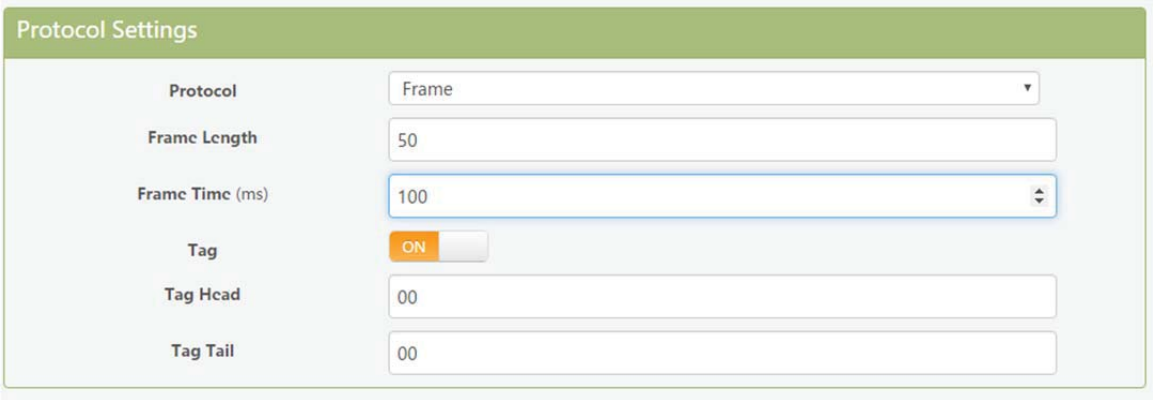

Figure 42. UART Auto-Frame Tag Function

3.10. Modbus Protocol

HF2211 support ModbusRTU to ModbusTCP and ModbusTCP to ModbusRTU. It's very convenient to connect with Modbus device. Modbus protocol setting as below:

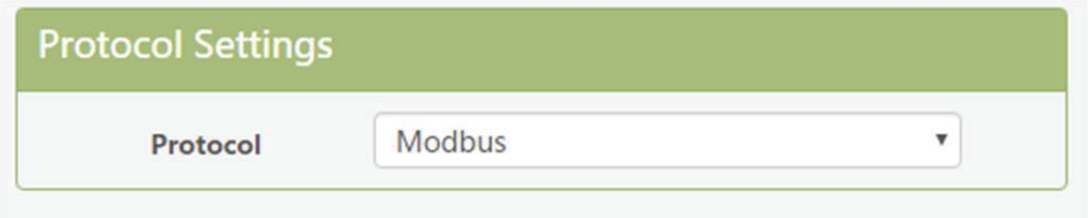

Figure 43. UART Modbus Function

3.11. Cli Command

Cli command is used for setting module configure parameters. Detailed command function and setting is in next chapter, Cli command can be set through UART port or Telnet function (Appendix C), The waiting time of below picture means use timeout time. If it exceed default 300s when no Cli command is input, it will exit Cli command mode. When the HF2211 receive continuous UART data of “+++”, it will enter into Cli command. (The device working in transparent transmission mode by default) May also set the device working in Cli command mode by default or disable this function .

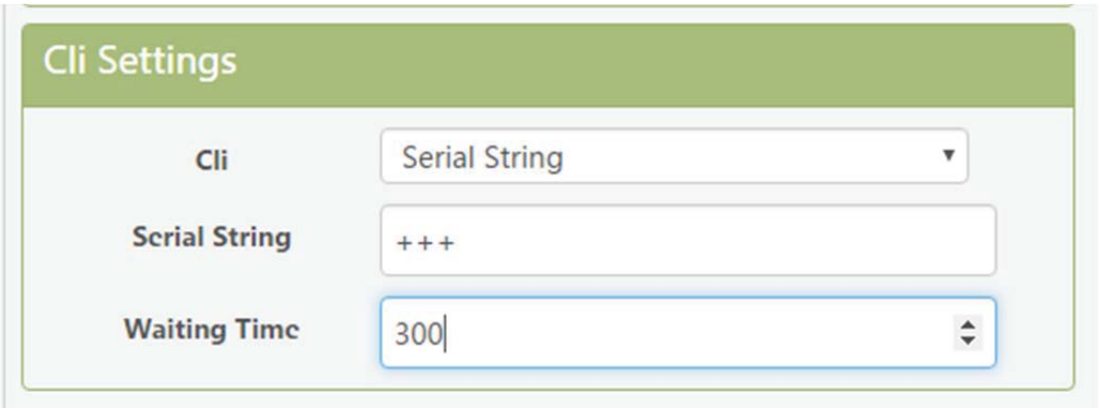

Figure 44. Cli Command Setting

3.12. UART Flow Control and RS485 Function

HF2211 support software and hardware UART flow control. If use hardware follow control, must use RS232 interface. If use software follow control, then It allowed the device output UART data after receive single UART 0x11 data(Default: value can be modified). It will stop output UART data after receive single UART 0x13 data(Default: value can be modified).

Figure 45. UART Flow Control

If set to “Half Duplex”, the product enable RS485 interface. **The flow control by default is set as “Disable”, it need to use RS485, set it to “Half Duplex” as the following picture.**

Figure 46. UART Half Duplex Function

3.13. Firmware Upgrade

HF2211 support OTA(over the air) firmware upgrade. User can use webpage to upgrade its firmware, whether external or internal webpage(192.168.0.101/hide. Internal webpage can be used for upgrade external webpage). Please check below example. IP address is assigned by router.

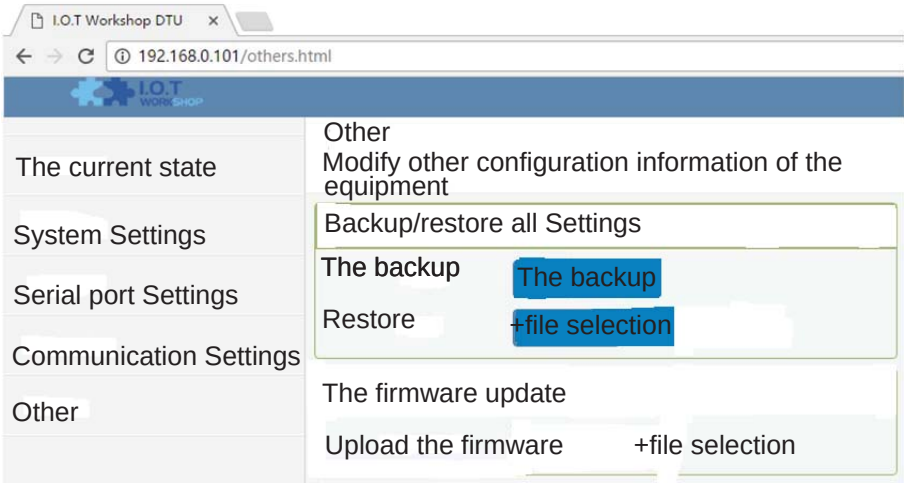

Figure 47. External web page

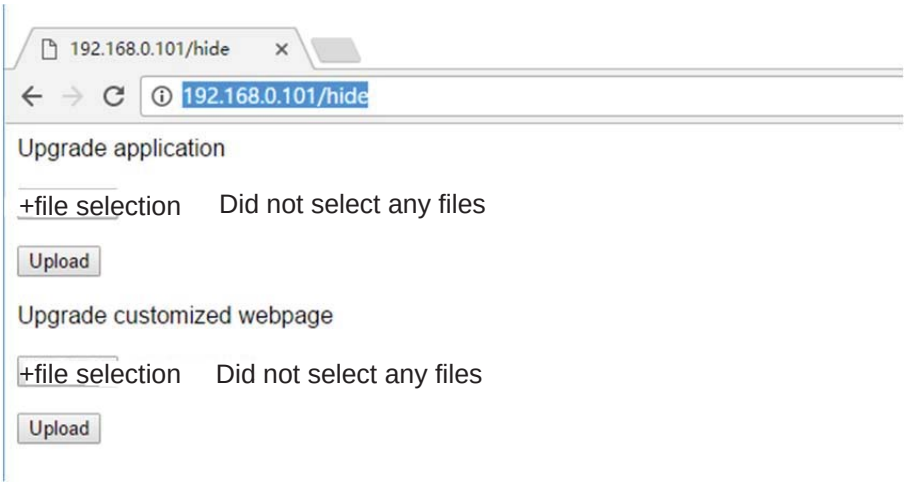

Figure 48. Internal web page

3.14. Web Page Function

Web page function can be enabled or disabled.

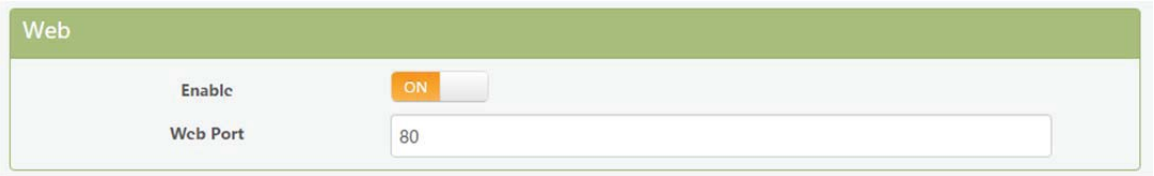

Figure 49. Web Page Function Setting

3.15. Auto-IP Function

Connect device Ethernet with PC, the device will use default auto IP. The PC may use this IP to config the device or transfer data(PC will need about 15 seconds to use default 169.254.xxx.xxx IP, then this communication can be created). As the following example, 169.254.173.207(If occure IP conflict, it will use other ip instead)

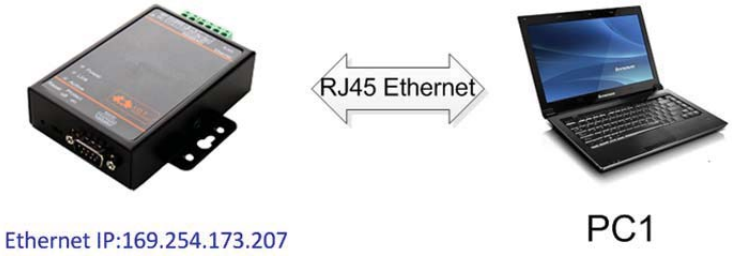

Figure 50. AUTO-IP Connection

3.16. NTP Function

Support NTP function(default is disabled). Support set NTP server, port, time zone information, more detailed usage see application document of “UART Fast Config”.(112.124.43.15 is High-Flying test NTP server)

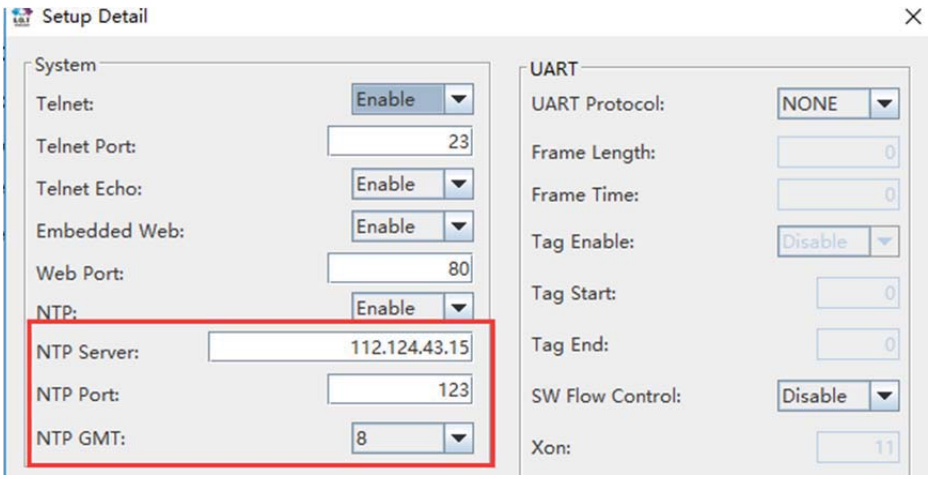

Figure 51. IOTManager Tools NTP Setting

```
EPORT>SYS NTP
Enable
Server:112.124.43.15
Port:123
GMT:8
EPORT>Show

===System State===
Product ID:HF5111B
Software Version:V1.07c
Config Protected:OFF
System time:2017-1-23 13:48:38 Mon
Up Time: 0-Day 2:44:32
Total Free Memory: 32880
MAX Block Size:31164
```

Figure 52. Cli Command NTP Setting and Query

3.17. Heartbeat Function

Supportheartbeat function, can set the heartbeat time and content(heartbeat time is the same as keepalive setting), if the product does not receive data from TCP server within heartbeat time, it will send heartbeat to server. The heartbeat function can only be enabled when socket is set as TCP client.

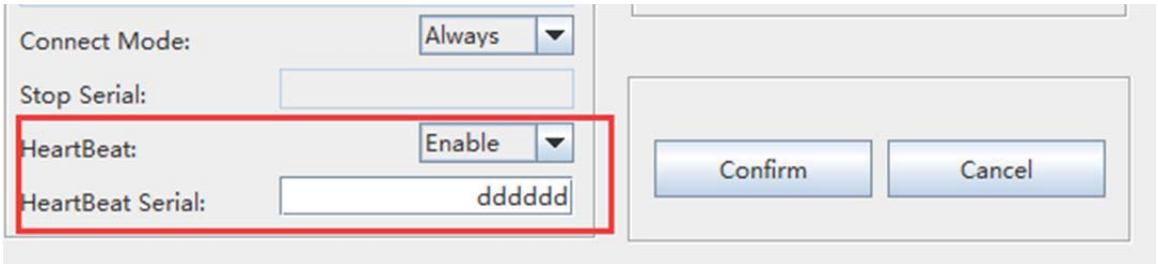

Figure 53. Heartbeat Function

3.18. UART Fast Config

Product support Cli command to config its parameters, but also support special HEX format UART data for fast config, see application manual for detailed usage.

3.19. Other Function

The HF2211 device parameters can be exported and loaded into other equipment..

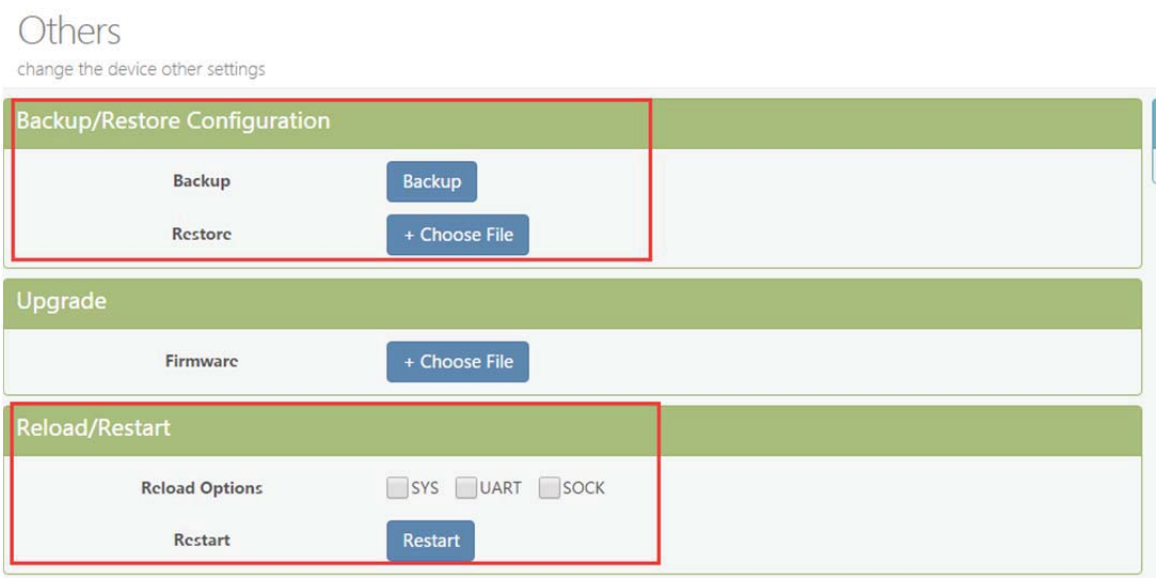

Figure 54. Other Function

<END OF DOCUMENT>

APPENDIX C: CONTACT INFORMATION

Address: Room 1002,Building 1,No.3000,Longdong Avenue,Pudong New Area,Shanghai,China
Web:www.iotworkshop.com or www.hi-flying.com
Contact:
Sales: sales@iotworkshop.com
Support: support@iotworkshop.com
Service: service@iotworkshop.com
Business: business@iotworkshop.com

For more information about IOTworkshop modules, applications, and solutions, please visit our web site www.iotworkshop.com

FCC：

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment .This equipment should be installed and operated with minimum distance 20cm between the radiator& your body.

<END OF DOCUMENT>