HF2111

GPRS Serial Server User Manual

V1.4

Overview of Characteristic

- ✧ **Support Four Frequency Bands, Global Standard (850/900/1800/1900MHz)**
- ✧ **Support GSM/GPRS (No 3G Network) and 2G/3G/4G CMCC or CUCC SIM Card**
- ✧ **Support Max 3 channel TCP/UDP.**
- ✧ **Support Multiple Work Mode(Transparent Transmission/AT Commands)**
- ✧ **Embedded RS232/RS422/RS485 to GPRS interface**
- ✧ **Size: 95 x 65 x 25mm**
- ✧ **Single 5~36V DC Power Supply**

CONTENT

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HISTORY

Ed. V1.0	12-29-2016	First Version.
Ed. V1.1	01-19-2017	Update PC Config IOTSerialTool
Ed. V1.2	02-10-2017	Update the appearance of the product, adjust the power input mark
Ed. v1.3	03-20-2017	Added register function and configuration instructions
Ed. v1.4	12-18-2017	Support HIS script, Modbus to TCP

1. PRODUCT OVERVIEW

1.1 Basic Parameters

Table1. HF2111 Basic Parameters

	Item	Parameter
Wireless Parameter	Internet Type	GSM/GPRS
	Data Rate	85.6Kbps(DL,UL)
	Frequency	850/ 900/1800/1900MHz
	Multi-Slot Class	GPRS Class 12
	Terminal Device Class	Class B
	Coding Schemes	CS1 ~ CS4
	Max Transmit Power	GSM850/GSM900: Class 4(2W) DCS1800/PCS1900: Class 1(1W)
	Application	AT Command
	Network Protocol	TCP/UDP
	Max Link	3
	SIM Card	1.8V/3V
	Antenna Interface	SMA(female, 50Ω)
Hardware Parameter	Port Interface	1 RS232/RS422/RS485
		RS232: DB9 RS485/RS422: 5.08mm connector
	Data Bit	5,6,7,8
	Stop Bit	1,2
	Charity Bit	None,Even,Odd
	Baud Rate	1200bps ~ 115.2Kbps
	Flow Control	RTS/CTS
	Buffer	1K
	Size	95 x 65 x 25mm
	Work Temp.	-40 ~ 85°C
	Storage Temp	-45 ~ 105°C 5 ~ 95% RH
	Input Voltage	DC 5~36V
	Work Current	~400mA
	Power Consumption	<2W
Others	Guarantee	2 years
	Accessories	5V/1A Adapter, Male to Female Serial Cable GPRS Antenna

1.2 Hardware Introduction

Figure 1. HF2111 Appearance

1.2.1. Interface Description

Table2. HF2111 External Interface

Function	Name	Description
External Interface	RS232	RS232 Communication.(Choose one of the three RS232/RS422/RS485 to

Function	Name	Description
		communicate)
	RS422/RS485	RS422/RS485 Interface
	SIM Card	Sim Card Slot
	DC Input	DCPower 5~36V Input
	Earth	Connect to Protect GND
	Antenna	SMA Antenna Interface
LED Indicator	Power	3.3V Internal Power Supply Indicator
	NET	On: Socket TCP connect to server success Off: No Socket TCP connection
	Active	Data receive Indicator Flash When receive UART data.
Button	Reset	Click to restore to factory setting
Switch	Protect/Reload	Reserved, switch to H by default

1.2.2. 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), see the following table for pin defination.

Figure 2. RS232 Pin Defination(Male/Needle Type)

Table3. 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

1.2.3. 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.

1.2.4. 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-

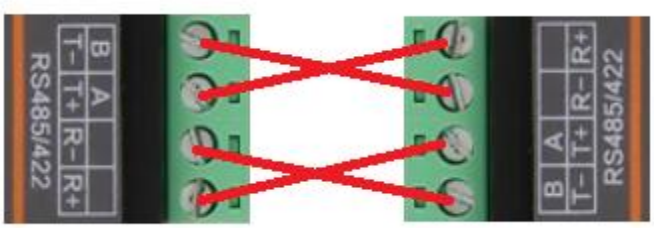


Table4. RS422 Connectioin

1.2.5. Mechanical Size

HF2111 device physical size as follows:

Figure 3. HF2111 Mechanical Dimension

1.2.6. Order Information

Acorrding to customer's demands,HF2111 product can provide different configured products, and the particular production code is showed as follow:

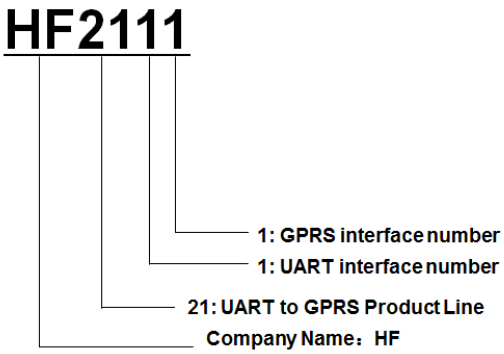


Figure 4. HF2111 Production Code Definition

1.2.7. Package Information

1 * HF2111
1 * 5V/1A Power Adapter
1 * RS232 Cable
1 * GPRS Antenna

2. FUNCTION DESCRIPTION

2.1. Wireless Networking

Product is connected with serial devices and GPRS network and communicate with remote server through public network. It is suggested to use build-in TCP/IP protocol stack to achieve remote control and monitor through UDP/TCP connection with server.

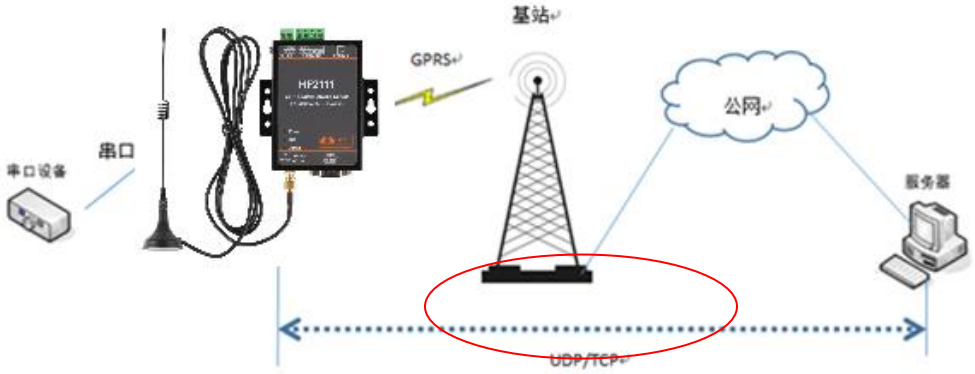


Figure 5. GPRSwireless network

2.2. Work Mode

2.3.1. Support single and multiple connecton

Single connection: build only one connection (UDP/TCP)

Multiple connection: maximum eight connections (UDP/TCP, AT+SOCKA, AT+SOCKB, AT+SOCKC)

Note:

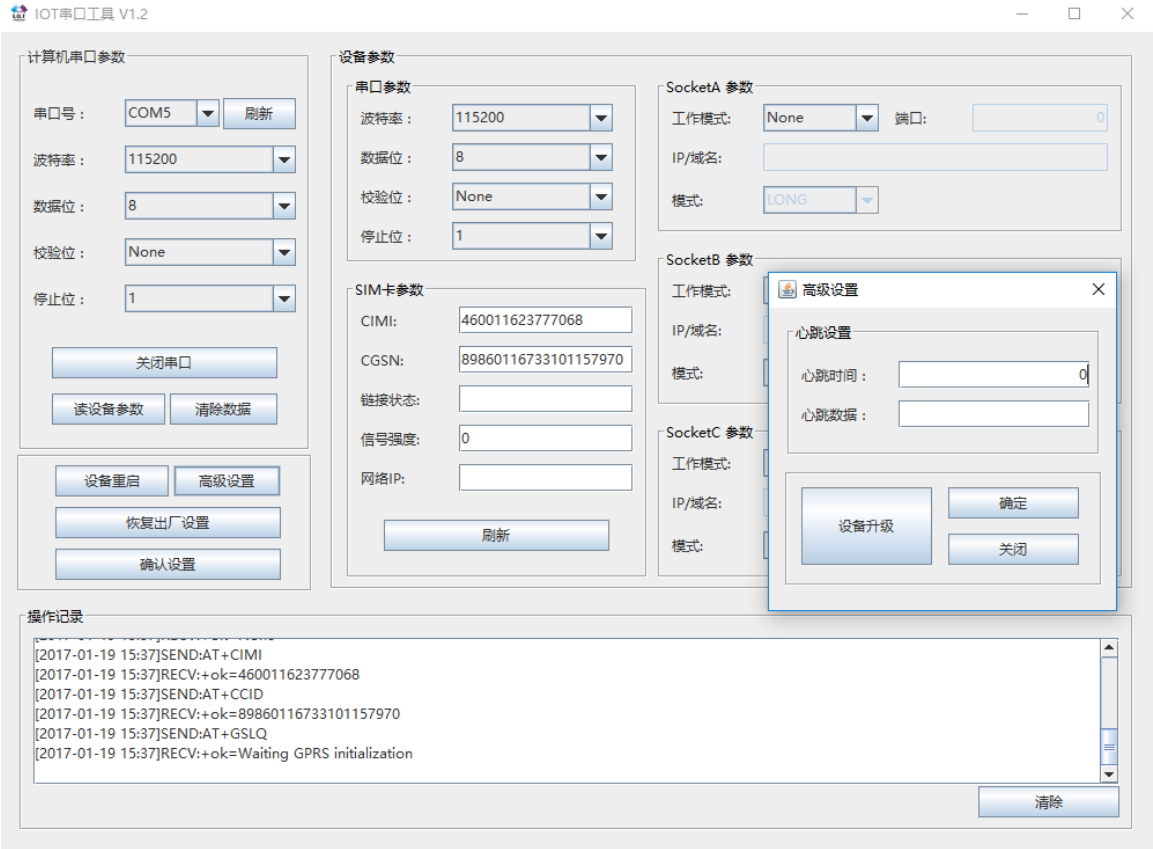
Recommend to send UART data every 1000ms to device, otherwise may lost some packet.

3. IOTSerialTool

3.1. Description

IOTSerialTool is to config the HF-G200/DTU-G101/HF2111 product, it is convenient to config the product parameters, upgrade firmware via RS232/RS485/RS422 interface.

3.2. UI



The following is a note on the interface of this tool in Chinese：

【计算机串口参数】: Computer serial port parameters

【串口号】：Serial number;【刷新】：Refresh；【波特率】：Baud rate;

【数据位】：Data bit;【校验位】：Check bit；【停止位】：Stop bit;

【关闭串口】：Disable serial port；【读设备参数】：Read device parameters;

【清除参数】：Clear parameters；【设备重启】：Device reboot;

【高级设置】：Advanced setting；【恢复出厂设置】：Restore factory settings；

【确认设置】：Confirm setting；【设备参数】:Equipment parameters;

【串口参数】：Serial parameters；【链接状态】：Link state；【信号强度】：signal intensity；

【网络 IP】:Network IP；【sockA 参数】：sockA parameters；【工作模式】：Working mode；

【端口】：port；【IP/域名】：IP/domain name；【模式】：Mode;

【操作记录】：Operation record

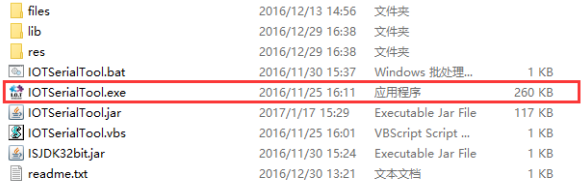
Click Advanced settings to enter heartbeat settings:

【心跳时间】：Heartbeat time；【心跳数据】：Heartbeat data；

【设备升级】：Equipment upgrade；【确定】：confirm；【关闭】：Close；

3.3. Operation Steps

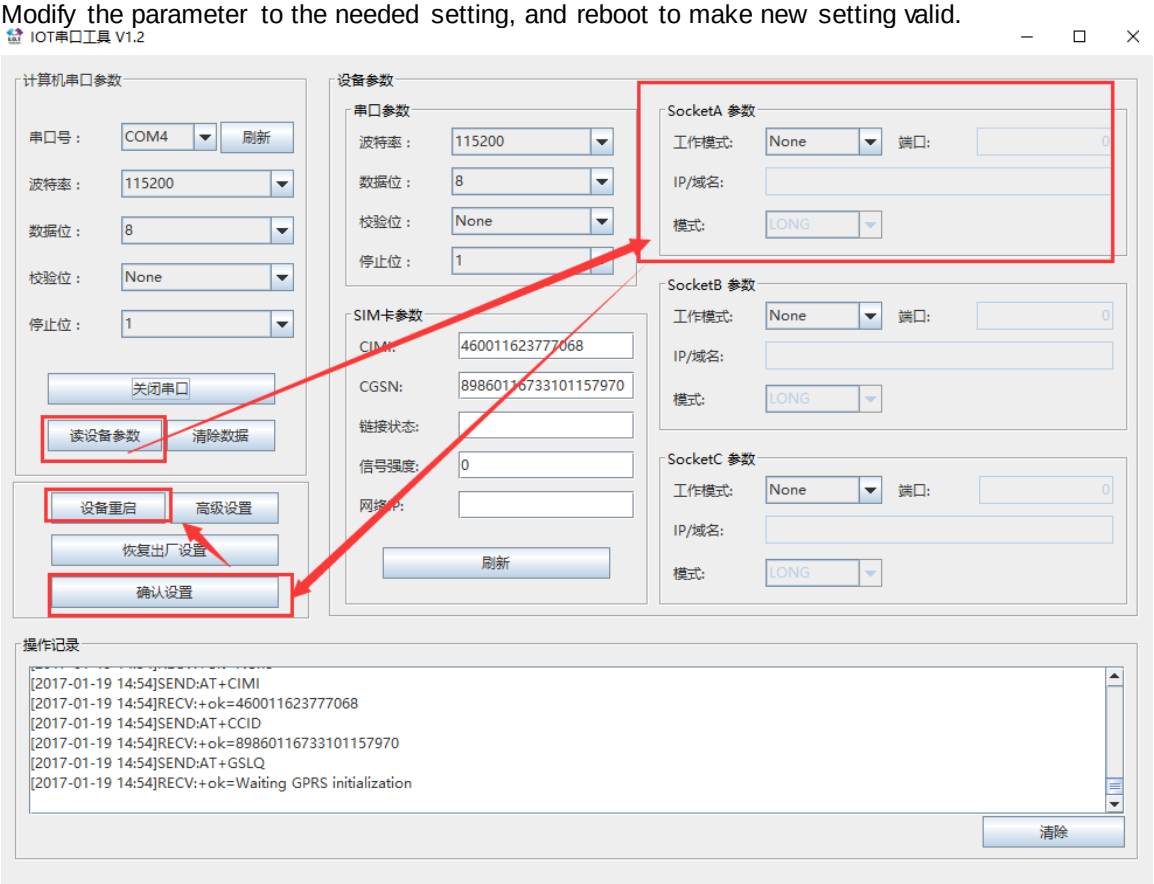
a) Click "IOTSerialTool.exe" to open the tool.



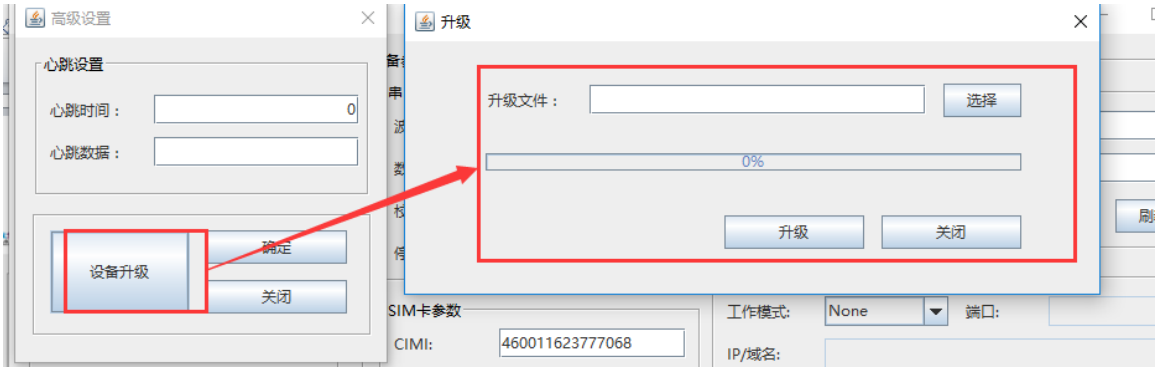
b) Set tool serial parameters and click open the serial.(product default parameter is 115200,8,N,1)

c) Click【读设备参数】，in【操作记录】 column, it will show AT command log information

d) Modify the parameter to the needed setting, and reboot to make new setting valid.



e) Click 【高级设置】 can set heart beat and upgrade function.


高级设置
心跳设置
心跳时间：
0
心跳数据：
设备升级
确定
关闭
升级
升级文件：
选择
0%
升级
关闭
SIM卡参数
CIMI:
460011623777068
工作模式:
None
端口:
IP/域名:

4. AT+INSTRUCTION INTRODUCTION

4.1. Configuration Mode

When HF2111 power up, it will default works as transparent transmission mode, then user can switch to configuration mode by serial port command. HF2111 UART default parameters setting as below figure,

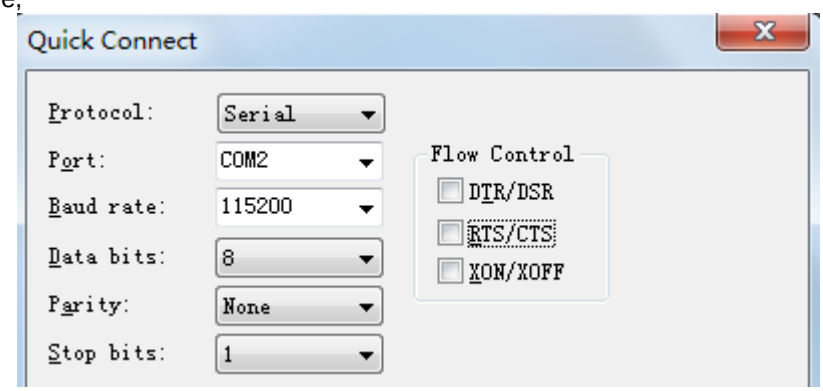


Figure 6. HF2111 Default UART Port Parameters

In configuration mode, user can setting the product through AT+instruction set, which cover all web page setting function.

4.1.1. Switch to Configuration Mode

Two steps to finish switching from transparent transmission mode to configuration mode.

- **UART input "+++", after product receive "+++", and feedback "a" as confirmation.**
- **UART input "a", after product receive "a" and feedback "+ok" to go into AT+instruction set configuration mode.**

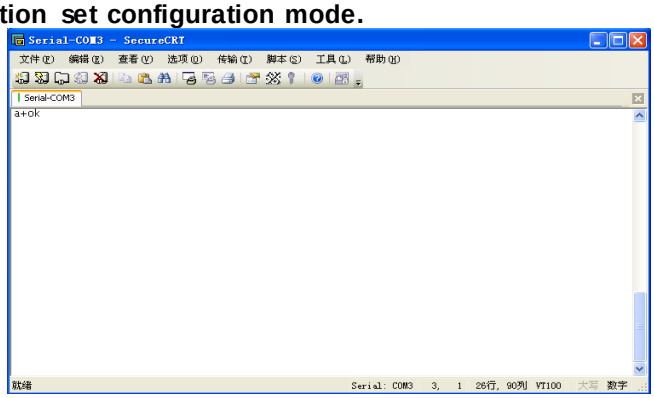
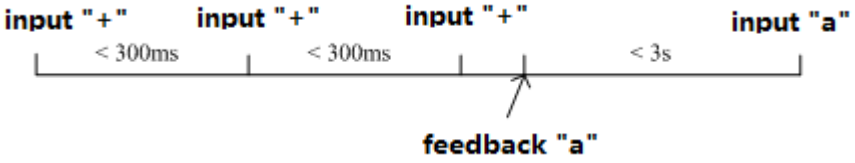


Figure 7. Switch to Configuration Mode

Notes:

1. When user input "+++" (No "Enter" key required), the UART port will display feedback information "a", and not display input information"+++" as above UART display.
2. Any other input or wrong step to UART port will cause the product still works as original mode (transparent transmission).

3. “+++” and “a” should be input in a certain period of time to make the product switch to configuration mode. Like the following sequence.



4.2. AT+Instruction Set Overview

User can input AT+Instruction through hyper terminal or other serial debug terminal, also can program the AT+Instruction to script. User can also input “AT+H” to list all AT+Instruction and description to start.

```
AT+H
   AT+: NONE command, reply "+ok".
   AT+E: Echo ON/Off, to turn on/off command line echo function.
   AT+Z: Reset the Module.
   AT+VER: Get application version.
   AT+APPVER: Show application version.
   AT+SOCKA: Set/Get SOCKA parameter.
   AT+SOCKB: Set/Get SOCKB parameter.
   AT+SOCKC: Set/Get SOCKC parameter.
   AT+GSLQ: Get Link Quality of the Module.
   AT+RELD: Reload the default setting and reboot.
   AT+UPGRADE:Use uart0 upgrade firmware.
   AT+GWMID:Write module MID.
   AT+GRMID:Read module MID.
   AT+TCPALK: Show Under the long connection of network status.
   AT+TCPBLK: Show Under the long connection of network status.
   AT+TCPCLK: Show Under the long connection of network status.
   AT+SOCKANUM: Show SOCKA total number of sending and receiving data.
   AT+SOCKBNUM: Show SOCKB total number of sending and receiving data.
   AT+SOCKCNUM: Show SOCKC total number of sending and receiving data.
   AT+TIME: Set/Get time.
   AT+GVER: Show GPRS module software version number.
   AT+GCID: Show SIM card unique identification number.
   AT+CNUM: Show query the machine number.
   AT+WANN: Show the IP address of the connection after the GPRS module.
   AT+GETIP: A domain name IP query.
   AT+UART: Set/Get the UART0/UART1 Parameters.
   AT+NDBGL:set/get debug level
   AT+SMD5=len: Software md5.
   AT+H:show help
+ok
```

Figure 8. ”AT+H” Instruction for Help

4.2.1. Instruction Syntax Format

4. AT+Instruction protocol is based on the instruction of ASCII command style, the description of syntax format as follow.
   - **Format Description**
     - **< >**: Means the parts must be included
     - **[ ]**: Means the optional part
   - **Command Message**

     AT+<CMD>[op][para-1,para-2,para-3,para-4…]<CR>

     - AT+: Prefix of command message;
     - CMD: Command string;
     - [op]: Symbol of command operator,

- "=" : The command requires parameters input;
- "NULL": Query the current command parameters setting;

- [para-n]: Parameters input for setting if required;
- <CR>:"Enter" Key, it's 0x0a or 0x0d in ASCII;

Notes: When input AT+Instruction, "AT+<CMD>" character will display capital letter automatic and other parts will not change as you input.

➢ **Response Message**

+<RSP>[op] [para-1,para-2,para-3,para-4…]<CR><LF><CR><LF>

- +: Prefix of response message;
- RSP: Response string;
  - "ok" : Success
  - "ERR": Failure
- [op] : =
- [para-n]: Parameters if query command or Error code when error happened;
- <CR>: ASCII 0x0d;
- <LF>: ASCIII 0x0a;

➢ **Error Code**

Table5. Error Code Describtion

Error Code	Description
-1	Invalid Command Format
-2	Invalid Command
-3	Invalid Operation Symbol
-4	Invalid Parameter
-5	Operation Not Permitted

4.2.2. AT+Instruction Set

Table6. AT+Instruction Set List

Instruction	Description
<null>	NULL
Managment Instruction Set	
E	Open/Close show back function
ENTM	Set product into transparent transmition mode
VER	Query product software version information
APPVER	Query customized software version information
RELD	Restore to factory default setting
Z	Re-start product
CFGTF	Save current setting as factory setting
FCLR	Clear saved factory setting
H	Help
UART Instruction Set	
UART	Set/Query serial port parameters
UARTINTERVAL	Set/Query serial port frame time
UARTTYPE	Set/Query serial port type

Instruction	Description
UARTHEAD	Set/Query serial port head data
Network Instruction Set	
SOCKA	Set/Query SOCK A network protocol parameters
TCPALK	Query if SOCK A TCP link already build-up;
SOCKANUM	Set/Query SOCK A send/receive data bytes.
SOCKB	Set/Query SOCK B network protocol parameters
TCPBLK	Query if SOCK B TCP link already build-up;
SOCKBNUM	Set/Query SOCK B send/receive data bytes.
SOCKC	Set/Query SOCK C network protocol parameters
TCPCLK	Query if SOCK C TCP link already build-up;
SOCKCNUM	Set/Query SOCK C send/receive data bytes.
WANN	Set/Query GPRS network status.
GETIP	Set/Query domain name IP address
HEART	Set/Query heartbeat parameters
LOGIN	Set/Query register data
MODBUSPROTO	Set/Query Modbus RTU to Modbus TCP function
Upgrade Instruction Set	
UPGRADE	Upgrade Firmware
GPRS Instruction Set	
GSLQ	Query GPRS signal strength
GVER	Query GPRS chip software version
GCID	Query SIM card CID number
CIMI	Query SIM card IMSI
CGSN	Query device IMEI
GPRS Instruction Set	
SCRIPTUART	Upgrade HIS script via UART
MOVESCRIPT	Delete HIS script

4.2.2.1. AT+E

- Function: Open/Close show back function;
- Format:
  - Set Operation

AT+E=<status><CR>

+ok<CR><LF><CR><LF>

- Parameters:
  - status: Echo status
    - ✧ on: Open echo
    - ✧ off: Close echo

When HF2111 product firstly switch from transparent transmission to configuration mode, show back status is open, input “AT+E” to close show back function, input“AT+E” again to open show back function, use AT+E=on/off command to direct set the echo status..

4.2.2.2. AT+ENTM

- Function: Set product into transparent transmition mode;
- Format:

AT+ENTM<CR>

+ok<CR><LF><CR><LF>

When operate this command, product switch from configuration mode to transparent transmission mode.

4.2.2.3. AT+VER

- Function: Query module software version information;
- Format:
  - Query Operation

AT+VER<CR>
+ok=<ver><CR><LF><CR><LF>

- Parameters:
  - ver: Module software version information;

4.2.2.4. AT+APPVER

- Function: Query custmized software version information
- Format:
  - Query Operation

AT+APPVER<CR>
+ok=<ver><CR><LF><CR><LF>

- Parameters:
  - ver: Module custmized software version information;

4.2.2.5. AT+RELD

- Function: module restore to factory default setting;
- Format:
  - Set Operation

AT+RELD<CR>
+ok<CR><LF><CR><LF>

When operate this command, module will restore to factory default setting. Support SMS connfig.

4.2.2.6. AT+Z

- Function: Restart module;
- Format:

AT+Z<CR>

4.2.2.7. AT+CFGTF

- Function: Copy User Parameters to Factory Default Parameters;
- Format:

AT+CFGTF<CR>
+ok=F-Setting Saved<CR><LF><CR><LF>

Support SMS config.

4.2.2.8. AT+FCLR

- Function: Clear saved factory setting
- Format:

AT+FCLR<CR>
+ok<CR><LF><CR><LF>

Support SMS config.

4.2.2.9. AT+H

- Function: Help;
- Format:
  - Query Operation

AT+H<CR>
+ok=<command help><CR><LF><CR><LF>

- Parameters:
  - command help: command introduction;

4.2.2.10. AT+UART

- Function: Set/Query serial port parameters. Setting is valid after reset.
- Format:
  - Query Operation

AT+UART<CR>
+ok=<baudrate,data_bits,stop_bit,parity,flowctrl><CR><LF><CR><LF>

  - Set Operation

AT+UART=<baudrate,data_bits,stop_bit,parity,flowctrl><CR>
+ok<CR><LF><CR><LF>

- Parameters:
  - baudrate:
    - 1200,1800,2400,4800,9600,19200,38400,57600,115200
  - data_bits:
    - 8
  - stop_bits:
    - 1,2
  - parity:
    - NONE
    - EVEN
    - ODD
  - Flowctrl: (CTSRTS),
    - NFC: No hardware flow control
    - FC: hardware flow control

Support SMS config.

4.2.2.11. AT+UARTINTERVAL

- Function: Set/Query serial port frame time. Setting is valid after reset.
- Format:
  - Query Operation

AT+UARTINTERVAL<CR>
+ok=<interval><CR><LF><CR><LF>

  - Set Operation

AT+UARTINTERVAL=<interval><CR>
+ok<CR><LF><CR><LF>

- Parameters:
  - interval: UART frame time.
    - default 200ms

4.2.2.12. AT+UARTTYPE

- Function: Set/Query serial port type. Setting is valid after reset. Only valid for HF-G200 and HF2111 product.
- Format:
  - Query Operation

AT+UARTTYPE<CR>
+ok=<type><CR><LF><CR><LF>

- Set Operation

AT+UARTTYPE=<type><CR>
+ok<CR><LF><CR><LF>

- Parameters:
  - type: UART type
    - RS485: UART type is RS485, half-duplex.
    - RS232: UART type is RS232/RS422, full-duplex.

4.2.2.13. AT+USERHEAD

- Function: Set/Query adding head data for each serial data. Setting is valid after reset. Only valid for HF-G200 and HF2111 product.
- Format:
  - Query Operation

AT+USERHEAD<CR>
+ok=<data_len><data><CR>< LF ><CR>< LF >
+ok=None<CR><LF ><CR><LF >

  - Set Operation

AT+USERHEAD=None<type><CR>
AT+USERHEAD=<data_len><data><type><CR>
+ok=None<CR><LF ><CR><LF >
+ok=<data_len><data><CR>< LF ><CR>< LF >

- Parameters:
  - data_len: head data length
  - data：head data, if need hex format add blank character. Ex: [68 79 90]

Support SMS config.

4.2.2.14. AT+SOCKA

- Function: Set/Query SOCK A network protocol parameters, Setting is valid after reset. Support SMS config.
- Format:
  - Query Operation

AT+SOCKA<CR>
+ok=<protocol,port,IP,mode><CR><LF><CR><LF>

  - Set Operation

AT+SOCKA=<protocol,port,IP,mode><CR>
+ok<CR><LF><CR><LF>

- Parameters:
  - protocol:
    - NONE: none setting, clear current setting.
    - TCP
    - UDP
  - port: protocol port ID: Decimal digit and less than 65535
  - IP: Server's IP address or domain name
  - mode: Connectiontype
    - LONG: long link connection
    - SHORT: short link connection.

4.2.2.15. AT+SOCKB

- Function: Set/Query SOCK B network protocol parameters, Setting is valid after reset. Support SMS config.
- Format:

- Query Operation

AT+SOCKB<CR>
+ok=<protocol,port,IP,mode><CR><LF><CR><LF>

- Set Operation

AT+SOCKB=<protocol,port,IP,mode><CR>
+ok<CR><LF><CR><LF>

- Parameters:
  - protocol:
    - NONE: none setting, clear current setting.
    - TCP
    - UDP
  - port: protocol port ID: Decimal digit and less than 65535
  - IP: Server's IP address or domain name
  - mode: Connectiontype
    - LONG: long link connection
    - SHORT: short link connection.

4.2.2.16. AT+SOCKC

- Function: Set/Query SOCK C network protocol parameters, Setting is valid after reset. Support SMS config.
- Format:
  - Query Operation

AT+SOCKC<CR>
+ok=<protocol,port,IP,mode><CR><LF><CR><LF>

  - Set Operation

AT+SOCKC=<protocol,port,IP,mode><CR>
+ok<CR><LF><CR><LF>

- Parameters:
  - protocol:
    - NONE: none setting, clear current setting.
    - TCP
    - UDP
  - port: protocol port ID: Decimal digit and less than 65535
  - IP: Server's IP address or domain name
  - mode: Connectiontype
    - LONG: long link connection
    - SHORT: short link connection.

4.2.2.17. AT+TCPALK

- Function: Query if SOCK A TCP link already build-up;
- Format:

AT+TCPALK<CR>
+ok=<sta><CR><LF><CR><LF>

- Parameters:
  - sta.: if module already setup TCP link;
    - on: TCP link setup;
    - off: TCP link not setup;

4.2.2.18. AT+TCPBLK

- Function: Query if SOCK A TCP link already build-up;
- Format:

AT+TCPBLK<CR>
+ok=<sta><CR><LF><CR><LF>

- Parameters:

- sta.: if module already setup TCP link;
  - on: TCP link setup;
  - off: TCP link not setup;

4.2.2.19. AT+TCPCLK

- Function: Query if SOCK A TCP link already build-up;
- Format:

AT+TCPCLK<CR>
+ok=<sta><CR><LF><CR><LF>

- Parameters:
  - sta.: if module already setup TCP link;
    - on: TCP link setup;
    - off: TCP link not setup;

4.2.2.20. AT+SOCKANUM

- Function: Set/Query SOCK A send/receive data bytes.
- Format:
  - Query Operation

AT+SOCKANUM<CR>
+ok=<send_num recv_num ><CR><LF><CR><LF>

- Parameters:
  - send_num: socket a send data bytes.
  - recv_num: socket a receive data bytes.

4.2.2.21. AT+SOCKBNUM

- Function: Set/Query SOCK B send/receive data bytes.
- Format:
  - Query Operation

AT+SOCKBNUM<CR>
+ok=<send_num recv_num ><CR><LF><CR><LF>

- Parameters:
  - send_num: socket b send data bytes.
  - recv_num: socket b receive data bytes.

4.2.2.22. AT+SOCKCNUM

- Function: Set/Query SOCK C send/receive data bytes.
- Format:
  - Query Operation

AT+SOCKCNUM<CR>
+ok=<send_num recv_num ><CR><LF><CR><LF>

- Parameters:
  - send_num: socket c send data bytes.
  - recv_num: socket c receive data bytes.

4.2.2.23. AT+WANN

- Function: Set/Query GPRS network status.
- Format:
  - Query Operation

AT+WANN<CR>
+ok=<IP><CR><LF><CR><LF>

- Parameters:
  - IP: device IP address.

- ✧ XXX.XXX.XXX.XXX: IP address
- ✧ Waiting GPRS initialization: waiting for initialization

4.2.2.24. AT+GETIP

- Function: Set/Query domain name IP address.
- Format:
  - Set Operation

    AT+GETIP=<domain_name><CR>
    +ok<CR><LF><CR><LF>
- Parameters:
  - domain_name: domain name.

4.2.2.25. AT+HEART

- Function: Set/Query heartbeat parameters. Setting is valid after reset. Support SMS config.
- Format:
  - Query Operation

AT+HEART<CR>
+ok=<beat_time, beat_datalen, beta_data><CR><LF><CR><LF>

  - Set Operation

AT+HEART=<beat_time, beat_datalen, beta_data><CR>
+ok<CR><LF><CR><LF>

  - Cancle Operation

AT+HEART=None<CR>
+ok<CR><LF><CR><LF>

- Parameters:
  - beat_time: beat time, unit: second
  - beat_datalen:beat length
  - beat_data: beat data, 250 bytes maximum

4.2.2.26. AT+UPGRADE

- Function：Set device in UART upgrade mode
- Format：
  - Set Operation

    AT+UPGRADE<CR>
    <CR><LF><CR><LF>

After input this command, the product fix baud rate at 115200 and output “Ready CCCCC…..” waing for upgrade file. Recommend to use secureCRT and transfer file in Xmodem to finish the upgrade operation.

4.2.2.27. AT+GVER

- Function: Query GPRS chip software version
- Format:
  - Query Operation

AT+GVER<CR>
+ok=<ver><CR><LF><CR><LF>

- Parameters:
  - ver: GPRS chip software version;

4.2.2.28. AT+GCID

- Function: Query SIM card CID number
- Format:

- Query Operation

AT+GCID<CR>
+ok=<sim_number><CR><LF><CR><LF>

- Parameters:
  - Sim_number: SIM card CID number.

4.2.2.29. AT+CIMI

- Function: Query SIM card IMSI
- Format:
  - Query Operation

AT+CIMI<CR>
+ok=<imsi_string><CR><LF><CR><LF>

- Parameters:
  - imsi_string: SIM card IMSI

4.2.2.30. AT+CGSN

- Function: Query device IMEI
- Format:
  - Query Operation

AT+CGSN<CR>
+ok=<imei><CR><LF><CR><LF>

- Parameters:
  - imei: IMEI.

4.2.2.31. AT+GSLQ

- Function: Query GPRS signal strength
- Format:
  - Query Operation

AT+GSLQ<CR>
+ok=<state,ret><CR><LF><CR><LF>

- Parameters:
  - state: signal strength.
    - Disconnected: No connection with GPRS station
    - Good: signal is good
    - Normal: signal is normal
  - ret: signal strength value, range from 0~31.

4.2.2.32. AT+LOGIN

- Function: Set/Query LOGIN parameters
- Format:
  - Query Operation

AT+LOGIN<CR>
+ok=<login_datalen><login_data><CR><LF><CR><LF>

  - Set Operation

AT+LOGIN=<login_datalen>,<login_data><CR>
+ok=<login_datalen><login_data><CR><LF><CR><LF>

- Parameters:
  - Login_datalen: login length
  - Login_data: login data

4.2.2.33. AT+MODBUSPROTO

- Function: Set/Query Modbus RTU to Modbus TCP parameters. Support SMS config.
- Format:
  - Query Operation

AT+MODBUSPROTO<CR>
+ok=<status><CR><LF><CR><LF>

  - Set Operation

AT+MODBUSPROTO=<status><CR>
+ok=<status><CR><LF><CR><LF>

- Parameters:
  - status: enable/disable Modbus RTU to Modbus TCP
    - on: enable
    - off: disable

4.2.2.34. AT+SCRIPTUART

- Function: Set/Query uart download HIS.
- Format:
  - Set Operation

AT+SCRIPTUART<CR>
<CR><LF><CR><LF>

After input this command, the product fix baud rate at 115200 and output “Ready CCCCC…..” waing for upgrade HIS file. Recommend to use secureCRT and transfer file in Xmodem to finish the upgrade operation.

4.2.2.35. AT+MOVESCRIPT

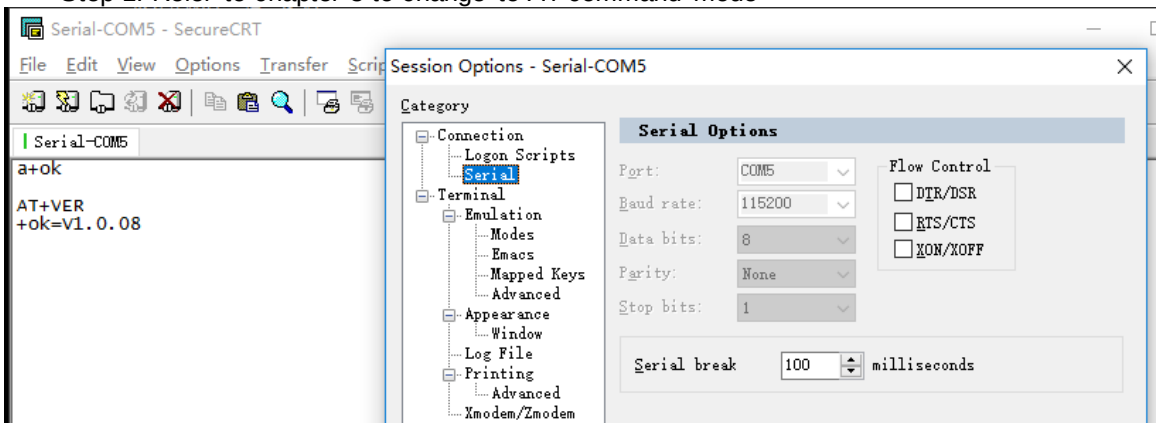
- Function: Removey . script
- Format:
  - Set Operation

AT+MOVESCRIPT=None<CR>
+ok=None<CR><LF><CR><LF>

5. TEST CASE

5.1. Use SOCK A to connect to server

Step 1: Refer to chapter 3 to change to AT command mode

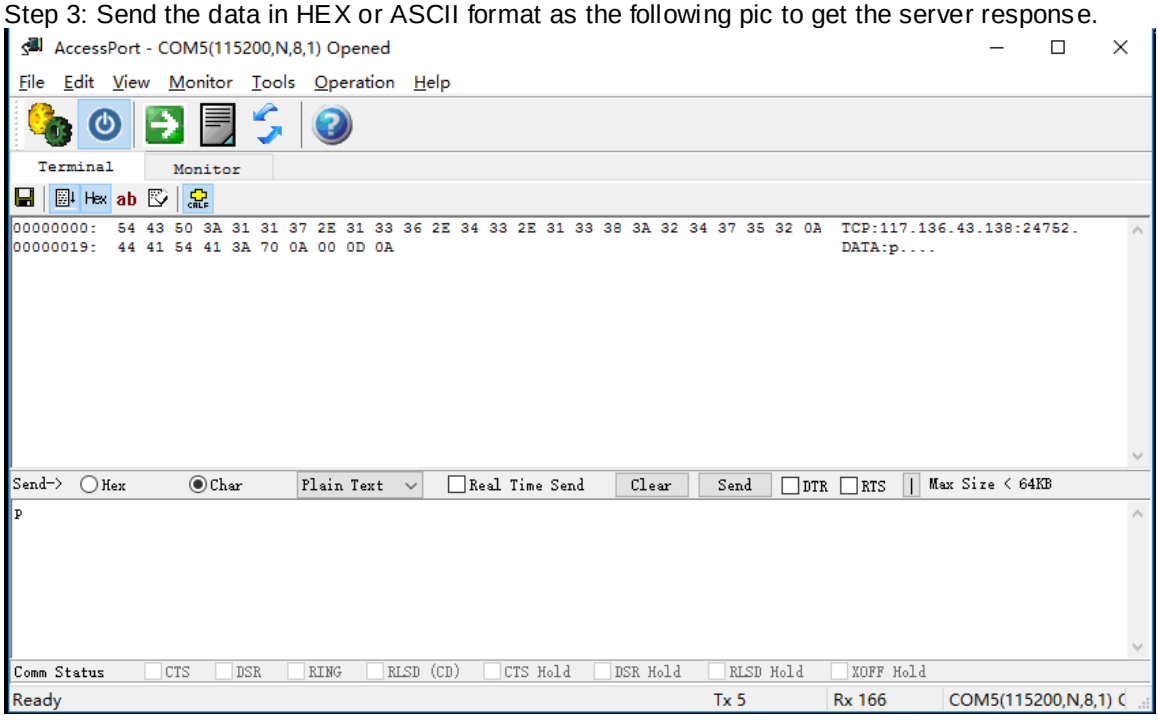


Step 2: Set the server information and reboot. The following is our test server address, it will feedback with the protocol, ip address, port and the received data.

```
AT+SOCKA=TCP,3006,nat1.iotworkshop.com,LONG
+ok

AT+Z
```

Step 3: Send the data in HEX or ASCII format as the following pic to get the server response.



Note:

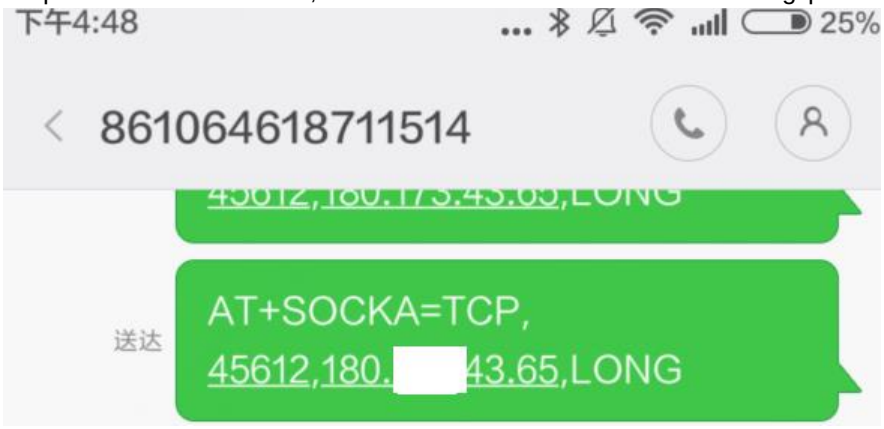
If encounter any problem, input AT+WANN and AT+TCPALK to check the network status.

```
AT+WANN
+ok=10.58.94.37

AT+TCPALK
+ok=on
```

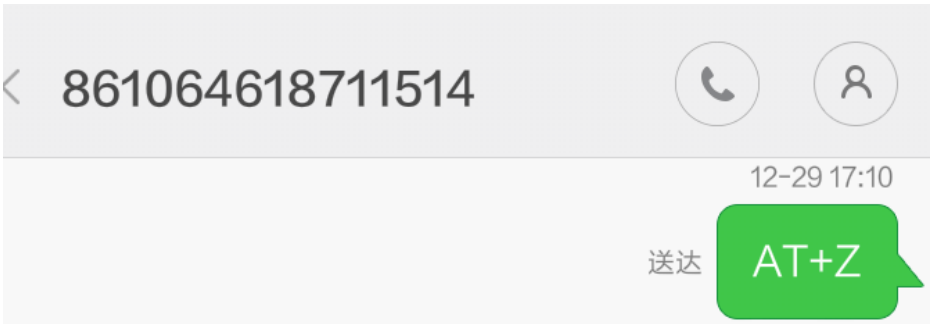
5.2. Use SMS to Set Parameters

Step1：Send AT+SOCKA, AT+SOCKB or AT+SOCKC as following picture.



Step2：if success, will receive【SOCKET 参数设置成功】， if fail will receive【SOCKET 配置参数有误！】

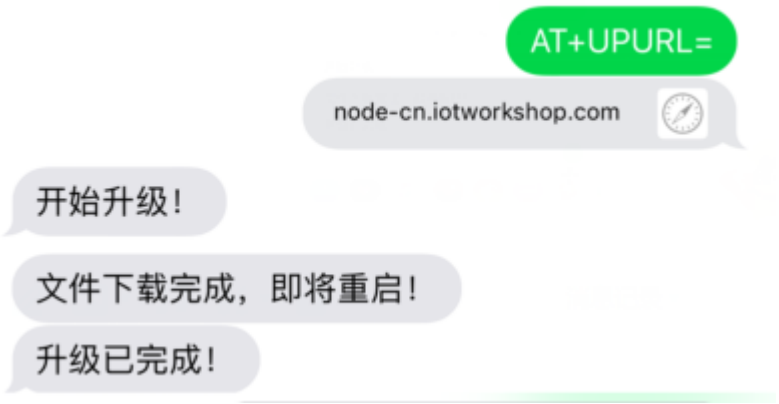
Step3：Send AT+Z to reboot, make new parameters valid.



Step4：Receive SMS back to note reboot in one minute.

5.3. Use SMS to Upgrade Firmware

AT+UPURL=http://node-cn.iotworkshop.com/otadata/file/GPRS/HF2111/LPBS2W_UPGARDE.bin



5.4. Use SMS to Upgrade HIS Script

AT+SCRIPTHTTP=http://node-cn.iotworkshop.com/otadata/file/GPRS/SCRIPT/LPB100_11j_1.05_20170704.bin

APPENDIX A:CONTACT US

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<END>