



FSC-BT1038x User Guide

Release 3.7.0

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[中文版]

This guide is applicable to the **FSC-BT1038x** series Bluetooth audio module, include:

- FSC-BT1038A
- FSC-BT1038B

This guide consists of the following parts:

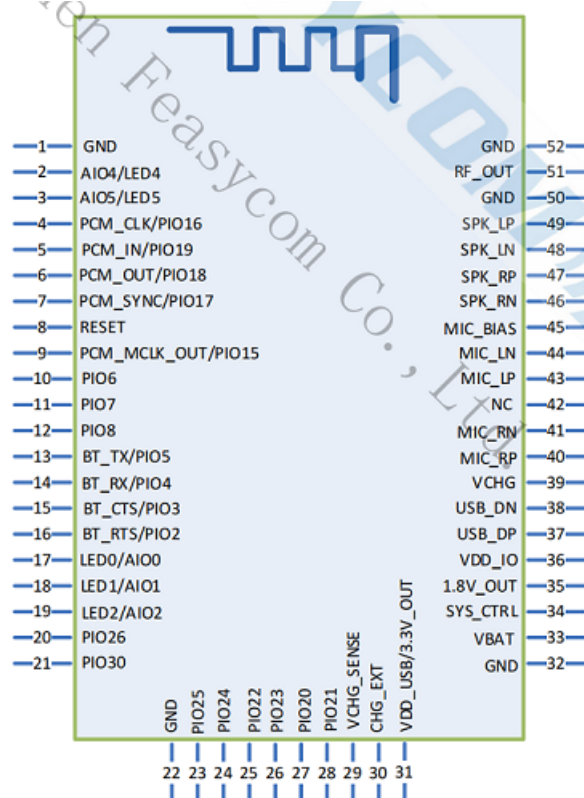
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Chapter 1

Hardware Design

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1.1 Module Pin Diagram



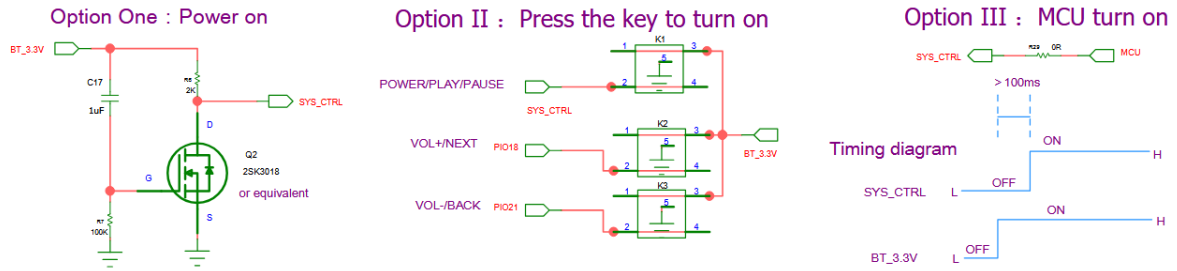
1.2 Pin Description

BT1038x	Pin Name	Type	Pin Descriptions
4	I2S_CLK	I/O	I2S BCLK
5	I2S_IN	I	I2S DATA IN
6	I2S_OUT	O	I2S DATA OUT
7	I2S_WS	I/O	I2S SYNC
8	RESET	I	Low level reset
13	UART_TX	O	UART_TX
14	UART_RX	I	UART_RX
15	UART_CTS	I/O	UART flow control pin (not required by default)
16	UART_RTS	I/O	default as power amplifier control pin
17	LED0	I/O	General-purpose analog/digital input or output.
18	LED1	I/O	General-purpose analog/digital input or output
32	GND	GND	GND
33	VDD	VDD	3.3V power supply, it is recommended to use LDO
34	VREG_IN	I	Power on/off pin
36	VDD_IO	I	pio supply
43	MIC_LP	Audio	MIC0/Line_IN differential L input, positive
44	MIC_LN	Audio	MIC0/Line_IN differential L input, negative
45	MIC_BIAS	Audio	MIC Power Supplies
46	SPK_RN	Audio	Headphone/speaker differential R output, negative
47	SPK_RP	Audio	Headphone/speaker differential R output, positive
48	SPK_LN	Audio	Headphone/speaker differential L output, negative
49	SPK_LP	Audio	Headphone/speaker differential L output, positive
51	EXT_ANT	ANT	External antenna connect pin

1.3 Power-on Circuit Design

The FSC-BT1038X module has three options for power on, which are: delayed power on circuit, button on/off circuit, and MCU controlled power on/off circuit. As shown in the following figure:

Power-on circuit



1.4 Hardware Design Note

- simple testing environment, just connect **VDD / VDD_IO / SYS_CTRL / GND / UART_RX / UART_TX**.
- After drawing the PCB circuit schematic, please send it to Feasycom for review to avoid suboptimal Bluetooth distance.

Chapter 2

Functional Description

[中文版]

2.1 Default Configuration

Name	FSC-BT1038x-XXXX
LE-Name	FSC-BT1038x-LE-XXXX
Secure Simple Pairing Mode	On
UART Baudrate	115200/8/N/1

2.2 Audio Codec Support Description

Mod- ule	Chip	SBC	AAC	aptX	aptX- HD	aptX- LL	aptX- AD	aptX- LossLess	LDAC	CVC
BT1038	QCC308	√	√	√	√	×	Li- cense	License	√	√
BT1038	QCC308	√	√	√	√	×	Li- cense	License	√	√

Note:

√ : Default Supported

× : Not Supported

License : Need License

2.3 Supported Profiles

- SPP (Serial Port Profile)
- GATTs (Generic Attribute Profile LE-Peripheral role)
- GATTC (Generic Attribute Profile LE-Central role)
- HFP-HF (Hands-Free Profile)
- HFP-AG (Hands-Free-AG Profile)
- A2DP-Sink (Advanced Audio Distribution Profile)
- A2DP-Source (Advanced Audio Distribution Profile)
- AVRCP-Controller (Audio/Video remote controller Profile)
- AVRCP-Target (Audio/Video remote controller Profile)
- HID-DEVICE (Human Interface Profile)
- PBAP (Phonebook Access Profile)
- MAP (Message Access Profile)
- LEA (LE Audio)

2.3.1 GATT Service

Type	UUID	Operation	Description
Service	0xFFFF0		Throughput transmission service
Write	0xFFFF2	Write, Write Without Response	APP sends data to module
Notify	0xFFFF1	Notify	APP notification

Chapter 3

Quick Development Kit

[中文版]

3.1 Datasheet

- FSC-BT1038x Datasheet

3.2 Evaluation Board

- FSC-DB200 : Feasycom Bluetooth audio application development board, compatible with FSC-BT1038x series modules.

3.3 AT Commands Set

- FSC-BT1038x General Audio AT Commands Set

3.4 Serial Port Tool

- Feasycom Serial Port Tool : A serial port communication analysis tool based on Windows PC.

3.5 APP&SDK

- FeasyBlue App : Feasycom App & SDK resource supporting Android and iOS, which enables functions such as Bluetooth BLE & SPP data communication test, Feasycom

module firmware version reading, parameter configuration, OTA Upgrade and OTA AT commands etc.

3.6 Firmware Upgrade

3.6.1 OTA Upgrade

- FeasyBlue (Based on Android or iOS)
- User Guide: Please refer to [FSC-BT1038x - OTA Upgrade](#).

3.6.2 UART Upgrade

- FSC-BT1038x Upgrade Tool 2.1 (Based on Windows PC)
- User Guide: Please refer to [FSC-BT1038x - UART Upgrade](#).

Chapter 4

Quick Start

[中文版]

4.1 What you need

4.1.1 Required Hardware

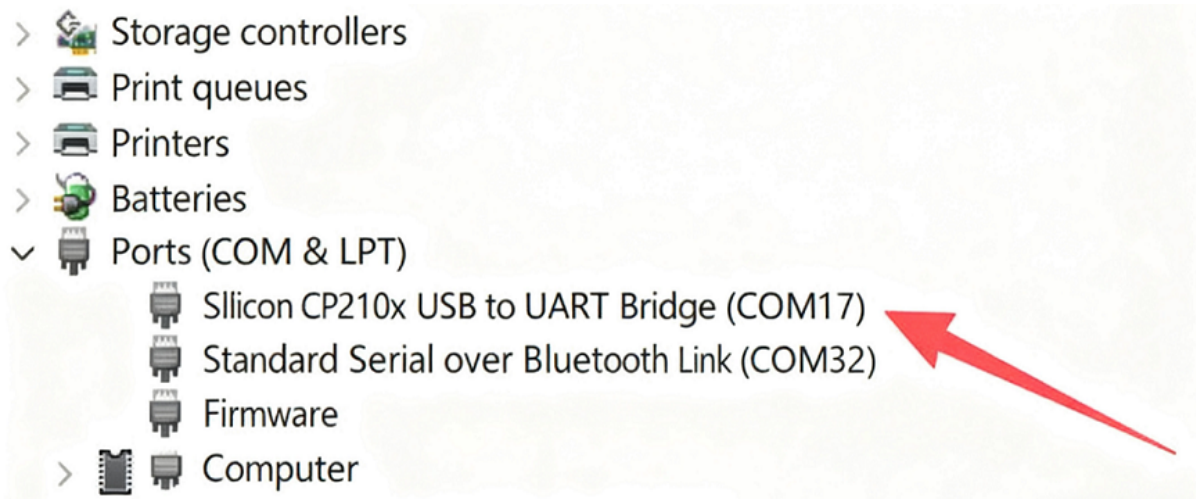
- 1 x FSC-DB200-BT1038x Rapid Development Kit : FSC-DB200 Rapid Development Kit pre-integrated with the FSC-BT1038x Bluetooth Audio Module
- 1 x PC (Windows)

4.1.2 Software and Setup

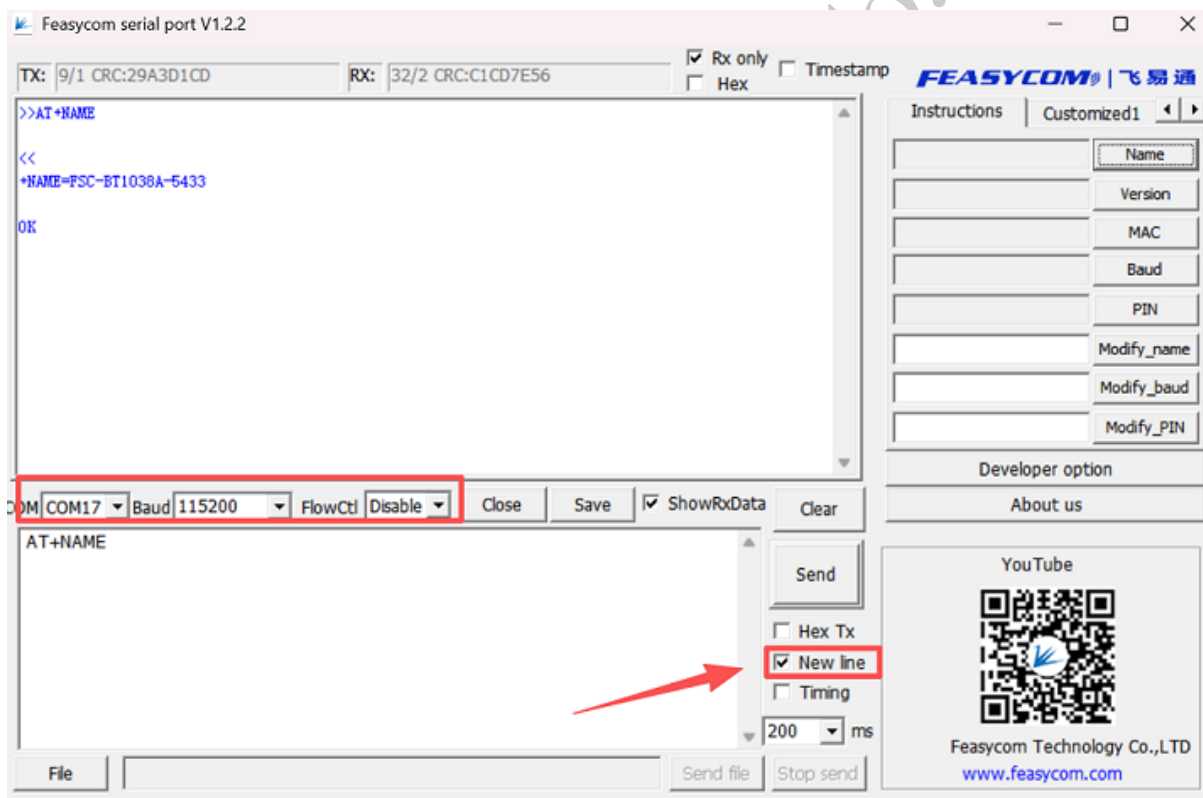
- Feasycom Serial Port Tool : A serial port communication analysis tool based on Windows PC.
- Communication Interface : UART
- UART Configuration: 115200/8/N/1

4.2 Hardware Access

Connect FSC-DB200-BT1038x to PC via USB To Type-C cable, switch the **UART/USB toggle** to UART, press the **USB/battery power option button** to switch to USB power supply, Press and hold the **ON/OFF** button for 2-3 seconds to turn on the device, and the PC will automatically recognize the serial port and generate a virtual COMx port.



2.Run the Feasycom Serial Port Tool on the PC, set the correct **COM** and **Baud**, and check the **New Line**.



4.3 Communication Test

The following are several basic general AT command test examples.

For more AT commands, please refer to [FSC-BT1038x General Audio AT Commands Set](#).

4.3.1 AT - UART Communication Test

Com- mand	AT\r\n
Response	\r\nOK\r\n
Descrip- tion	Test the UART communication between HOST and Module after power on, baudrate changed, etc.

Example:

```
Send:      >>AT\r\n
Response: <<\r\nOK\r\n    //Successfully connected.
```

4.3.2 AT+NAME - Read/Write Local BR/EDR Name

Example:

```
Send:      >>AT+NAME\r\n
Response: <<\r\n+NAME=FSC-BT1038A-FF08\r\n    //Example, please
↳refer to the actual reading
Response: <<\r\nOK\r\n
```

4.3.3 AT+LENNAME - Read/Write Local BLE Name

Example:

```
Send:      >>AT+LENNAME\r\n
Response: <<\r\n+LENNAME=FSC-BT1038A-LE-FF08\r\n    //Example,
↳please refer to the actual reading
Response: <<\r\nOK\r\n
```

4.3.4 AT+VER - Read the Current Firmware Version

Example:

```
Send:      >>AT+VER\r\n
Response: <<\r\n+VER=FSC-BT1038A,V1.1.9\r\n    //Example, please
```

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→ refer to the actual reading result

Response: <<\r\nOK\r\n

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Chapter 5

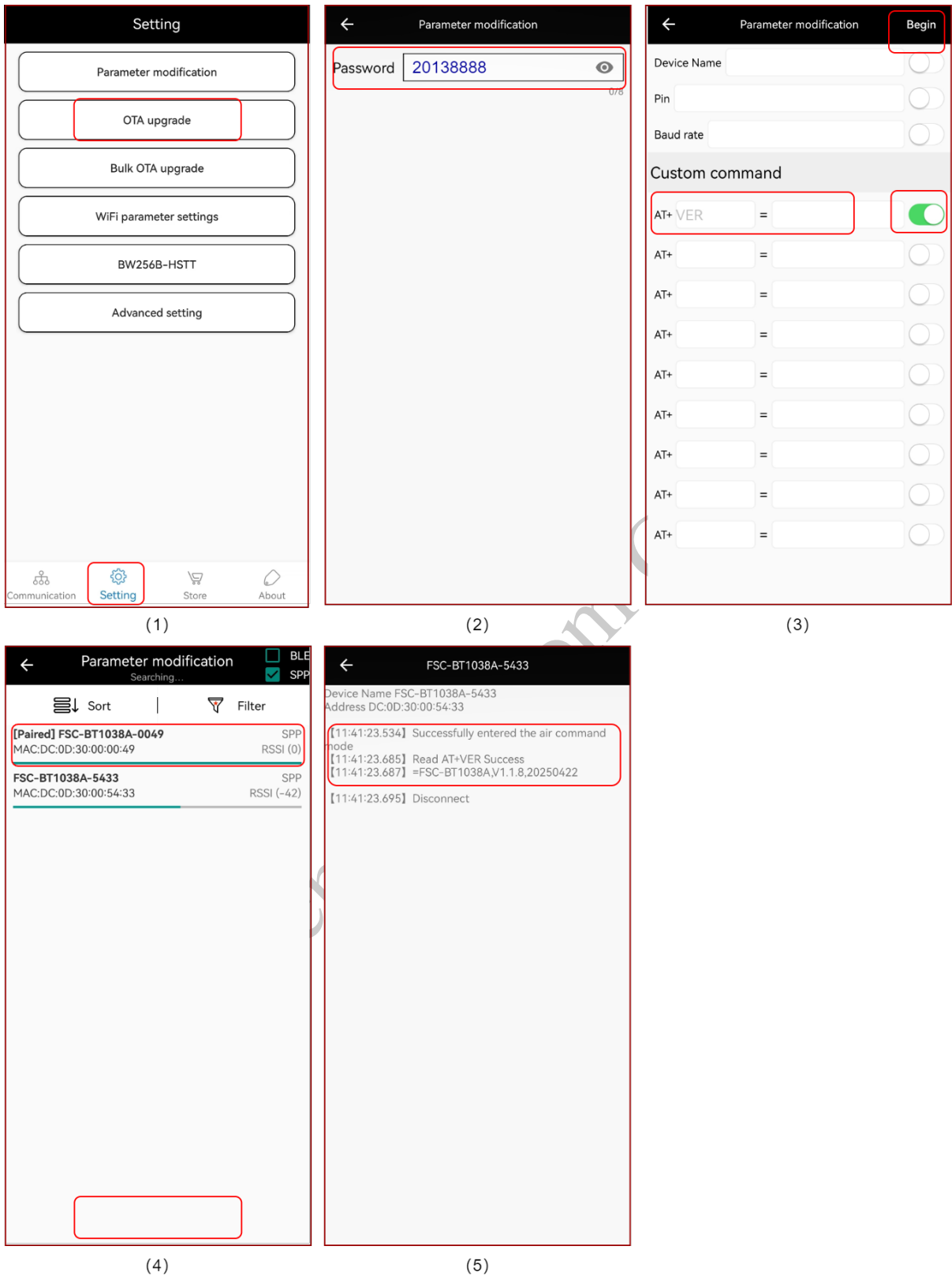
Obtain Firmware Version

[中文版]

Currently, there are two ways to obtain the firmware version information of FSC-BT1038x, as following:

5.1 FeasyBlue OTA AT Command

1. Download and install **FeasyBlue App** (Based on Android or iOS).
2. Run **FeasyBlue**, select **Setting - Parameter modification**, enter “**20138888**” in the **Password** field, and access the Parameter modification function page.
3. On the **Parameter modification** function page, go to the **Custom command** function block, enter the AT command: **AT+VER**, and **check it**, then select **Begin** in the top-right corner of the page to start sending the OTA AT command.
4. Scan for nearby devices and select the device whose firmware version you need to query. After selection, you will successfully access the air command mode and execute the AT command at the same time.
5. After the command is executed successfully, the current firmware version information of the device will be displayed.



5.2 UART AT Command

Send the **AT+VER** command through UART to obtain firmware version information.

Send: <<AT+VER

Response: >>+VER=FSC-BT1038A,V1.1.9 //Example, please refer to
↪the actual reading result

Response: >>OK

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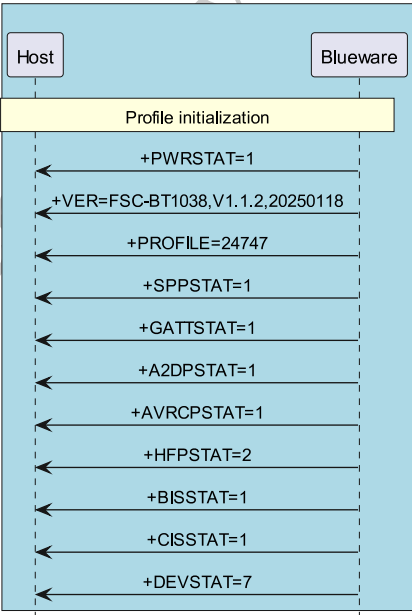
Chapter 6

Development Examples

[中文版]

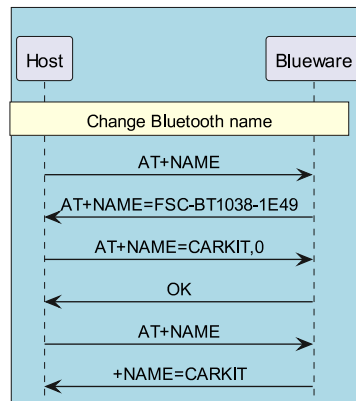
6.1 Profile Initialization

Module Profile initialization, response event examples are as follows:



6.2 Parameter Modification

6.2.1 Modify Bluetooth Name



Before the MCU modifies any parameters, it is recommended to first query, then modify, and finally verify. For the MCU to modify the device name to CARKIT, the reference code example is as follows:

```

void change_name(void)
{

    uart_send("AT+NAME\r\n");
    if(uart_read("+NAME", name_buf))
    {
        if(memcmp(name_buf, "CARKIT", 6))
        {
            uart_send("AT+NAME=CARKIT,0\r\n"); //defalut disable_
            ↪MAC address suffix
            uart_send("AT+NAME\r\n"); // read bt name
            if(uart_read("+NAME", name_buf))
            {
                if(memcmp(name_buf, "CARKIT", 6))
                {
                    //change name fail
                }
                else
                {
                    //change name success
                }
            }
        }
    }
}
  
```

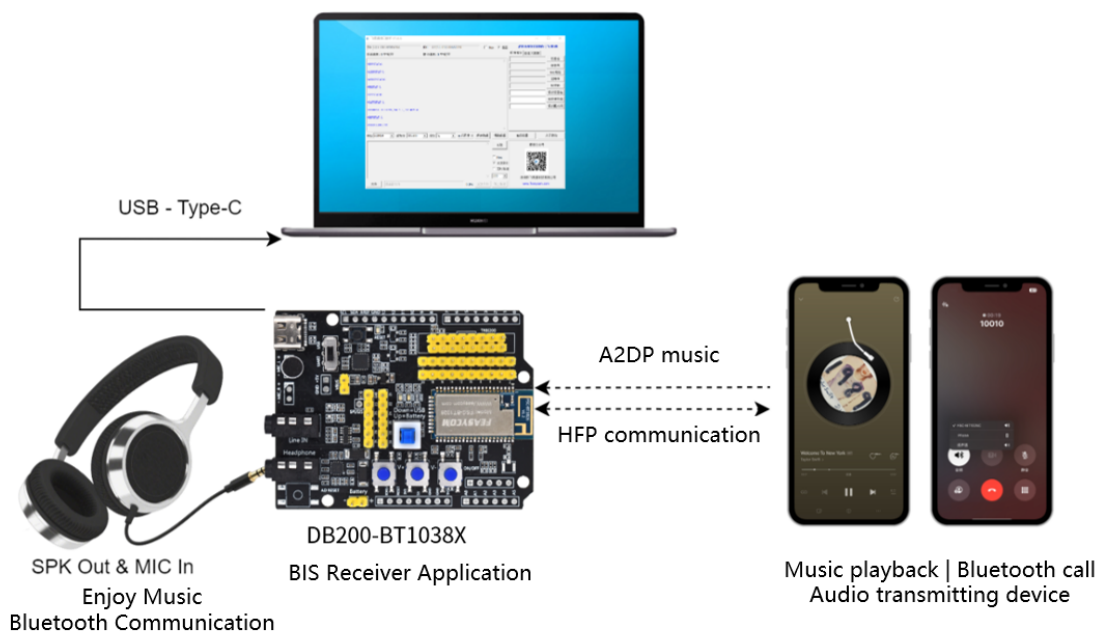
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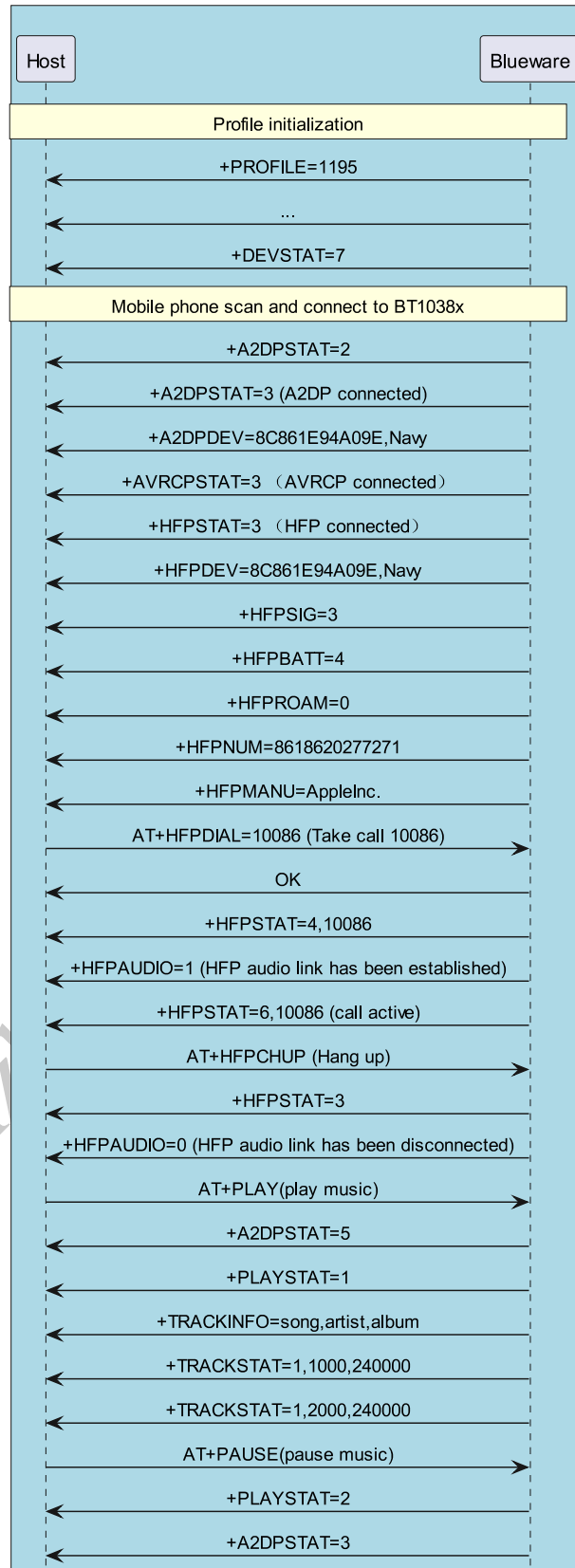
```
}  
  
}  
  
}
```

6.3 Classic Auido Sink Mode Application

6.3.1 Application Scenarios



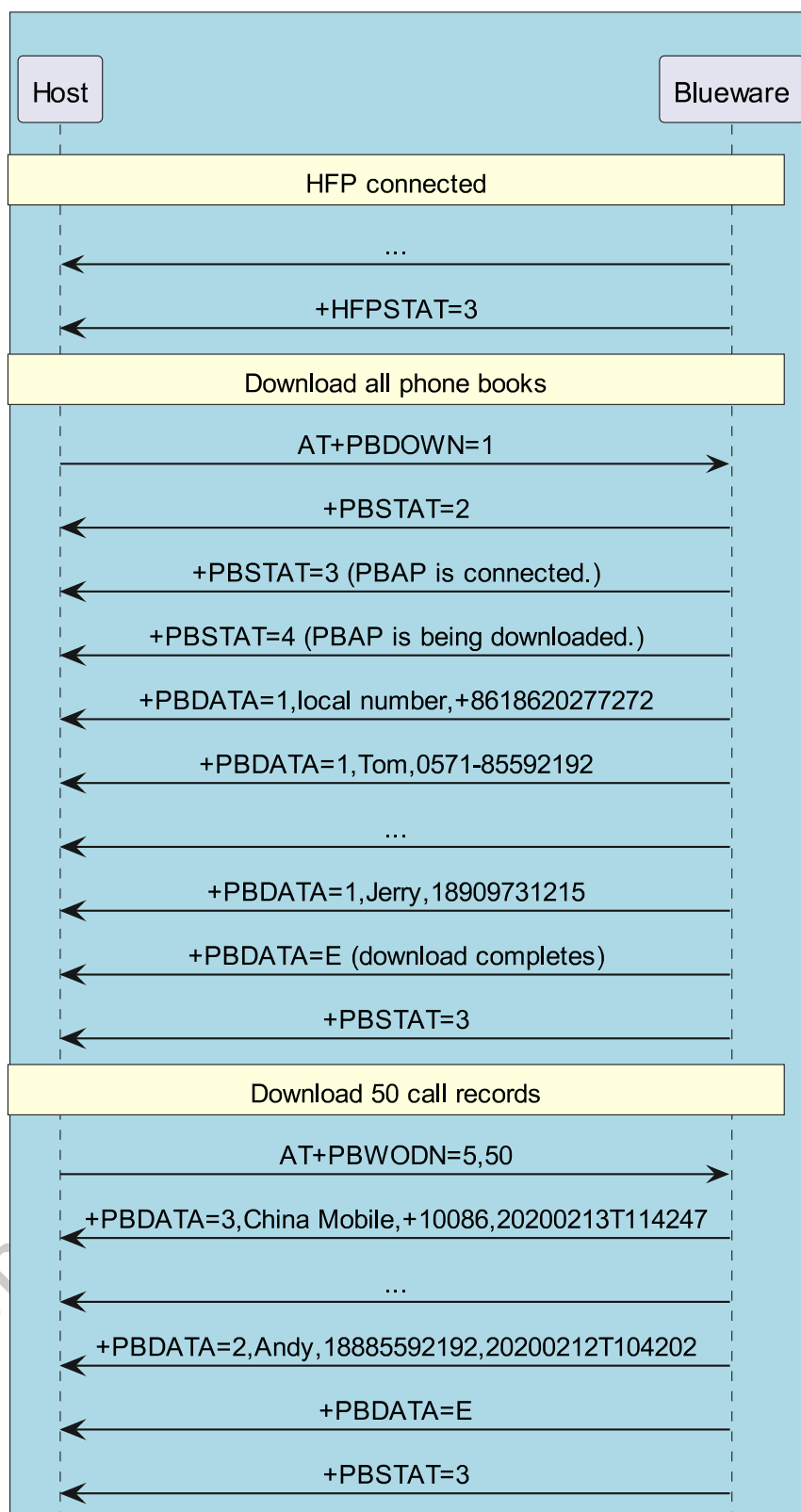
6.3.2 Application Examples



6.4 Phonebook Download

Note

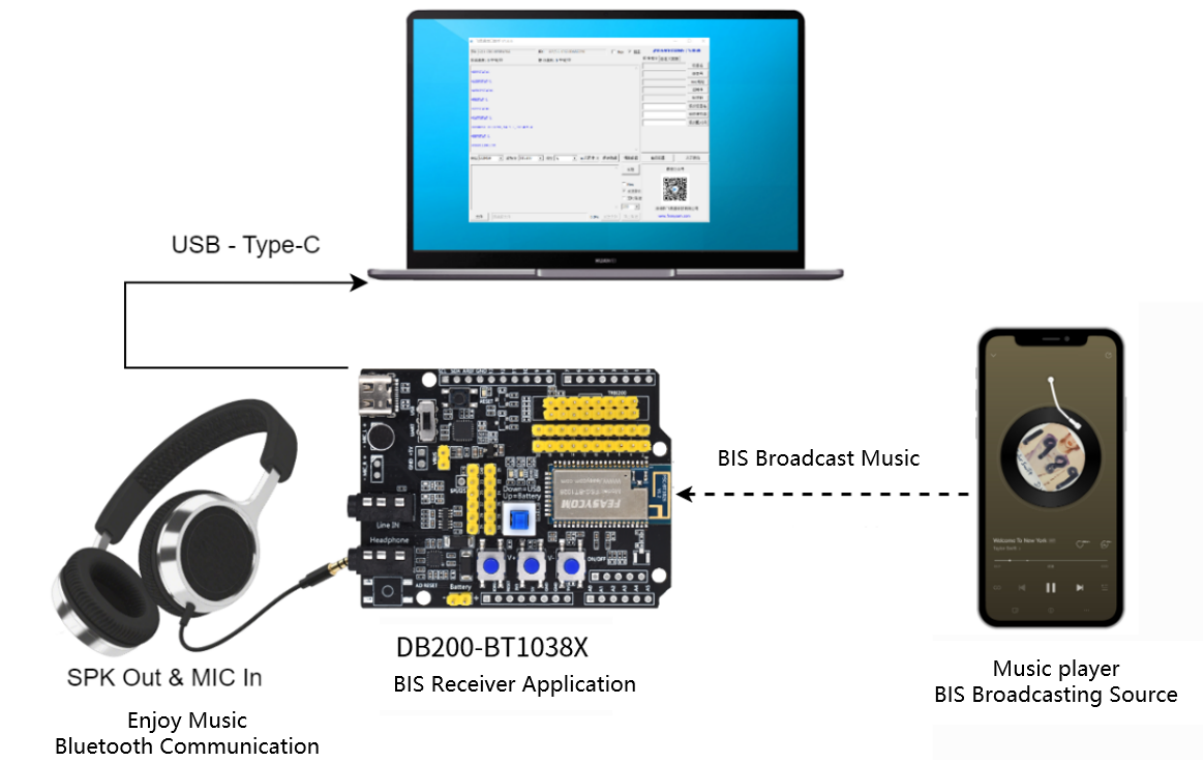
For some firmware versions of SOC audio modules, automatic connection to PBAP (Phone Book Access Profile) is not supported when downloading contacts. You need to first send the AT command AT+PBCONN to establish a PBAP connection before proceeding with the download.



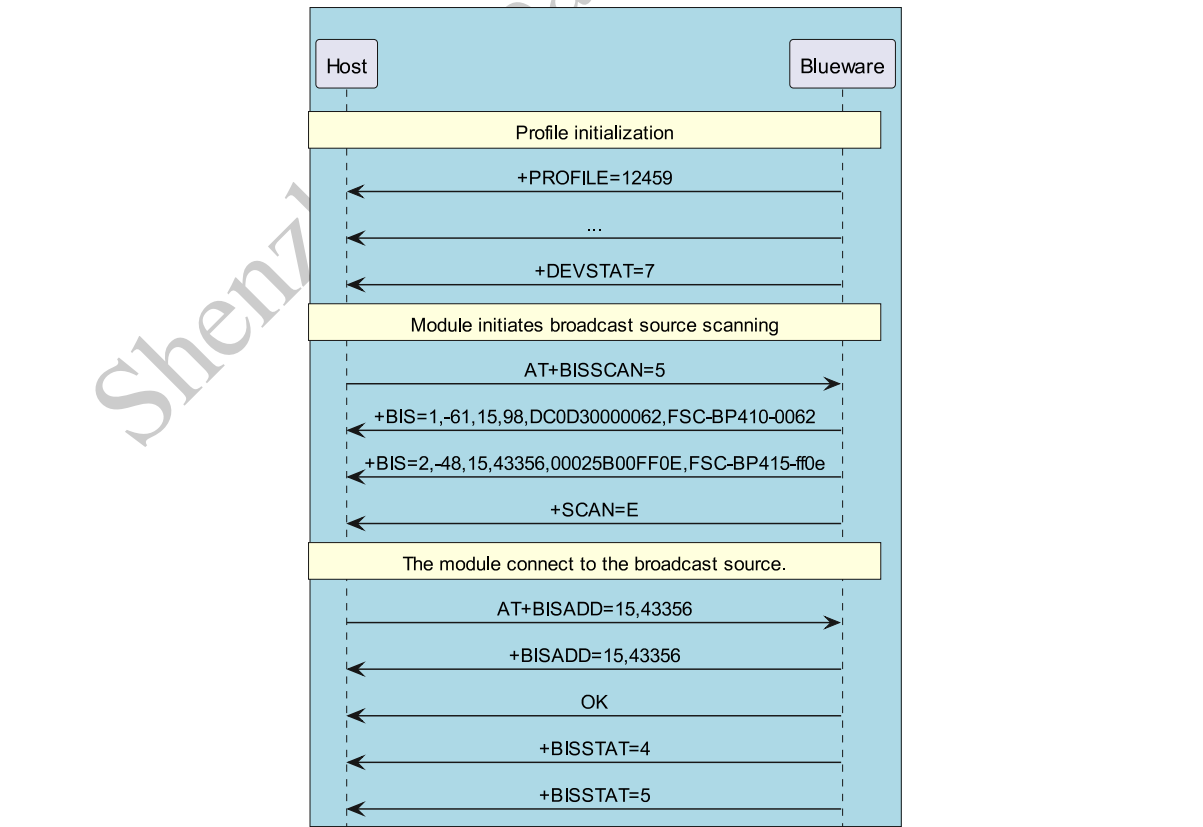
6.5 LE Audio Application

6.5.1 LE Audio Broadcast Application

Application Scenarios



Application Example



Chapter 7

Firmware Upgrade

[中文版]

FSC-BT1038x series Bluetooth audio module now supports: **Over the air upgrade (OTA)** and UART upgrade.

7.1 OTA upgrade

7.1.1 App Download

- FeasyBlue App (Base on Andriod or iOS)

7.1.2 User Guide

1.Run the FeasyBlue App, select **Setting - OTA Upgrade** to enter the OTA Upgrade function page. After entering, it will redirect to the device search page where you can select the Bluetooth device to be upgraded.

2.Scan and select the Bluetooth devices that need to be upgraded. After selecting the device, you will enter the **Firmware Loading** interface to load the firmware update file.

3.There are two ways to load the firmware update file:

- **Select firmware:** Choose to load the firmware update file stored locally on the phone (the firmware update file is provided by Feasycom).
- **Get the firmware:** By entering the **DFU name**, the corresponding firmware update file can be downloaded and imported from the Feasycom cloud server via the network (the DFU name is provided by Feasycom).

4. After successfully loading the firmware update file, click the **Start Upgrade** button. The message “**Upgrading**” and the upgrade progress will be displayed, indicating that the upgrade mode has been successfully entered and the upgrade is in progress.

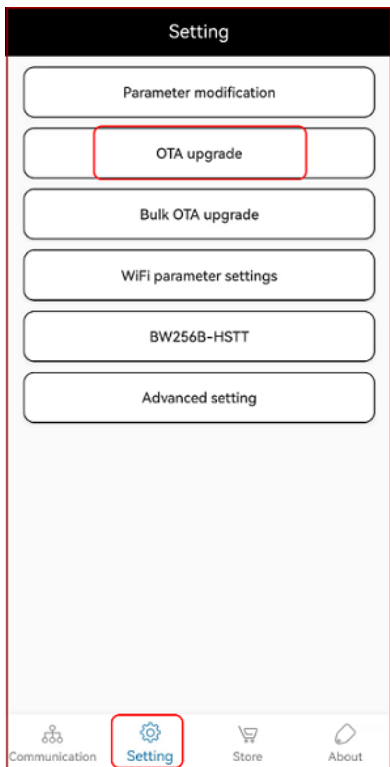
5. Wait for the upgrade progress bar to complete and display “**Upgrade Completed**”, then the upgrade is considered complete.

Warning:

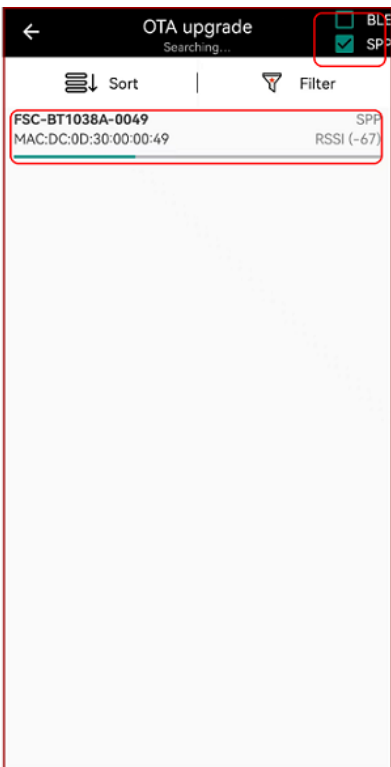
1. When installing and running the FeasyBlue App, please allow the App to access **nearby devices, location information, and media and file access** permissions. Otherwise, it will result in the inability to search for nearby Bluetooth devices and load firmware update files.
2. If you choose to import the firmware update file by obtaining the firmware through the **DFU name**, please note that your phone needs to be connected to the Internet and ensure that the DFU name is entered correctly (case sensitive), otherwise an error message of **network or file error** will be displayed.
3. During the upgrade process, do not disconnect the power supply.

7.1.3 OTA Upgrade Example

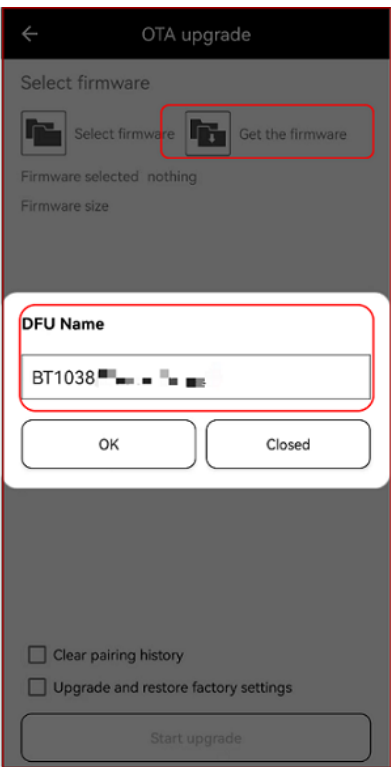
Note: The following example is based on operations on the Android platform. The involved device name, parameters, and firmware DFU name are for demonstration purposes only. Please refer to the actual information during project implementation.



(1)



(2)



(3)



(4)



(5)



(6)

7.2 UART Upgrade

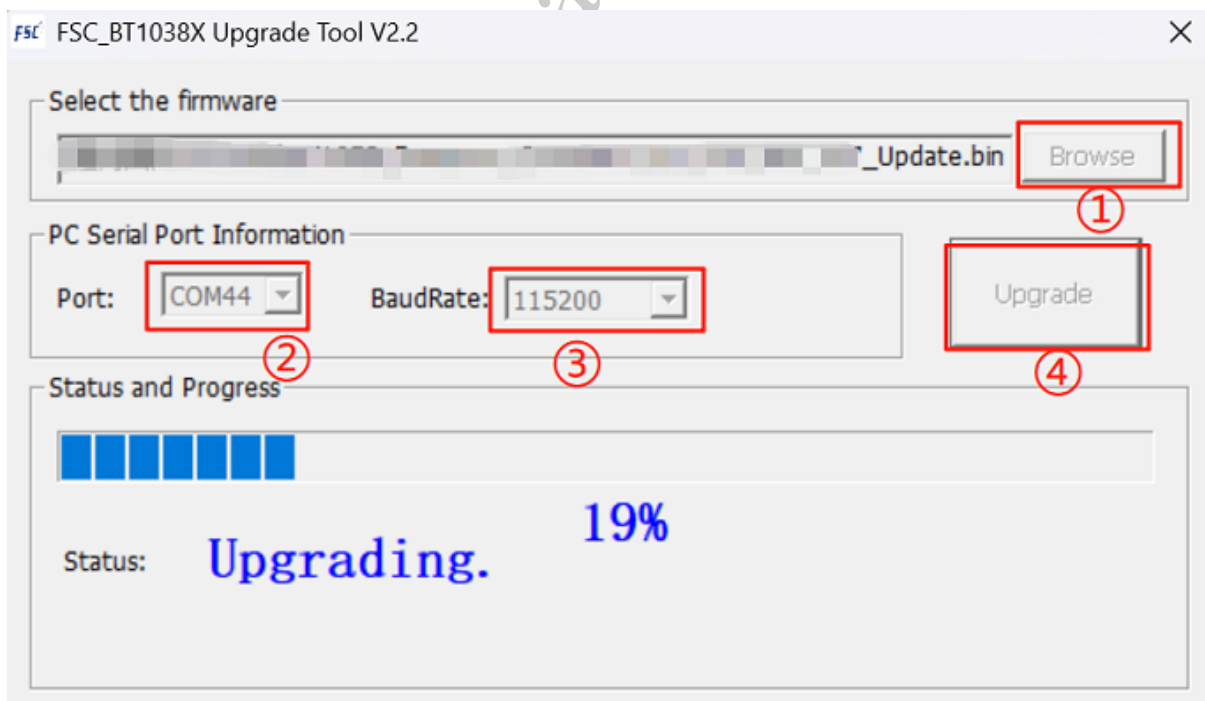
7.2.1 Tool

- FSC-BT1038x Upgrade Tool 2.1 (Based on Windows PC)

7.2.2 User Guide

1. This example uses the Feasycom **FSC-DB200** development board.
2. Connect the FSC-DB200-BT1026C to the PC via a USB to Type-C data cable. Toggle the **UART/USB switch** to UART, press the **USB/Battery Power Option button** to switch to **USB**, and press and hold the **Power (ON/OFF) button** for 2-3 seconds to power on. The PC will automatically recognize the serial port and generate a virtual COMx port.
3. Launch **FSC-BT1038x Upgrade Tool**. Click **Browse** to select the firmware upgrade file stored locally on the PC to load the firmware file.
4. After loading the firmware file, select the corresponding COMx for the **Port** item, and select the current baud rate of the module for the **BaudRate** item (the default baud rate for general programs is 115200). Once the configurations are confirmed to be correct, click **Upgrade** to start the upgrade and enter upgrade mode. Wait until the Status and Progress bar is complete.

7.2.3 UART Upgrade Example



Chapter 8

Contact Information

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Chapter 9

Appendix

9.1 PDF Dowload

PDF Download

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