FSC-BT80X

Audio&Data Dual-mode Module

Get Started

Version 1.0

Contents

1   Brief

This application note describes a quick start for using FSC-BT80X(e.g.FSC-BT802,FSC-BT806) – Feasycom's dual-mode Bluetooth 5.0 audio & data module.Feasycom provides modules (standard firmware), apps, SDKs and programming examples to the customers.

1.1   Application Scenarios

1.1.1   Audio Receiver & Data Interaction

FSC-BT80X can play music and interact app data at the same time when connected a cell phone. Users can customize their own interesting functions via data interaction with a smart phone.

1.1.2   Audio Transmitter

FSC-BT80X can connect and stream to the Bluetooth audio Receivers (speaker, headset, audio sink bluetooth device, etc) automatically and intelligently. User can configure the module flexibility and conveniently.

1.2　Firmwares

- **Dual Mode Data & Audio**
  The standard firmware is compiled for applications that apply profiles including HFP(sink), A2DP(Sink & Source), AVRCP(sink), SPP(server), GATT(server), etc.
- **Other firmwares**
  Firmware listed Above doesn't fit your applications? please contact support@feasycom.com.

1.3　Documents

- **FSC-BT802/FSC-BT806 Datasheet V1.1 EN**
  It provides the technical features, specifications, characteristics and some other information of the module. The last page of the datasheet includes the reference circuit design.
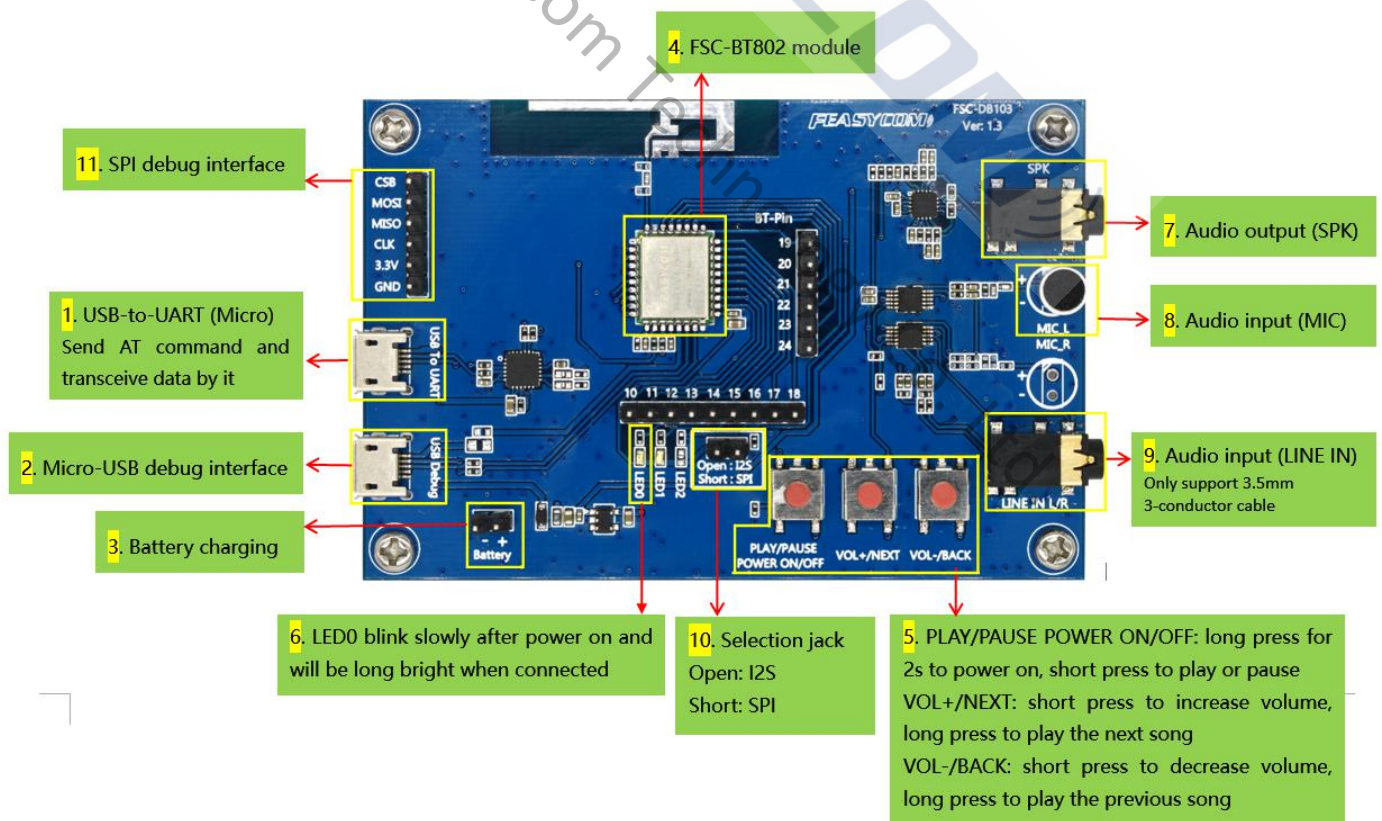- **FSC-BT80X Sink Programming User Guide V3.4(Dual-Mode Audio&Data Transceiver)**
  It provides complete information on how to use the UART, PIO, and other interfaces to program with the module, a complete list and detailed descriptions of AT commands are included.
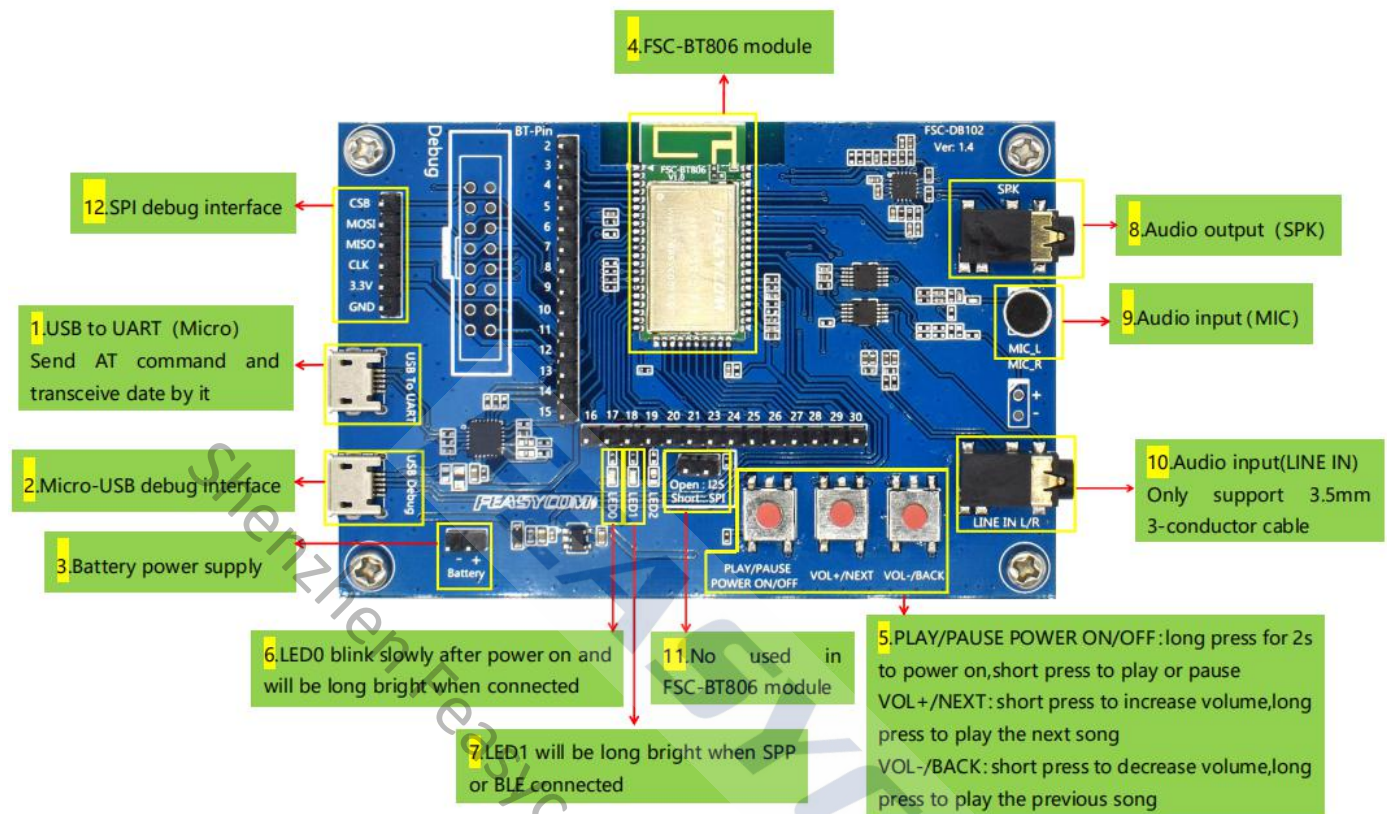
2　Hardware

2.1　Development Board

2.1.1　FSC-DB103-BT802

2.1.2   FSC-DB102-BT806

4.FSC-BT806 module

12.SPI debug interface

1.USB to UART (Micro) Send AT command and transceive date by it

2.Micro-USB debug interface

3.Battery power supply

8.Audio output (SPK)

9.Audio input (MIC)

10.Audio input(LINE IN) Only support 3.5mm 3-conductor cable

6.LED0 blink slowly after power on and will be long bright when connected

11.No used in FSC-BT806 module

7.LED1 will be long bright when SPP or BLE connected

5.PLAY/PAUSE POWER ON/OFF：long press for 2s to power on,short press to play or pause

VOL+/NEXT：short press to increase volume,long press to play the next song

VOL-/BACK：short press to decrease volume,long press to play the previous song

2.2   Hardware Default Setting

- Audio input/output channel: Analog. Developers can send AT commands to change input/output channel. Please see the details in the programming user guide section 2.1.20 & 2.1.21.
- Analog input path: MIC. When a 3.5mm line-in cable is inserted into the jack, the microphone will be muted and the line-in port will be in use.
- Audio active Pin: 11(BT802)/16(BT806). When audio stream go through the SPK port, This pin will be pulled up after 1 sec to eliminate the "popo" noise.
- VOL+/NEXT Pin: 12(BT802)/27(BT806).
- VOL-/BACK Pin: 13(BT802)/28(BT806).
- PLAY/PAUSE & POWER ON/OFF: VREGENABLE.

# 3   Software

3.1   Host Communication Interface

- Communication interface: UART (115200 bps, 8 data bits, no parity, 1 stop bit).

3.2   Bluetooth Generic Default Settings

- Device name (BR/EDR):   **FSC-BT80X**
- Device name (LE):   **FSC-BT80X-LE**
- SPP Pin code: **0000**
- Secure Simple Pairing (SSP): Enabled
- Power on auto reconnect: Enabled

3.3   HFP Default Settings

- Auto display remote device info: (1)Roaming state, (2)Battery level, (3)Network signal strength, (4)Network operator, (5)caller number
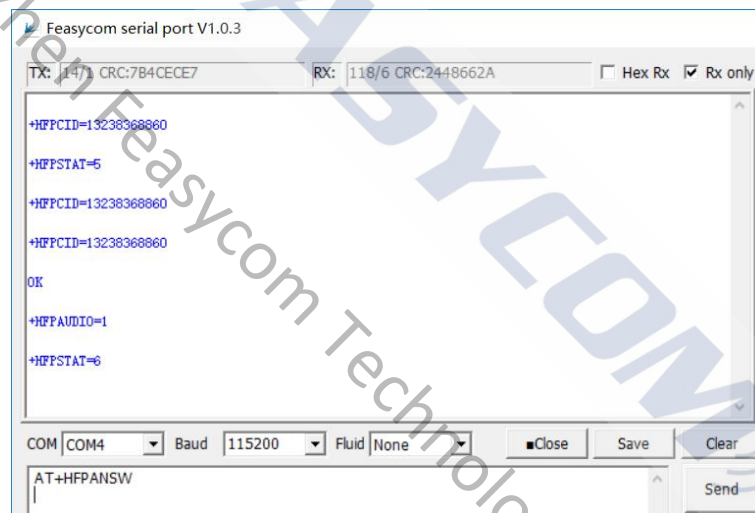
Put up incoming call

3.4   A2DP Default Settings(+A2DPROLE=0)

- Users can change role by AT command. Detail in programming user guide Section 2.3.2
- Supportive codec: SBC, APTX, APTX-HD

3.5   AVRCP Default Settings(+AVRCPCFG=11)

- AVRCP id3 notification: Enabled
- AVRCP playstatus period:5*1000ms
- User can get track ID3 information(title, artist, album) and play progress from Feasycom Serial Port. Detail in programming user guide Section 3.3

ID3 and play progress information

3.6   BLE UUIDs

- Service UUID: **FFF0**
- Notify UUID: **FFF1**
- Write or Write without Response UUID: **FFF2**

3.7   Throughput Mode and AT-Command Mode

- FSC-BT80X works in AT-command mode by default.
- AT-command mode (+TPMODE=0) means that the module works in AT-command state when SPP/GATT connected. Please see the details in the programming user guide Section 2.5 & 2.6 .
- Throughput mode (+TPMODE=1) means that module enters Throughput state when SPP/GATT connected. In Throughput state, every byte of data received via UART from the host MCU will be entirely delivered to remote Bluetooth device without any change, vice versa.

3.8   AT Commands Format

- Every AT command starts with 'AT' and ends with Carriage Return (CR, encoded to 0x0D in the ASCII character set) and Line Feed (LF, encoded to 0x0A in the ASCII character set).

3.9   Transmission Speed

- When FSC-BT80X is transmitting or receiving audio and the UART baud rate is 921600 bps, its maximum SPP transmission speed can reach up to 20 kB/s, its maximum BLE transmission speed can reach up to 1 kB/s.
- When FSC-BT80X is neither transmitting nor receiving audio and the UART baud rate is 921600 bps, its maximum SPP transmission speed can reach up to 40 kB/s.
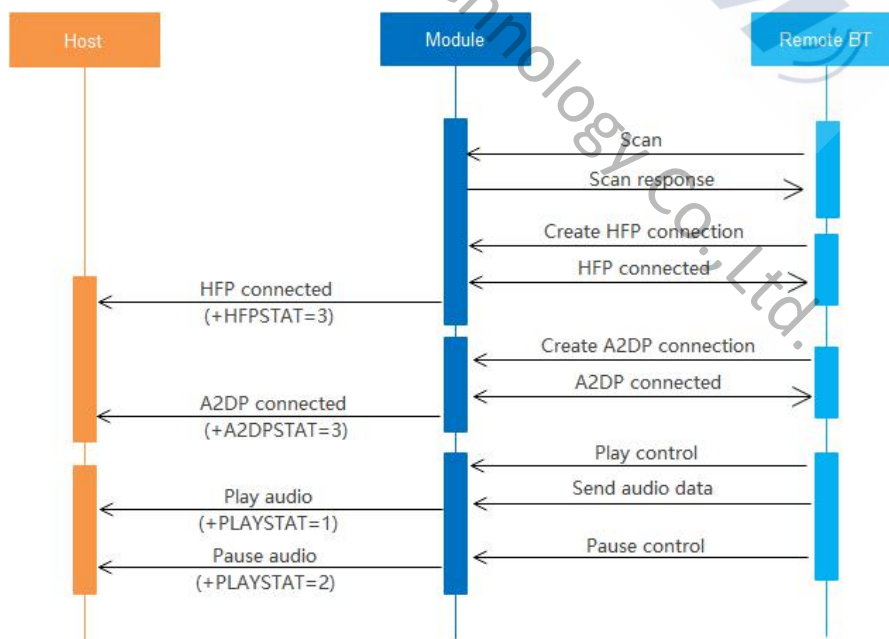
4   Major Process

4.1   Read/Write Parameters

● Typical Read/Write Parameters Interaction:
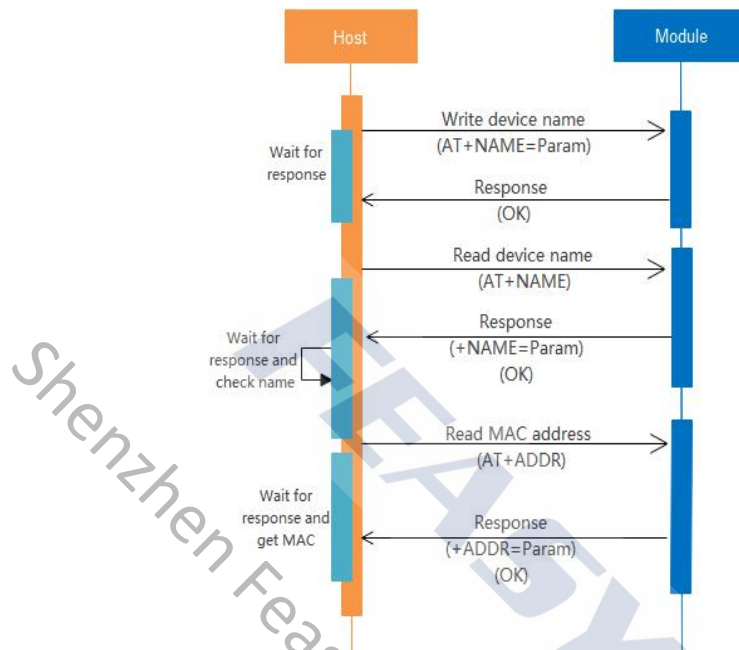

4.2   Audio Sink(+A2DPROLE=0) – Connection

● The connection between the module and an audio transmitter (smartphone, tablet, laptop, audio source Bluetooth device, etc) is initiated by the audio transmitter.

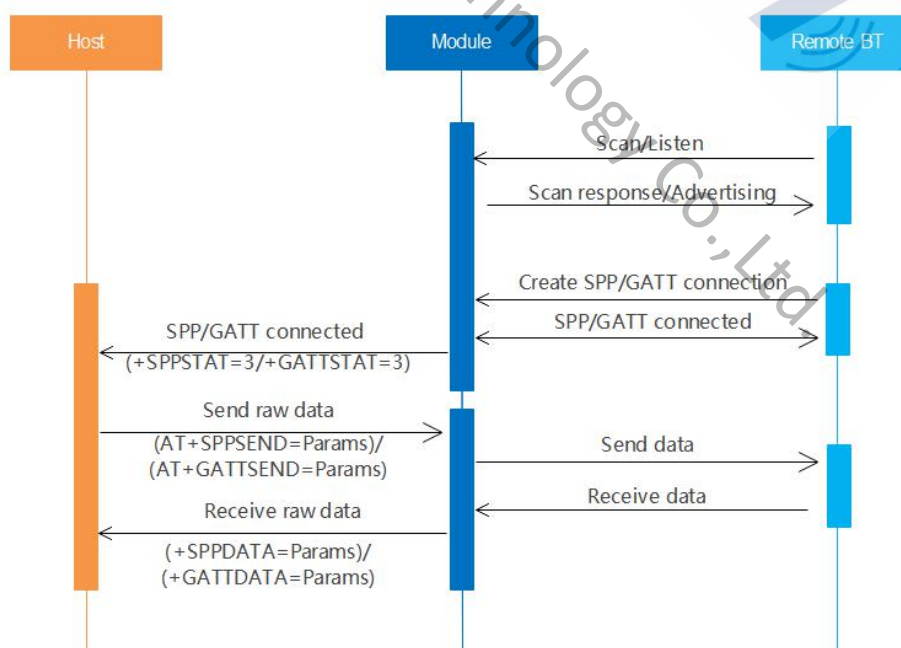● Typical Audio Sink Connection Interaction:

4.3 Audio Source(+A2DPROLE=1) – Connection

● +INQCFG=1: Auto scan and connect nearby audio device which RSSI>-80
● +INQCFG=0: Typical Audio Source Initiative Connection Interaction:
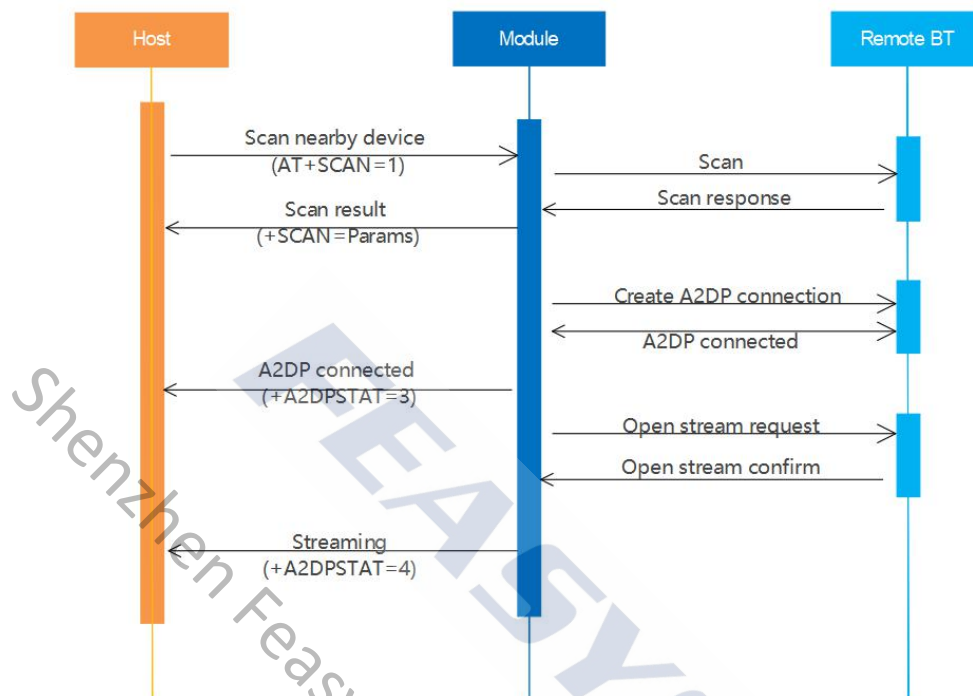
4.4 Data Throughput

● Full duplex transparent communication is available in Throughput state
● Typical SPP/GATT Slave Data Throughput Interaction:

5 Apps and Tools

5.1 Apps

5.1.1 FeasyBlue - iOS App

FeasyBlue iOS app is available in iOS App Store, search "FeasyBlue" in App Store to download. Here's an operating example on an IOS phone:
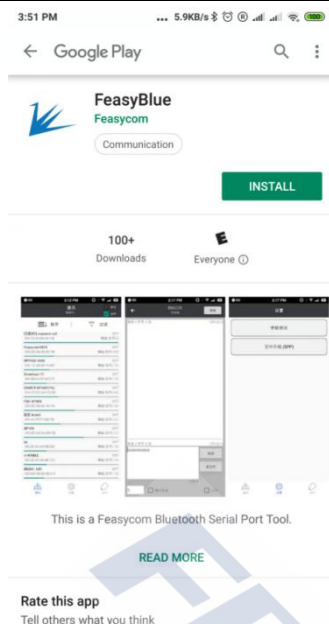

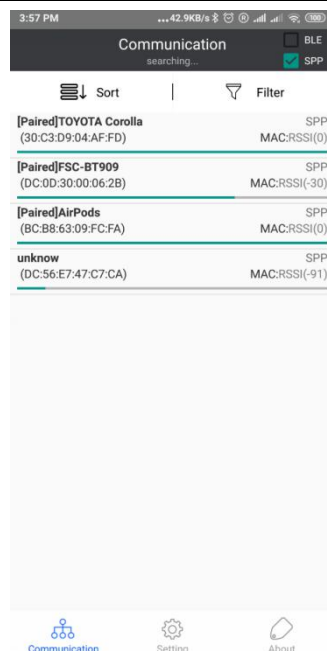| Installation | FeasyBlue Home Page |

The app's features:

- Interfacing the module by Bluetooth.
- Communication. Searching, connecting, data transceiving.
- Properties Defining. Configuring the module.

5.1.2 FeasyBlue - Android App

FeasyBlue Android app is available in Google Play Store, click here or search "FeasyBlue" in Google Play Store to download. Here's an operating example on an android phone:

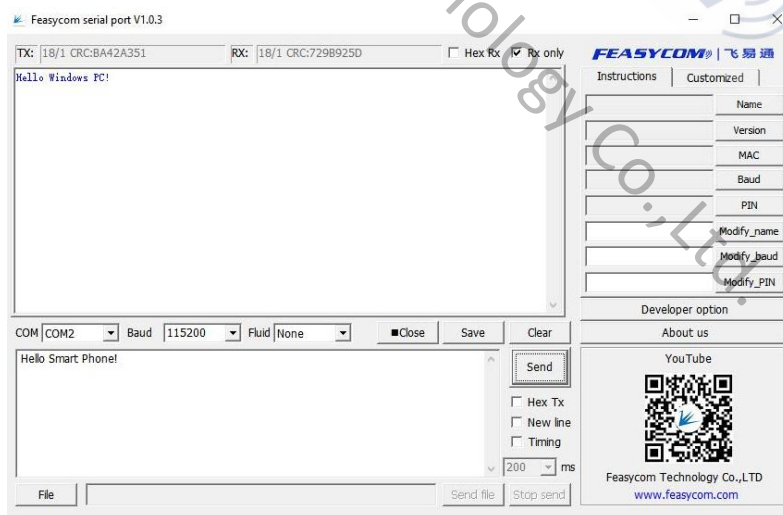|	
Installation	FeasyBlue Home Page

The app's features:
- Interfacing the module by Bluetooth.
- Communication. Searching, connecting, data transceiving.
- Properties Defining. Configuring the module.

5.2 Windows Tool

5.2.1 Feasycom Serial Port

Feasycom Serial Port Windows app is available on www.feasycom.com, click here to download. Here's an operating example on a windows PC:

Feasycom Serial Port Home Page

The app's features:
- Interfacing the module by UART.
- Communication. Searching, connecting, data transceiving.
- Configuration. Read/Write the module's parameters.

6   Value-added Services

- SDK
- App Support
- PCB Design
- Development Board

- Firmware Development
- Depth Customization
- Certification Request
- Turn-Key Production Testing & Manufacturing

For sales service, please contact sales@feasycom.com

For technical support, please contact support@feasycom.com