

FEITIAN

bR301 User Manual



Revision History:

| Date | Revision | Description |
|-----------|----------|------------------------------|
| Aug. 2013 | V1.0 | Release of the first version |

Software Developer's Agreement

All Products of Feitian Technologies Co., Ltd. (Feitian) including, but not limited to, evaluation copies, diskettes, CD-ROMs, hardware and documentation, and all future orders, are subject to the terms of this Agreement. If you do not agree with the terms herein, please return the evaluation package to us, postage and insurance prepaid, within seven days of their receipt, and we will reimburse you the cost of the Product, less freight and reasonable handling charges.

1. Allowable Use – You may merge and link the Software with other programs for the sole purpose of protecting those programs in accordance with the usage described in the Developer's Guide. You may make archival copies of the Software.
2. Prohibited Use – The Software or hardware or any other part of the Product may not be copied, reengineered, disassembled, decompiled, revised, enhanced or otherwise modified, except as specifically allowed in item 1. You may not reverse engineer the Software or any part of the product or attempt to discover the Software's source code. You may not use the magnetic or optical media included with the Product for the purposes of transferring or storing data that was not either an original part of the Product, or a Feitian provided enhancement or upgrade to the Product.
3. Warranty – Feitian warrants that the hardware and Software storage media are substantially free from significant defects of workmanship or materials for a time period of twelve (12) months from the date of delivery of the Product to you.
4. Breach of Warranty – In the event of breach of this warranty, Feitian's sole obligation is to replace or repair, at the discretion of Feitian, any Product free of charge. Any replaced Product becomes the property of Feitian.

Warranty claims must be made in writing to Feitian during the warranty period and within fourteen (14) days after the observation of the defect. All warranty claims must be accompanied by evidence of the defect that is deemed satisfactory by Feitian. Any Products that you return to Feitian, or a Feitian authorized distributor, must be sent with freight and insurance prepaid.

EXCEPT AS STATED ABOVE, THERE IS NO OTHER WARRANTY OR REPRESENTATION OF THE PRODUCT, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

5. Limitation of Feitian's Liability – Feitian's entire liability to you or any other party for any cause whatsoever, whether in contract or in tort, including negligence, shall not exceed the price you paid for the unit of the Product that caused the damages or are the subject of, or indirectly related to the cause of action. In no event shall Feitian be liable for any damages caused by your failure to meet your obligations, nor for any loss of data, profit or savings, or any other consequential and incidental damages, even if Feitian has been advised of the possibility of damages, or for any claim by you based on any third-party claim.

6. Termination – This Agreement shall terminate if you fail to comply with the terms herein. Items 2, 3, 4 and 5 shall survive any termination of this Agreement.

Contents

| | |
|--|----------|
| Chapter 1. Overview | 1 |
| Chapter 2. Specification..... | 2 |
| Chapter 3. Features..... | 4 |
| Chapter 4. System requirements..... | 5 |
| Chapter 5. Installation..... | 6 |
| Chapter 6. Hardware configuration | 8 |

Chapter 1. Overview

This chapter describes how to develop bR301 reader applications, including the development interfaces supported by the product (bR301) and how to develop applications based on these interfaces.

FEITIAN bR301 is specially engineered to accommodate a range of smart card applications. Developers use it as a platform to generate and deploy related products and services. Moreover, FEITIAN bR301 is a terminal unit which is seamlessly integrated to all major systems of operation. Additional features such as the built-in inclusive support for different smart card interfaces has facilitated the wide scale and cross industry adoption of bR301.

bR301 suits customers where security concerns are the most salient and satisfies the demand for a flexible solution for ID authentication, e-commerce, e-payment, information security and access control.

bR301 and the rest of FEITIAN's line of smart card readers offer each customer a complete solution for all manner of utilizations.

Chapter 2. Specification

| | |
|-----------------------------|--|
| Working Voltage | 3.3V |
| Working Current | < 60mA (without card) |
| Communication Rate | 10753~344086bps |
| Supported Card Type | T0,T1,CLASSB,CLASSC,CLASSBC |
| Communication Rate with iOS | 115200bps |
| Working Temperature | 0°C to 50°C (32 to 122°F) |
| Storage Temperature | - 20°C to 70°C (-4 to 158°F) |
| Operating Humidity | 60 to 90%RH non-condensing |
| Storage Humidity | 60 to 90%RH non-condensing |
| Port | Bluetooth/Micro USB |
| Device Type smart card | Contact (smart card) |
| Enclosure Type | External |
| External | 15 |
| Expansion Slot(s) | 1 x Smart Card |
| Battery | 890mAh |
| Charging Port | Micro USB |
| Dimension | 64mm(2.51in)wide*85mm(3.35in)high*13.5mm(0.53in)thick |
| Material | PC+ABS |
| Card Deck | 8 contact points (ISO7816 standard) 100000 plugging and unplugging times |
| Supported OS | iOS/Android/Blackberry/Windows/Linux/Mac OS X |
| Certification | MFI/RoHS |

Wireless Communications

| | |
|-------------------------|--|
| Communications protocol | 2.4GHz frequency ISM band. IEEE 802.15.1(Bluetooth) with full security enabled |
| RF Transmissions Range | Less than half a meter |
| Data Throughput | 750kb/s to 1MB/s |

Communications
data encryption AES-128

Customizable items Logo/case color/ Shell surface treatment process

Chapter 3. Features

- Support USB 1.1/2.0/3.0
- Compliant with PC/SC, CCID Standards
- Support ISO-7816-1/2/3 T=0 and T=1 Protocol
- Support ISO-7816 Class A,B and C Cards
- Compliant with EMV Level 1
- Provide third party development library
- MFI specification
- Support auto-PPS
- Support iOS/Android/Linux/Mac OS X/Windows
- DUKPT(encryption functions) in firmware, support iOS
- Support firmware upgrade through USB port on PC
- Support UID(User ID) management
- The reader support wireless port with Bluetooth 2.1+ (included 2.1/3.0/4.0)
- Anti-static, seismic
- Lights to inform reader's status
- Add low power, fully speed can work at least 18 hours. Standby time at least 100 hours.
- Can save battery less than 90 days in -10°C- 35°C.
- The firmware can't be read, Support Anti-reverse engineering, Self-protection.
- Support short-circuit protection and over-current protection card
- Can work with iOS(Bluetooth) and Mac OS x(usb port, bluetooth port is developing, will release end of September in 2013)

Chapter 4. System requirements

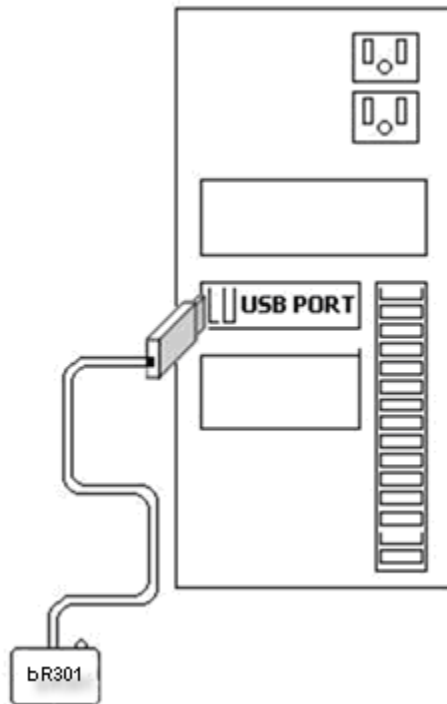
Computer with USB2.0/1.1 port *1

PC platforms: Windows 7+/MAC OS X 10.5+/ LINUX kernel 2.4+

Mobile platforms: iOS 4.3+/Android 4.0+

Chapter 5. Installation

BR301 usage:



For Windows PC platform:

Plug in the reader to PC and insert the SMART card to the card reader(the driver will automatic download from Microsoft website).

The test steps is below:

Customer can through WINS CARD API to commutate with bR301.

For LINUX and MAC OS X platform:

1. Please install CCID driver at first, the install steps please follow below website:

<http://pcslite.alieth.debian.org/ccid.html>

2. Use lsusb command in terminal to list usb reader PID and VID, edit Info.plist file to add VID and PID in it.

```
<key>ifdVendorID</key>
```

```
<string>0x096e</string>
```

```
<key>ifdProductID</key>
```

```
<string>0x061A</string>
```

```
<key>ifdFriendlyName</key>
```

```
<string>FEITIAN bR301 smart card reader</string>
```

The test steps is below:

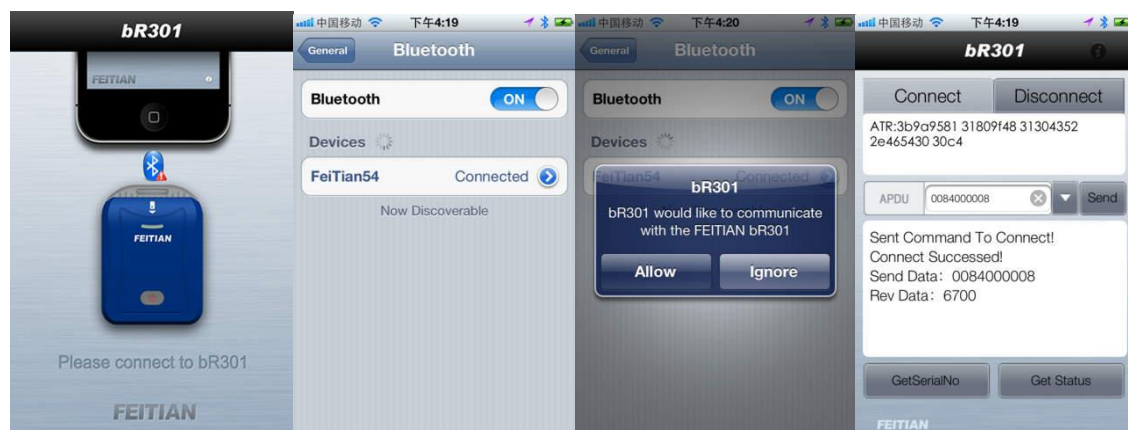
1. run pcscd in terminal
2. Plug in reader and card then run pcscstest

For mobile platform:

1. Power on bR301 and open mobile device Bluetooth port for pair.
2. Download bR301 test app from Appstore and test it:

<https://itunes.apple.com/us/app/br301/id564122073?mt=8>

The test steps is below:



Chapter 6. Hardware configuration

To help customer to know how use bR301, we have use lights to inform different status of card and reader.

We apply four lights to inform reader and card status, included Bluetooth connection/card status/charge battery/low life battery/transaction status.

We provide four lights which is red/blue/yellow/white, each means charge battery/Bluetooth connection/low battery/card status.

Bluetooth connection status light – blue color light

| Number | Progress | Status |
|--------|---------------------------------|----------------|
| 1 | The Bluetooth back to the stage | Three flashing |
| 2 | Bluetooth standby stage | One flashing |
| 3 | Bluetooth connection | Two flashing |

Card status light – white color light

| Number | Progress | Status |
|--------|---------------|----------------|
| 1 | No card | Light OFF |
| 2 | Card detected | Light ON |
| 3 | Data transfer | Light flashing |

Low battery light – yellow color light

| Number | Progress | Status |
|--------|--------------|-----------|
| 1 | Full battery | Light OFF |
| 2 | Low battery | Light ON |

Charge battery light – red color light

| Number | Progress | Status |
|--------|--------------------|-----------|
| 1 | Charging completed | Light OFF |
| 2 | Charging | Light ON |