



iPhone 6/6s Sleeve Reader USER'S MANUAL

Revision Sheet

Release No.	Date	Revision Description
Rev 1. 0	October, 2016	User's Manual Created

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USER'S MANUAL

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1.0 GENERAL INFORMATION

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1.1 Product Introduction

FEITIAN iR301 series is engineered to incorporate smartcard applications and popular mobile devices by Apple. Developers use it as a focal point to generate and deploy card based products and services which perform specialized operations in new and innovative ways.

The iPhone Sleeve reader had lightning connector allow user connect to their iPhone 6/6s, the sleeve design makes convenient for users. They can be using iPhone do authentication with their smart card without plug out iPhone sleeve reader.

It also can be a terminal unit that functions seamlessly with Apple iPhone systems. Features such as built in support and strict adherence to global standards in addition to the sleek appearance and user/developer friendly interface make iR301 an ideal choice to add vital functionality to standard mobile products.

Mobile devices perform more & more sensitive functions all the time, end users demand a solution to address the increased need for protection. iR301 provides relief in situations where security concerns are most salient and answers the call for a flexible solution in personal identity authentication, e-commerce, e-payment, information security and access control.

1.2 Acronyms and Abbreviations

MFi - (Made for iPhone/iPad/iPod)

CCID – (Chip Card Interface Device) Integrated Circuit(s)Card Interface Devices Specification

PCSC – (Short for "Personal Computer/Smart Card") is a specification for smart-card integration into computing environments.

Lightning connector - Lightning is a proprietary computer bus and power connector created by Apple Inc.

IAP – (iPod Accessory Protocol) used for communication between iOS devices and accessories such as docking stations and automotive head units.

BYOD – Bring your own device

1.3 Keywords and Features

Keywords: Mobile card reader, iPhone sleeve reader, CCID, USB, ISO 7816, T0, T1

Features:

1. Industry leading sleeve Reader for iPhone, greatly improve the efficiency of government and enterprises.
2. Do chargeable without plug out reader
3. Security: High security hardware design
4. Certification: We are certified worldwide with the certification; our reader is totally a universal product on both functionality and performance
5. Offer a standard size contact card deck, support ISO 7816 1/2/3 standard, T0 and T1 protocol card

2.0 SPECIFICATION

2.0 SPECIFICATION

Overview:

(Enable your mobility, bring your own device.)

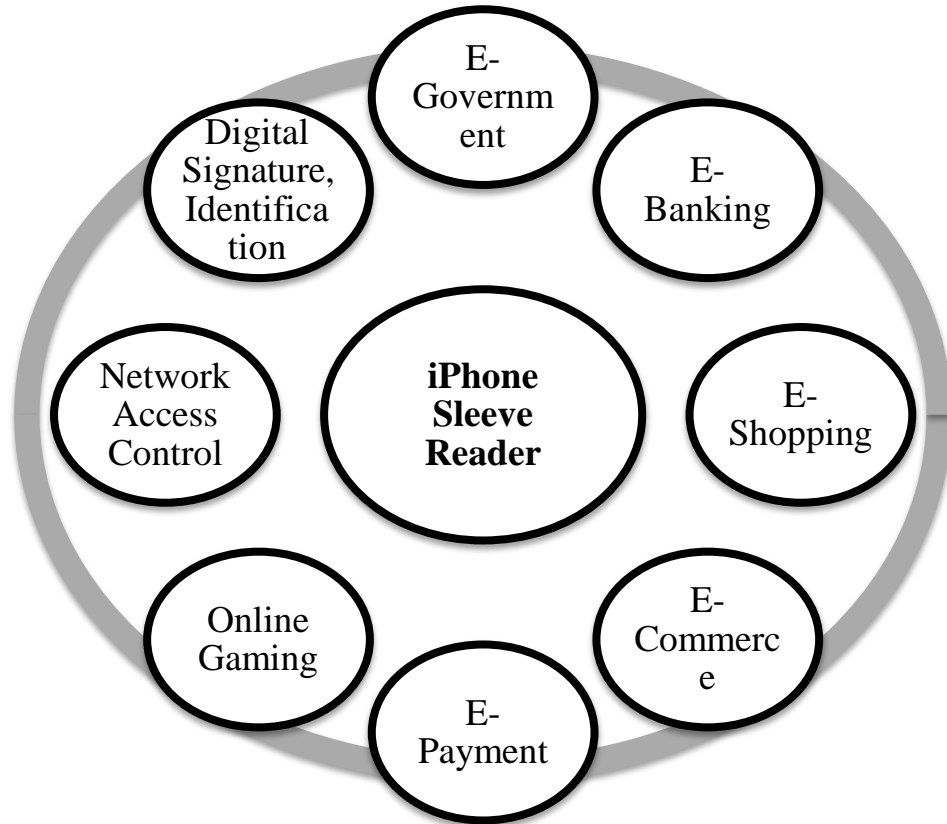
General Parameters:

- Industry leading sleeve Reader for iPhone, greatly improve the efficiency of government and enterprises.
- Support do charging iPhone 6/6s battery without remove Sleeve Reader
- High security hardware design
- We are certified worldwide with the certification; our reader is totally a universal product on both functionality and performance
- Offer a standard size contact card deck, support ISO 7816 1/2/3 standard, T0 and T1 protocol, CLASS A, CLASS B, CLASS C, CLASS BC card
- Open UID (User ID control) Function
- Support 255 bytes' flash memory for customer
- Provide secondary development library
- Support firmware upgrade through Micro USB
- Support DUKPT encryption and memory card support
- Supports Windows 2000+/Linux/Mac OS X/iOS/Android (Support OTG)
- MFi, CE, FCC, RoHS certified, compatible with EMV Level 1, BSMI, FIPS 201, TQM, LTIC

2.1 Technical Parameter Table

Type	Comments	
Basic Parameters (* means optional)	Specification	Parameters
	Working Voltage	USB: 5V Lightning connector:3.3v
	Working Current	< 60mA
	Communication Rate with USB	USB 2.0 Full Speed
	Supported Card Type	CLASS A, CLASS B, CLASS C, CLASS BC
	Communication Rate with iOS	USB 2.0 Full Speed
	Working Temperature	0°C to 50°C (32 to 122°F)
	Storage Temperature	- 20°C to 70°C (-4 to 158°F)
	Operating Humidity	0 to 90%RH non-condensing
	Storage Humidity	0 to 90%RH non-condensing
	Port	Lightning connector/Micro USB (Type B)
	Card Deck	8 contact points (ISO7816 standard) 100,000 plugging and unplugging times
	Supported OS	Windows2000+/Linux/Mac OS X/iOS3.1.3+/Android(Support OTG)
	Certification	MFi, CE, FCC, RoHS certified, compatible with EMV Level 1, BSMI, FIPS 201, TQM, LTIC
Support card parameters(Content card)	Contact card	Support ISO/IEC 7816 1/2/3 standard, T0 and T1 protocol, CLASS A, CLASS B, CLASS C, CLASS BC card
		*Support memory card 4442
	Communication rate with card	10753~344,086bps
	Card clock frequency	4MHz
Custom items	Casing	Support iPhone 6/6s
	LOGO	Custom logo
	Firmware	Can do OEM firmware
Dimension	Weight	63g
	Size	150mm*69mm*16mm
	Material	PC
	Color	Black
Communication Security	*Support DUKPT (Derived unique key per transaction)	
Hardware Security	Support Card short circuit protection	

2.2 Key Application



2.3 Product Photo

Notice: Please notice insert your smart card with the chip side facing towards you



3.0 RUNNING ENVIRONMENT AND INSTALLATION

3.0 RUNNING ENVIRONMENT AND INSTALLATION

3.1 Operating Environment

iPhone 6/6s Sleeve Reader is designed for iPhone 6/6s only, but it also had Micro USB port, also can be using for PC platform (Connect reader to PC platform through Micro USB cable only without attach iPhone 6/6s device) and for charging iPhone 6/6s battery (Connected to Charger with iPhone 6/6s device attached). The Reader support contact smart card and it can be used in various operating environments, including hardware and software operating environments, thus expanding the scope of use of Sleeve Reader.

3.2 Software and Hardware Operating Environment

iPhone 6/6s Sleeve Reader is accordance CCID (Chip Card Interface Devices) standard to do develop, CCID driver support has been natively supported in the Windows operating system from Windows 2000. On Linux and Mac OS X, CCID and CT-API devices are usually accessed with user-space drivers, for which no special kernel adaptation is required.

More information, please check: http://www.usb.org/developers/docs/devclass_docs/DWG_Smart-Card_CCID_Rev110.pdf

The reader is CCID standard device, you should can using on Windows without install any driver, except Windows XP. For Linux and Mac OS X, Feitian has add iPhone 6/6s Sleeve Reader into CCID support list, which can found in <https://pcsclite.alioth.debian.org/ccid/shouldwork.html>. To using it, please check more details from below:

For iOS - iPhone 6/6s:

The iPhone 6/6s Sleeve Reader support iOS 7.0+, to do operate reader, Feitian had demo app iRockey301 on Appstore, download from <http://itunes.apple.com/tw/app/irockey301/id525954151?mt=8>, It had read serial number, write/read flash, get UID and basic Connect/Disconnect/Transfer data to card and so on, the app using for show reader functions. For end user, you will need based on Feitian SDK to do develop your own application. Until now, Feitian had more than 100 Apps on Appstore based on different Feitian MFi device. If you want check their App, please insert your reader to iPhone 6/6s and go “Settings”->“General”->“About”->“iR301”->“Find App for Accessory”, and then it will be going to Appstore to list all the supported Apps.

For Windows:

Windows Vista, Windows 7, Windows 8, Windows 8.1, Windows 10 and Windows Server series also be supported. If your system is Windows XP, please install:

http://download.ftsafe.com/files/reader/CCID_driver_on_Windows2000+.zip

Do develop application on windows, you can through WINS CARD API, can found them on MSDN, Feitian also provide demo code for you reference, check ->

<https://github.com/FeitianSmartcardReader/R301/tree/master/Sample%20Code>

For Linux and Mac OS X:

Check your CCID version, the device was adding into support list from v1.4.21. If your version is lower than v1.4.21, then please install latest CCID device, for Linux system, some system can through package management command to install, E.g. Ubuntu, Debian, Linux mint using apt-get install ccid to install.

Some system doesn't have release package, you can have based on source code build on your Linux system, the step please check CCID official website:

https://alioth.debian.org/frs/?group_id=30105#title_ccid, follow below steps:

```
tar xzvf ccid-*.tar.bz2
cd ccid-*
./configure
make
```

For Mac OS X, please go CCID official release web to download and install:

<https://github.com/martinpaljak/osx-ccid-installer/releases>

Do develop application on Linux and Mac OS X, please follow PCSC LITE API to do operation,

http://pcsc-lite.alioth.debian.org/api/group_API.html The demo code you can check:

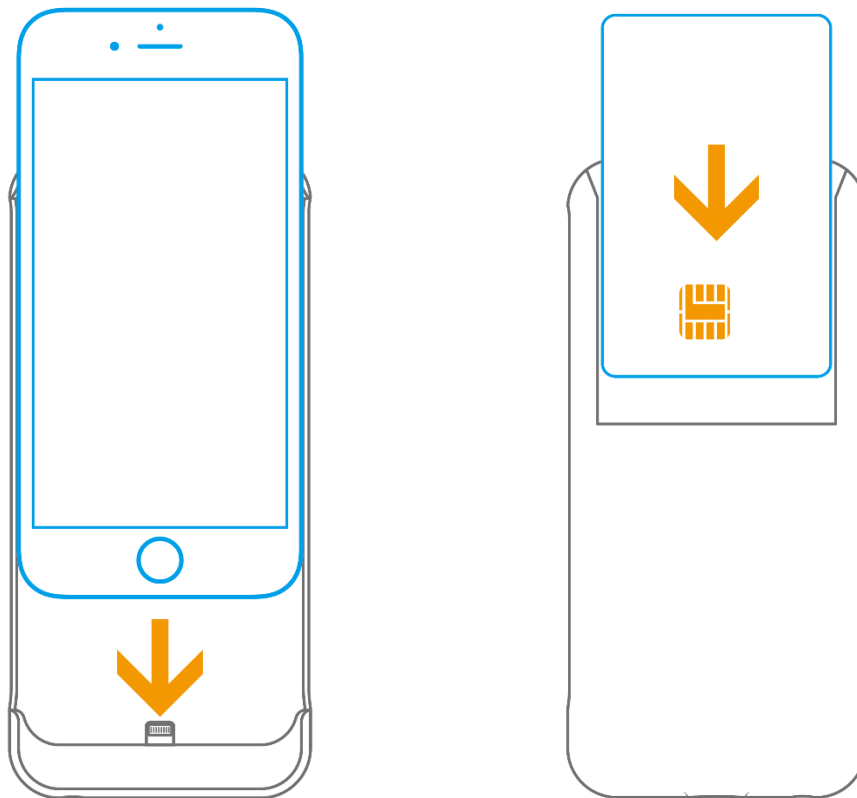
<https://github.com/LudovicRousseau/PCSC/blob/master/src/testpcsc.c>

3.3 Installation

To using iPhone 6/6s Sleeve Reader, please follow below steps to install.

1. Connect the iPhone 6/6s device to Sleeve Reader and hold to lightning connector
2. Snap the top of the cover in place
3. Insert your smart card with the chip side facing towards you
4. To remove, gently press camera hole and separate the top of the Sleeve Reader, then disconnect smoothly

Notice: Be gently and slowly do press the iPhone 6/6s device from camera hole, avoid causing damage lightning connector



3.4 Charging battery for iPhone 6/6s

The iPhone 6/6s Sleeve Reader support charging battery for iPhone device without remove Sleeve Reader, the package will provide Micro USB cable for end user do charging battery for iPhone 6/6s.

Steps below:

1. Connect your Sleeve Reader with your iPhone 6/6s device
2. Using Micro USB cable do connect your AC adapter with Sleeve Reader

Notice: The cable using for charging battery and be using for PC platform as a USB Reader, if you want using on PC, then need disconnect iPhone 6/6s device, using Micro USB cable do connect Reader to your PC directly.

3.5 Synchronizing data from iPhone 6/6s on your PC

The iPhone 6/6s Sleeve Reader doesn't support do synchronizing your iPhone data to PC, also doesn't support do debugging using Xcode. It has limit function in lightning connector. If you want do synchronizing your iPhone data to your PC, we suggestion through Wi-Fi communication. Or plug out Sleeve Reader from iPhone device, using your lightning cable do connect by USB.

4.0 iPhone 6/6s SLEEVE READER RELATED TOOL

4.0 IPHONE 6/6S SLEEVE READER RELATED TOOL




4.1 Introduction of Update tool

Firmware update tool using to upgrade iPhone 6/6s Sleeve Reader firmware, which was consider in future maintainable, since the Apple has upgrade their iOS very often, to avoid end user had issue and ship back the reader, Feitian provide update tool to make it more convenient. The update tool using dual encrypted mechanism, the reader firmware was encrypted by UID (User ID), and it stored in firmware level, cannot take out. The default UID is FFFFFFFFFFFFFFFF. More information of UID will do explain next chapter.

Notice: To using update tool, please check detail from below, before using update tool, please check below items first:

- a) Make sure your system has install .net framework 3.5+
- b) The tool support Windows XP, Vista, Windows 7, Windows 8, Windows 8.1, Windows 10, include x86 and x64, make sure you are using one of them, doesn't support Mac OS X and Linux

*The related files of update tool

Name	Date modified	Type	Size
 config.ini	2015-08-27 19:05	Configuration sett...	1 KB
 FT_iR301_Update_Tool.exe	2015-09-18 17:32	Application	108 KB
 FT_iR301_Update_Tool.exe.config	2015-09-01 10:52	XML Configuratio...	1 KB

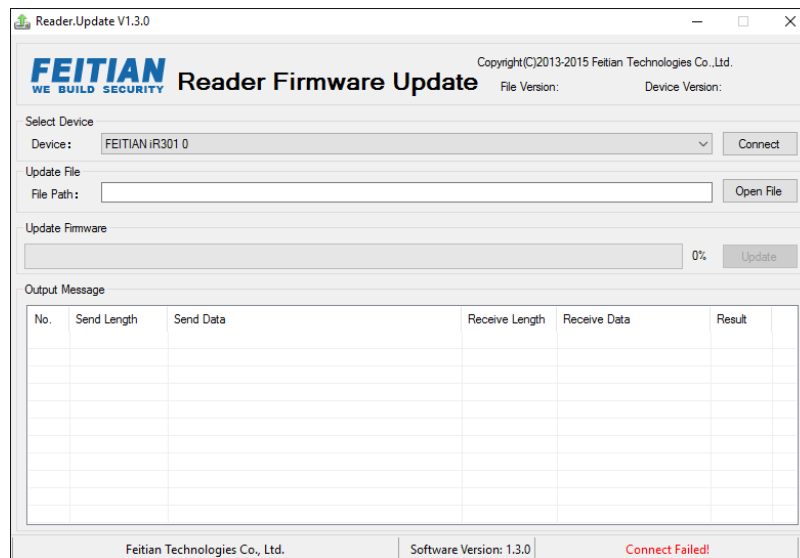
- ➔ FT_iR301_Update_Tool.exe is execute file
- ➔ *. bin file is firmware BIN file
- ➔ Config.ini is configuration file which encrypted
- ➔ FT_iR301_Update_Tool.exe.config file using for Windows 8.1+ system

4.2 The operation of Update tool

The update tool is easy to do operation; it has convenient interface for view, this chapter will introduce how to using update tool. (if you had OEM UID, then please contact Feitian to get specific UID firmware)

Step #1: Insert reader to PC and double click “FT_iR301_Update_Tool.exe” by **administrator**. If you are first running this tool, the tool will inform to re-plug reader.

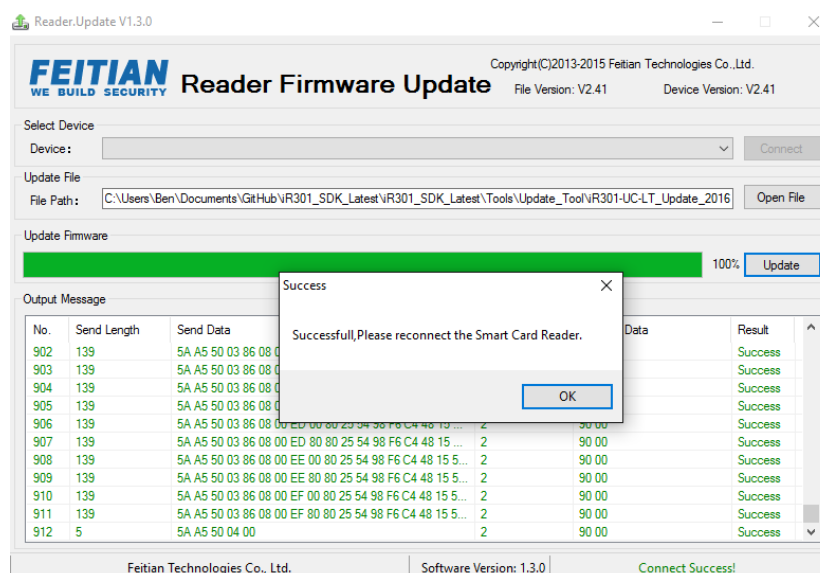
Check drop list on Device, list iPhone Sleeve Reader and click connect and through “Open File” to open your firmware: (After click connect, the tool will to get your device firmware version show on the top label, check “Device Version”)



Step #2: Click “Update” button to start upgrading. The whole progress will cost 30s – 40s, depends on your system. **Please not remove reader while in updating.** If something happens while in updating progress, please open tool and re-updating reader again.

After done, you can re-plug your reader and using it on your mobile or PC platform.

Notice: The upgrading progress will stop at 30%, please do not do any operation, because the app still running at background to re-plug/connect reader again, that's the necessary step while in updating.



4.3 iPhone 6/6s sleeve reader uid Tool

4.4 Introduction of UID Tool

UID (User ID) Management mechanism provide two functions:




Manage your OEM Reader:

The mechanism for distributor or people who want the reader only can be distinguish by their application, The UID is generate by seed code, user can input their privacy seed code, using UID Tool write seed code and get 8 bytes ID, called User ID. And Feitian provide API to read this UID for different platform, user can bind the UID with their App, without this ID, cannot using your App, to keep App only can be using by specific reader. And on other hand, hacker without your seed code, they cannot make same UID reader as yours. So please keep your seed code at safe place.

Firmware Encrypted:

In our firmware design, the UID also be using for encrypted firmware, if you had done OEM UID, then the firmware also will be encrypted by your own UID. If you want do update firmware, then you will need specific firmware which encrypted by your UID.

*The related files of update application:

Name	Date modified	Type	Size
 FEITIAN iR301-U_UID.exe	2015-08-05 15:50	Application	44 KB
 UID.ini	2013-05-15 17:59	Configuration sett...	1 KB
 UID_Instructions.chm	2011-05-05 18:02	Compiled HTML ...	11 KB

- ➔ FEITIAN iR301-U_UID.exe is execute file
- ➔ UID.ini is config file for tool
- ➔ UID_Instructions.chm is manual for usage UID Tool

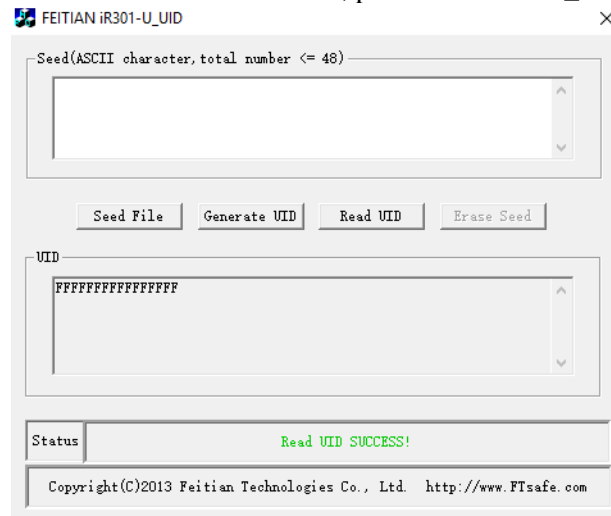
4.5 The operation of UID tool

This tool show user read/write/erase UID, the UID generated by private algorithm through the seed. the default UID is 16xFF, before input your seed, please don't forget it. If you forgot the seed or lost the seed, without exist seed, you cannot change it and erase it, also your reader will cannot do update firmware anymore.

On other hand, we provide read/write/erase APDU and sample code allow using to do bind in mobile and PC platform. For such document, please contact Feitian and sign NDA to get it.

Step #1: Please keep all the related file in same directory, insert your reader by Micro USB cable without iPhone 6/6s attach. Using administrator running FEITIAN iR301-U_UID.exe, if you are first using this tool, you will need re-plug reader.

Step #2: re-plug reader and using administrator to run the tool again. And start to do operation. The below screenshot show read default UID. More information, please check UID_Instructions.chm



5.0 CUSTOMIZATION

5.0 CUSTOMIZATION

All the OEM item will be charge fee, more information, please contact Feitian sales team.

1. Casing silk printing and Package Customization

Customer can make their logo or other information on casing and package. Feitian will provide original AI file for usage.

2. Firmware Customization Information

Below is Feitian standard device information, customer can have based on item to make their own.

PC/Android smart card reader:

Manufacturer name: Feitian Technologies Co., Ltd.

Accessory name: FEITIAN Smartcard reader

iOS:

Accessory name: FEITIAN Smartcard reader

Manufacturer name: Feitian Technologies Co., Ltd

Model Number: iR301

Protocol string: com.ftsafe.iR301

3. OEM OTG cable (Micro USB to Micro USB) for android Phone/tablet



6.0 FAQ

6.0 FAQ

6.1 Development

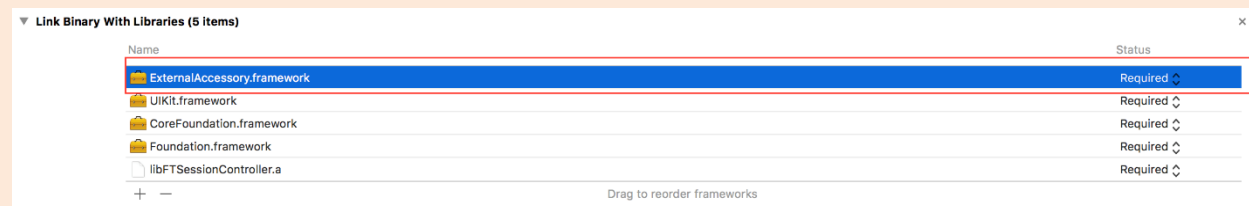
For windows, please using WINS CARD API to do operation.

For Linux and Mac OS X, please using PCSC Lite API. On Mac OS X, there have PCSC.framework in Xcode, you can add it and using it.

For iPhone 6/6s, please using Feitian standard mobile SDK, which also using PC/SC API for call. Feitian also provide private API(un-PCSC) based on Objective-C, if you need, please contact Feitian to get it. To **debug** under Xcode, we suggestion you can buy BR301(C18) which is Bluetooth reader and using same SDK as iPhone 6/6s Sleeve Reader. Since the lightning connector only had one port, it should need be using for build App, so cannot be using for debug reader at same time. But for BR301, you can be using it do pair with your iPhone 6/6s and connect lightning port to Mac book using Xcode to do step by step debug.

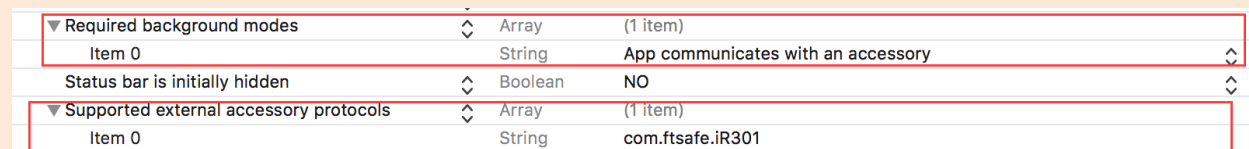
Buy BR301 (C18 with Blue color) - <http://ftsafes.com/onlinestore/product?id=15>

Notice: Develop under Xcode: Please add below information into your Info.plist file:



*If you plan your app using App at background, please setting “Required background modes” and set to “App communicates with an accessory”

*Please make sure you have add “Supported external accessory protocols” key with string “com.ftsafe.iR301” into your Info.plist,



6.2 Upload to Appstore

To submit your App to Appstore, you will need provide below information to Feitian, since the iPhone 6/6s Sleeve Reader using lightning connector and such reader was certified by MFi, in rules of Apple, need bind your App with Accessory in MFi system.

Fill below information of your App and send to Feitian, we will help you submit to MFi system and get PPID.

1. Name of app as it will appear in App Store:
2. App version:
3. Planned release data:
4. App Store category:
5. Bundle identifier:
6. protocol names:
7. functional overview:
8. name of the developer that will submit the app to the app store:

After get your PPID, please put into review notes in iConnect:

Review Notes (optional)	MFi PPID 123456-7890
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