R301 USER MANUAL

V1.2

Revision History：

Date	Revision	Description
Dec. 2014	V1.0	First release
Feb. 2016	V1.1	Second release
April 1, 2016	V1.2	Add B6 casing
May 31, 2016	V1.3	Modify card frequency

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1. Overview of ROCKEY301

This chapter introduces the basic concept, technique specification and product features of the ROCKEY301 reader.

1.1 Product overview

ROCKEY301 reader is a kind of high-speed contact smart card reader, which is used for PC environment or relevant smart card environment. It is compliant with standard CCID specification and USB 2.0 interface (also the USB 1.1 interface). The ROCKEY301 reader can operate all CLASS A, CLASS B and CLASS C smart cards which are compliant with ISO 7816-1/2/3. The standard size IC card which is compliant with ISO 7816-3 can be supported stably as well. As the mandatory processing device of smart card integrated systems, ROCKEY301 reader can greatly increase the security of the whole application. It can be widely used in financial, social security, telecom, online banking, e-business, authentication, e-government and other CPU based high level security card application fields.

1.2 Product feature

- Support USB 2.0 interface
- Compiled standard CCID specification
- Read/Write all CLASS A, CLASS B and CLASS C smart cards which are compliant with ISO 7816-1/2/3 T=0 and T=1
- For contact card, support full parameter PPS protocol. The ICC data transfer Baud rate is 500K (The result is got when the frequency of IC card is 4MHz-12MHz)
- Short circuit protection
- Be compliance with ISO7816, IEC/EN60950, EMV 2000 Level
- Power supply: 1.8V/3V/5V (independent control)，LDO provides stable 1.8V/3V power
- Data transfer speed: For T=0 and T=1, Baud rate is 10.753k ~ 500K (The result is got when the frequency of IC card is 4MHz-12MHz) (D=32/F=372)

1.3 Technique specification

Table 1   ROCKEY301 technique specification

Interface type	USB 2.0 interface				
Power supply	USB port 5V DC				
Working current	<50mA without card plugged				
Working temperature	0°C ～ 60 °C				
Storage temperature	- 20°C ～ 85°C				
Humidity	≤90%(non-condensed)				
Slot	ISO7816-3 standard slot				
	>100,000 times plug/unplug				
Protection	Short circuit protection				
CPU card	ISO/IEC7816, T=0 and T=1 protocol, Class A, B, C cards				
	Data transfer speed: 10753~500kbps				
	Power supply 1.8V, 3V and 5V				
	Frequency of Card: 4-12(MHz)				
Size(mm)	B5: 75.5 *22*8.7	B6: 56*21*7.5	C11: 67 *57.5 *12.5	C41: 120*80*76mm	C25: 74 *56 *11
material	B5: ABS+PC	B6: Metal+ABS+PC	C11: ABS+PC	C41: ABS+PC+ Metal	C25: ABS+PC
Weight	10g	11g	50g	281.96g	46.7g
Standard and specification	ISO-7816 Class A, B, C（5V, 3V,1.8V)、CCID、 EN 60950/IEC 60950、 CE、 FCC、 Microsoft WHQL 2K\ XP、RoHS Compliant、 EMV 2000 Level 1				

1.4 Keywords

ROCKEY301 Reader keywords

Contact

Reader

Full speed USB device

ISO7816

CCID

T0

T1

1.5 Applications

ROCKEY301 reader is a kind of high-speed contact smart card reader, which is used for PC environment or relevant smart card environment. It is compliant with standard CCID specification and USB 2.0 interface. The ROCKEY301 reader can operate all type A, type B and type C smart cards which are compliant with ISO 7816-1/2/3. The standard size IC card which is compliant with ISO 7816-3 can be supported stably as well. As the mandatory processing device of smart card integrated systems, ROCKEY301 reader can greatly increase the security of the whole application. It can be widely used in financial, social security, telecom, online banking, e-business, authentication, e-government and other CPU based high level security card application fields.

1.6 Security feature

1）firmware cannot be read out. Anti-reverse analysis

2）Short circuit protection and overcurrent protection

3）Do not contain any users' sensitive data in product, such as password.

4）PCB board has a 5mm distance with reader shell.

1.7 Extension and maintenance

1）Product can be extended and disassembled.

2）Firmware can be extended, customized and updated.

1.8 Reliability

1）100,000 times plug/unplug. The period of hardware usable is at least 5 years.

2）Frequently read/write 200 times will not lead the system down or error.

3）Continuously using 48 hours will not lead error occurrence rate exceed 3‰.

1.9 Product shell

Rockey301 reader is a kind of high-speed contact smart card reader, which is used for PC environment or relevant smart card environment. Product shell is using C25 by default. Also customer can choose other casing, like C11 and C41, for SIM SIZE card, we have B5 and B6 casing.

The casing picture see below:

C11, with full size card slot and SIM card slot:

C25 with full size card slot only:

B5 with SIM Card slot only:

B6 with SIM Card slot only:

C41 with full size card slot only:

1.10 Product Icon

Operating System: Windows 2000（SP4）、2003Server、XP（SP2、SP3）、2008 Server、Windows®Vista，Windows 7 ，Windows CE，Linux®。

Product certifications: CE、FCC

Other:

2. Introduction to ROCKEY301

ROCKEY301 is a professional reader for contact IC card. It is used for various IC card applications.

This chapter introduces ROCKEY301 comprehensively.

2.1 ROCKEY301 Hardware Configuration

ROCKEY301 provides the following hardware configuration for users.

> Card slot interface：USB2.0，Full speed is up to 12MHz
> Card slot support one full size IC card

ROCKEY301 uses operating system's CCID driver which can be got from OS provider. This manual takes Windows XP for example to introduce how to install CCID driver.

2.2 USB2.0 Full Speed Communication

ROCKEY301 is USB2.0 full speed device. Before installing the driver, you need to connect the reader to the computer according to the figure below.
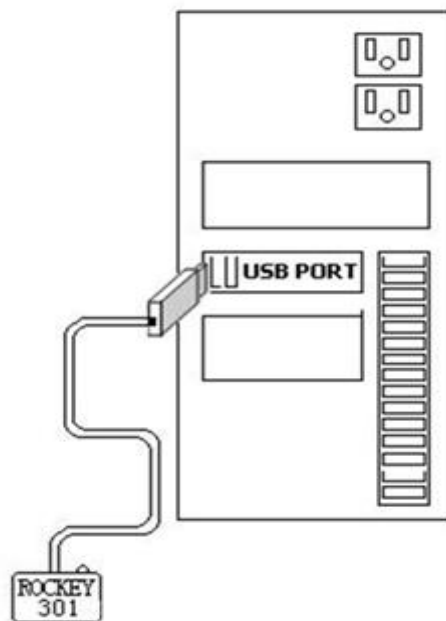
Figure 1   USB Connection

After connection, we can start to install the driver for ROCKEY301.

2.3 ROCKEY301 Reader

2.3.1 Hardware Description

- Support 1 big size card
- PC/SC device
- 1.5m USB cable
- Red/Blue LED

2.3.2 Software Environment

1). CCID driver

2). Supported systems：

- Windows 2000(SP4)
- Windows 2003 Server
- Windows XP(SP2、SP3)
- Windows 2008 server
- Windows Vista
- Windows 7
- Windows 8
- Windows 8.1
- Windows 10
- Windows 2012 server
- Linux® （FC7、ubuntu7.1、AS4 and more）
- MacOS® (Mac 10.4 or above)

2.3.3 Precondition of Installation

Before installation the driver for ROCKEY301, please confirm to meet the following requirements：

- The OS is supported by ROCKEY301
- The setting of BIOS supports USB device
- 1.5m USB cable
- ROCKEY301 reader

2.3.4 Installing CCID Driver on Windows

*CCID driver for XP ->http://download.ftsafe.com/files/reader/CCID_driver_on_Windows2000+.zip

*Below just describe install driver on Windows, for Vista+, customer don't need install driver, the driver already

integrated into Windows system.

1. Connect ROCKEY301 according to figure 1. The system will find the new hardware and the following interface appears. Select "Install from a list or specific location (Advanced)" and click "Next" button.

Figure 2   Found New Hardware Wizard

2. The following interface appears as Figure 3 shown below. Click "Browse" button.
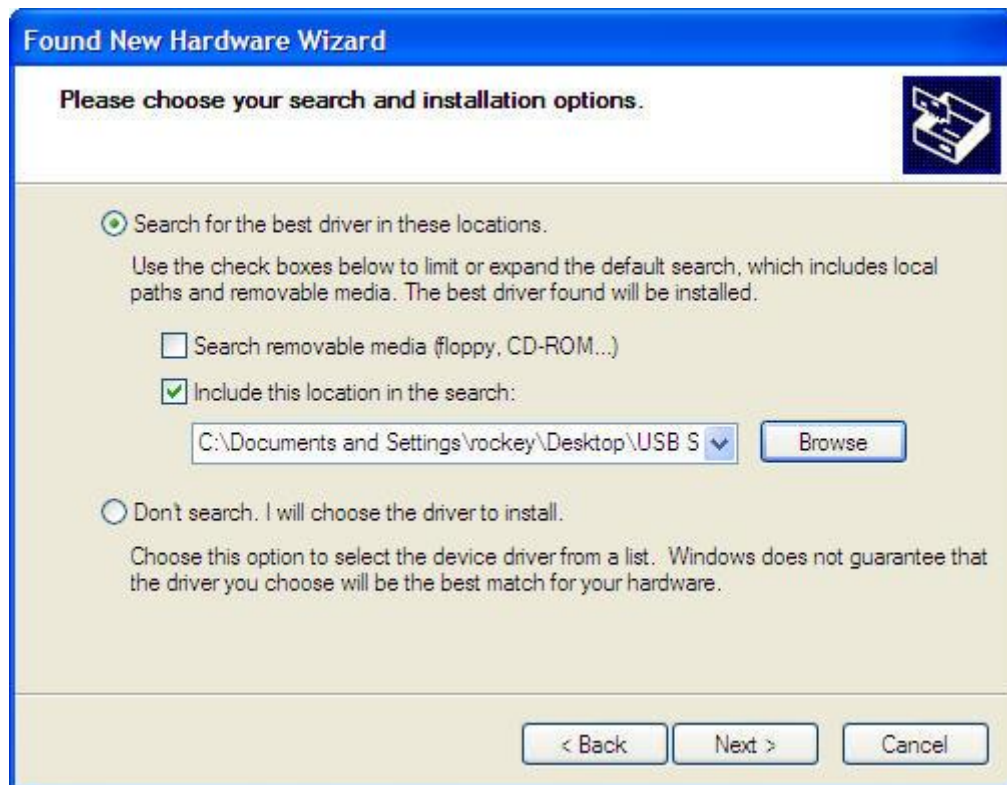
Figure 3   Searching Driver

3. After clicking "Browse" button, the following interface appears. Please select the folder that the CCID driver is in and click "OK" button.

Figure 4   Chose CCID Driver

4. Click "Next" button as shown in Figure 3 and then the system starts to install the driver.

Figure 5   Installing
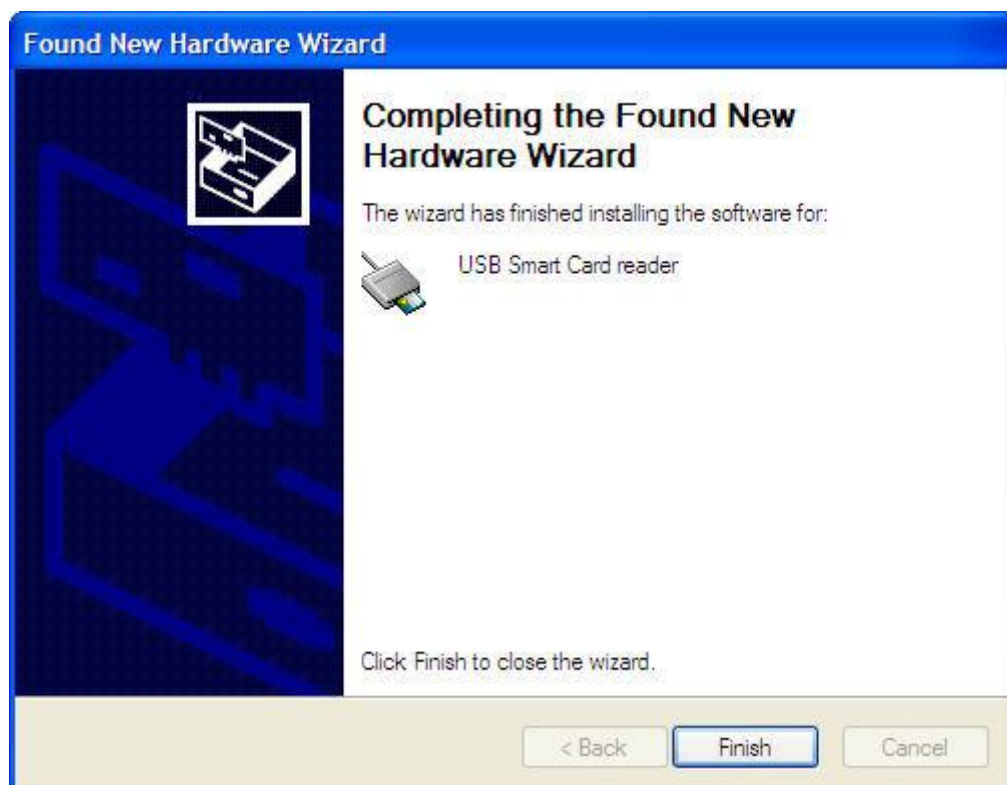
5. Installation is finished.

Figure 6   The End of Installation

6. After installation, ROCKEY301 can be found in "Device Manager" as shown below.
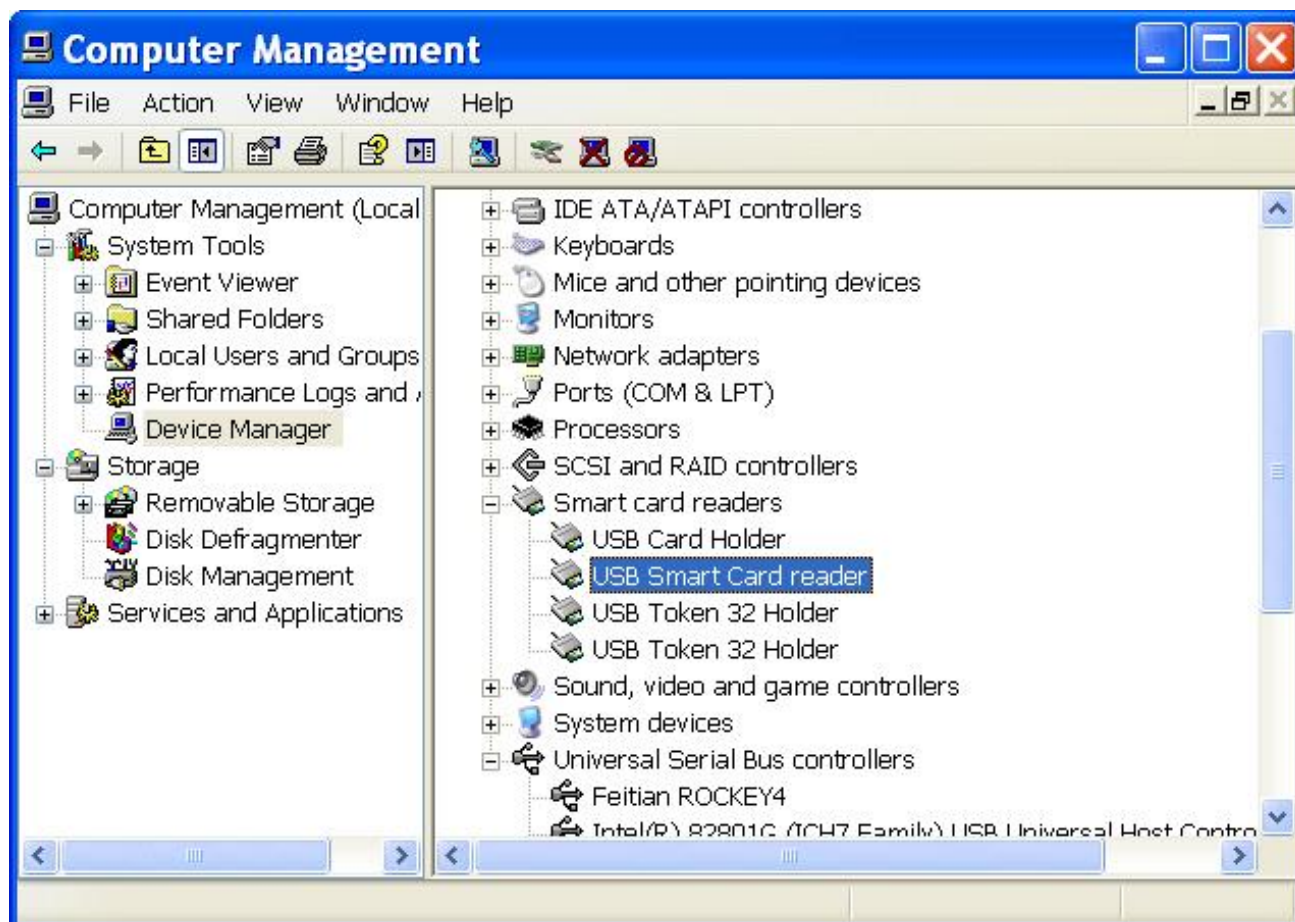
Figure 7   ROCKEY301 in Device List

3. Install/Uninstall CCID driver in Linux and Mac OS X

*Please confirm your computer has installed the latest CCID and PCSC Lite.

For Linux, the default CCID driver will be install on linux, if your system has installed CCID driver, then can using R301 directly, because R301 has add support in CCID support list.

For MAC, after MAC OS 10.4.X, the mac system can using Feitian R301 directly.

If your computer hasn't install CCID driver, then you will follow CCID official website to do install, more information, please check http://pcsclite.alioth.debian.org/ccid.html

4. Frequently asked questions and solutions

4.1 Why there is no "found new hardware" popup window when I attach a ROCKEY301 reader?

Symptom: After attached ROCKEY301 reader, there is no "found new hardware" popup window.

Solution: Right click "My Computer" -> "Device Manager" -> "Smart card readers", right click "update driver", use "hardware update wizard" to update hardware.

4.2 Why it shows "Connect Reader to PC!" when I double-clicked ROCKEY301.Update?

Symptom: Double-click "ROCKEY301.Update.exe" and shows "Connect Reader to PC!".

Solution: Please remove the ROCKEY301 reader and re-attach it again.

4.3 Light is off

Symptom: The device light is off. The device may not be correctly connected.

Solution:

> Re-attach the device;
> Check the USB connection line.

4.4 Light is flashing when no card is in card reader

Symptom: The device is broken.

Solution: Return this device to manufacturer for repairing.

4.5 Blue light is flashing frequently when no card is in card reader

Symptom: Blue light is flashing with frequent 4Hz. This means the checksum of the firmware is wrong.

Solution: Please update the firmware or return the device to manufacturer.

4.6 Blue light is flashing when a card is inserted in the card reader

Symptom: Blue light is flashing when a card is inserted in the card reader. The card is unusable.

Solution:

  Insert the card again with another side;

  The card is not compatible with the ISO-7816 (e.g., timeout, byte intervals);

  The card is not compatible with the power supply.

  The output current of the card is too weak to be recognized by the card reader.

  The card is damaged.

  The device is damaged and need to be return to manufacturer.

Appendix Abbreviation

CE Attestation of Conformity

The equipment complies with the principal protection requirement ofthe EMC Directive (Directive 89/336/EEC relating to electromagneticcompatibility) based on a voluntary test.

This attestation applies only to the particular sample of the product and its technicaldocumentation provided for testing and certification.

After preparation of the necessary technical documentation as well as the conformitydeclaration the CE marking as shown below can be affixed on the equipment as stipulatedin Article 10.1 of the Directive. Other relevant Directives have to be observed.

FCC certificate of approval

This Device is conformance with Part 15 of the FCC Rules and Regulations for Information Technology Equipment.

WEEE

Dispose in separate collection.

RoHS