deskRead user manual

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Inside Secure

41, Parc Club du Golf
13856 Aix-en-Provence Cedex 3
France
Tel.: +33 (0)4 42 39 63 00 - Fax: +33 (0)4 42 39 63 19
E-mail: info@insidefr.com - Web site: http://www.insidesecure.com

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1 INTRODUCTION

Thank you for choosing Inside Secure's deskRead NFC device.

deskRead is designed to support NFC application developpers with a full-featured NFC hardware platform that allows practical testing of NFC contactless applications.

Once connected to a personnal computer, deskRead will bring the same NFC functionnality than an integrated NFC enabled Handset or smart device. It is then possible to develop and test NFC applications that use Open NFC API, before porting to an embedded target that implements Open NFC.

Emulator based third party handset applications development environments may also provide hardware NFC device connection to enable physical testing of the emulated applications.

Open NFC API is available as Open source software for multiple OS or virtual machine porting including Androïd, WindowsCE and Java JSR 257 and can be downloaded from http://www.open-nfc.org

⚠ deskRead is not a commercial contactless reader device: it is not designed to be widely deployed as point of sale or NFC end user homes and desktops NFC reader. It is only supported by Inside's proprietary software and is not a standard PC/SC contactless reader.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

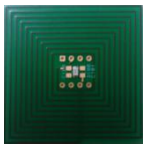
NOTE: THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT

2 MAIN FEATURES

- Plug and play USB HID (human interface device) class device :

  The HID class is the one that is used by keyboard, mouse or identification device and does not require any driver installation with most of Operating Systems.
- secuRead NFC routing device : provides NFC reader writer, card emulation and Peer-to-Peer functionality to the secured host (SWP-UICC card) or primary control host (PC).
- JavaCard secure element : the SecuRead version of the product provides embedded JavaCard integrated circuit card : the deskRead with enabled feature can be presented in front of any contactless reader and will be detected just like a standard JavaCard.
- Optionnal UICC developper extension for third party UICC development tools.

3 CONTENT

deskRead device :	
NFC tags	
UICC extension device :	
RF detector device :	

4 CONTROL SOFTWARE

deskRead is supported by Open NFC Connection Center software.

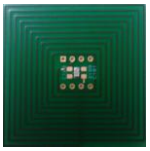
Connection center is a windows PC software that acts as a crosspoint for open NFC clients and services. deskRead devices will be detected as NFC controller dervice provider.

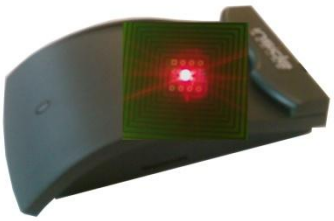
When an Open NFC server is started, the connection center provides automatic connection to the available NFC controller service.

Connection Center is not a control software as it is only used to set up a NFC controller service, it does not perform any operation on the device as long as no Open NFC client (the control application) has been started. Open NFC client example applications are provided in the Open NFC download package.

Open NFC API including Connection Center software and documentation can be freely downloaded at http://www.open-nfc.org.

5 THE RF DETECTOR





The RF detector device is useful to check NFC reader operation mode: when it is placed on the active area, the RF field energy powers the LED. The LED is blinking when the device is waiting for a card. The LED brights continuously when it waits for a removed tag answer. The wait timeout before the reader resumes card detection (LED blink) may be long, up to several tens of seconds, depending on the card communication protocol settings.

⚠ The RF detector should not be used when a card is being read as it might prevent communication with the card

6 DESKREAD DEVICE

Three power modes are available : Handset ON, Battery OFF (power by the field), and Handset OFF (Battery LOW).

When using the device, the power mode is signalled thanks to the dual color LED.

Before the device connection to the USB port, it is in battery off mode. It can be used to perform card emulation from a secure element if previously setup.

After the device is connected to the USB port or after PC startup, the LED remains OFF as long as no control software is started.

In this mode, the device may be used for battery low card emulation from secure elements hosts as previously defined from control software. It is not possible to read a card and any card shall be removed in order to perform a transaction with a remote reader.

After the device has been started by control software such as NFC Desk, the LED turns red for battery on mode.

It is then possible to read a card and perform card emulation under the PC software control.

After the control software is stopped, the LED turns orange. The device is now back to battery low mode. This mode is similar to battery off mode with higher performance.

No card can be read or written. The device may perform card emulation from secure elements hosts depending on control software setup.

To go back to battery off mode, remove the USB cable.

Note : the battery low mode will be signalled differently, depending on the control software status as summarized in the table below which also illustrates the different operational transitions when connecting/disconnecting the device or when starting and stopping the control software.

USB cable	LED	Power Mode	Operation	Control Software
Non connected	OFF	Battery off (power by the field)	Card emulation from secure element	Not applicable
Connected	NOT VISIBLE	Battery low (handset OFF)	Card emulation from secure element	Not started
Connected	RED	Battery on (Handset ON)	Card emulation from any host Reader/writer	Started
Connected	ORANGE	Battery low (Handset OFF)	Card emulation from secure element	Stopped

6.1 Use cases

6.1.1 Read/Write a card

deskRead casing offers an ID1 card landing area in order to provide a stable card position during software avaluation. Depending on the card internal antenna design, it may be needed to swap or rotate the card to ensure card detection.

6.1.2 Emulate a card

When card emulation services are enabled, deskRead can be used just as a card, under the control of a selected host.

The control software (primary host) may provide the emulated card application. When the control software is not running, a secure element (UICC host or SE) usually provide securead emulated card application. The routing of the contactless transaction to a secure element is configured from the control software.

6.1.3 Peer-to-peer exchange.

Two deskRead devices may be used as peer devices when held in front of each other

6.1.4 Secure elements hosted applications

Two types of secure elements car be used to manage NFC secure applications.

The SWP UICC is a NFC host as it is able to configure the NFC controller. The UICC is removable and usually delivered by a network or service operator which controls the hosted contactless and applications.

The NFC controller internal secure element is controlled by the device manufacturer. Depending on the device manufacturer service offering, this secure element may offer higher flexibility to applications developpers as the device manufacturer may include secure aplications APIs to the application developper's environment.

Depending on the processor and OS security level, the control software that runs into the device operating system may also provide secure applications hosting from the primary host.

6.1.5 Secure element connectivity

Open NFC API implements the connectivity API that allows exchange between the secure elments and the control software, in order to display user feedback after a secure element has performed a contactless transaction ;

7 UICC

The UICC (not supplied) may be inserted as shown aside :

The UICC is correctly inserted after the click.

If the UICC cannot be fully inserted, make sure the notched corner is inserted first and the circuit side up.

Use a sharp tool to insert the UICC.

To remove the UICC, use a sharp tool in order to push the UICC card and release the spring.

Do not remove or insert the UICC while the control software is running (LED RED).

⚠ It is advised to stop control software and disconnect USB connector before inserting or removing the UICC, just the same as for standard handset. Otherwise, the control software may stop responding or the UICC may be damaged or operating improperly.

After a new UICC inserted, it is necessary to run a control software and configure the UICC access rights before it can be used in contactless applications.

8 TROUBLESHOOTING

Operationnal bitrate :

USB HID device class is convenient as it is plug and play, however bitrate is limited to 64 bytes per ms. Hence, the remaining bandwidth for NFC data is highly reduced, which provides low performance for bandwidth consuming NFC applications and use cases such as P2P operation.

Open NFC application does not start :

Make sure the deskRead is properly detected in the Connection Center and the associated NFC controller service is properly started. It is advised to stop the NFC controller service before disconnecting the device. After the device is connected, the associated service has to be started manually if the Connection Center was previously started.

APPENDIX A - LIST OF TABLES

Aucune entrée de table d'illustration n'a été trouvée.

APPENDIX B - LIST OF FIGURES

Aucune entrée de table d'illustration n'a été trouvée.