

Prox'N'Roll PC/SC HSP

Getting Started Guide



Overview

The Prox'N'Roll HSP PC/SC is a user-friendly contactless (NFC/RFID @13.56MHz) coupling device. This document will guide you through installing the proper driver and exploring the available software for a successful start using your Prox'N'Roll HSP PC/SC.

Products covered by this guide

Order code	Description
SC15131	Prox'N'Roll PC/SC HSP – EU
SC16216	Prox'N'Roll PC/SC HSP – US/Canada
SC15254	Prox'N'Roll PC/SC HSP OEM (without housing)

- Important warning

The Prox'N'Roll HSP PC/SC uses a magnetic field to remotely power the contactless cards, and communicate with them. Magnetic waves are distorted or absorbed by conductive materials, including metal surfaces or shells. Also, the NFC/RFID communication is likely to be perturbed by other radiating devices (such as displays, radio or wireless communication interfaces) in the nearby. Place the Prox'N'Roll HSP PC/SC far from all sources of perturbations.

Before you begin

SpringCard aims at making contactless devices simple to use. Even so you will win time by reading this guide before plugging the device to your computer.

Please visit the Prox'N'Roll HSP PC/SC's web page to get up-to-date information regarding the device and download the last version of all documentations:

<https://www.springcard.com/en/products/proxnroll-pcsc-hsp>

Download and install the driver

A PC/SC coupler requires a driver to operate.

☐ Microsoft Windows

If your computer is directly connected to the Internet, you may just plug the coupler and let the system download the driver Windows Update. Use the manual installation procedure below for computers that are not using Windows Update, or for a faster installation.

The **Prox'N'Roll HSP PC/SC** share the same driver (part number SD16055) as all other **SpringCard** USB PC/SC Couplers.

Direct link to the driver:

<https://www.springcard.com/en/download/find/file/sd16055>

Launch the downloaded setup file to install the driver (you then need the administrative privileges on the computer).

Tip for network administrators: the driver setup could run unattended with the /SILENT command line flag.

☐ Linux and other UNIX

The **Prox'N'Roll HSP PC/SC** is fully supported by the PCSC-Lite open source project, through its USB CCID driver sub-project.

Please refer to the project page at:

<https://pcsc-lite.alioth.debian.org/>

Technical articles regarding the use of **SpringCard** couplers with PCSC-Lite are regrouped here:

<http://tech.springcard.com/topics/pcsc-lite/>

- SpringCard is not connected with and does not sponsor or endorse 3rd party open-source developers.

☐ macOS X

Apple now maintains its own fork of the PCSC-Lite open source project. Recent versions of Mac OS X support the same USB CCID couplers as the Linux original version:

<https://smartcardservices.github.io/>

Technical articles regarding the use of **SpringCard** couplers with PCSC-Lite are regrouped here:

<http://tech.springcard.com/topics/pcsc-lite/>

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The PC/SC QuickStart

□ Microsoft Windows

The **PC/SC QuickStart** is a set of simple applications to test that the coupler and its driver have been correctly installed. They are also a good starting point to explore the world of contactless smartcards.

The **PC/SC QuickStart** (part number SQ13163) could be downloaded here:

<https://www.springcard.com/en/download/find/file/sq13163>

□ Linux and other UNIX, □ macOS X

There are a few companion tools with the PCSC-Lite project that provide the same features as the PC/SC QuickStart for Windows:

- pcsc_scan
- gScriptor

They are provided by Ludovic Rousseau as open-source software:

<http://ludovic.rousseau.free.fr/software/pcsc-tools/index.html>

- SpringCard is not connected with and does not sponsor or endorse 3rd party open-source developers.

Plug the coupler into a USB port

Plug the **Prox'N'Roll HSP PC/SC** into one of the computer's USB ports.

Wait 10 to 120 seconds until the operating system activates the driver and enables the coupling device.

□ Windows takes 10 to 120 seconds the first time you plug the coupling device into the computer only. Afterwards, the coupling device will be activated in a couple of seconds.

Keep an eye on the device: the **Prox'N'Roll HSP PC/SC** blinks yellow until it has been enabled by the computer.

As soon as the blue light enters a smooth “breath” sequence, the device is ready!

- Precautions

As a contactless coupler, the **Prox'N'Roll HSP PC/SC** needs a clean power supply to remotely power the contactless cards, RFID labels or NFC tags. Do not try to operate the device through a non-powered USB hub nor through a passive USB cable extender.

Verify that everything is OK

You need a (compliant) contactless card do pass this step. Use for instance a card from the NXP MIFARE family, or any NFC Forum Tag.

SpringCard also offers contactless cards. Need a small assortment of various chips to start your developments, or a large batch to issue many cards to your users? Just contact us:

<https://www.springcard.com/en/products/cards-tags>

☐ Microsoft Windows

Launch the **SpringCard PC/SC Diagnostic** application that has been installed by the **PC/SC QuickStart** package.

The application shows all the PC/SC couplers connected to the system. Verify that one of them is named *“SpringCard Prox’N’Roll Contactless”* (a number follows).

Place a compliant contactless card onto the **Prox’N’Roll HSP PC/SC**.

The device emits a **short beep** and illuminates **solid green**. The PC/SC Diagnostic application shows the card’s Answer to Reset string (ATR) on the coupler’s line.

Congratulations, your Prox’N’Roll HSP PC/SC is ready to work with!

☐ Linux and other UNIX, ☐ macOS X

Open a terminal and launch `pcsc_scan`.

The tool enumerates all the PC/SC couplers connected to the system. Verify that one of them is named *“SpringCard H663 00 00”* (the **Prox’N’Roll HSP PC/SC** is the very same core as the H663 module, and the open-source driver has no knowledge of the different form factor).

Place a compliant contactless card onto the **Prox’N’Roll HSP PC/SC**.

The device emits a **short beep** and illuminates **solid green**. `pcsc_scan` shows that a card has been inserted into the coupler, and explains the card’s Answer to Reset string (ATR).

Congratulations, your Prox’N’Roll HSP PC/SC is ready to work with!

Understanding the LEDs & beeper

U.I. status	Description
“Breathing” blue	The device is ready, awaiting for a contactless card
Single beep+ Solid green	A contactless card is present and available for operation
Repeated beeps	The communication between the device and the card is not reliable. Move the card closer to the device. Install the device elsewhere.
Red, blinking	Malfunction (hardware error or overheating)
Yellow, blinking	The PC has not activated the device yet

FAQ

The device does not light at all / The device keeps blinking yellow

Verify that the driver has been correctly installed. Plug the device directly into one of the computer’s USB port and not through a hub or cable expender.

The Prox’N’Roll lights cyan, not blue – it is not listed by the OS as a PC/SC coupler but as a keyboard (Human Interface Device)

Your device is a Prox’N’Roll RFID Scanner, not a Prox’N’Roll PC/SC. More details here:

<https://www.springcard.com/en/learning/reader-or-coupling-device>

The device has been correctly installed and appears in the Device Manager under the Smart Card class, but PC/SC Diagnostic does not show any coupler

The PC/SC subsystem is disabled on your computer. Launch the “Services” applet in the Control Panel, and activate the “Smart Card Service” (ScardSvr.exe). More details here:

<http://tech.springcard.com/2014/pcsc-troubleshooting-on-windows/>

When I place a new card on the coupler, Windows tries to locate a driver and complains that a driver is missing

Microsoft Windows now tries to associate a driver to virtually anything, including contactless cards, but only high-end cards providing digital signature services have such a driver. More details here:

<http://tech.springcard.com/2011/windows-7-smartcard-driver-missing-workaround/>

The device does not 'see' my contactless card

Verify that your card is in the compliance list (basically: compliant with ISO/IEC 14443-3 or ISO/IEC 15693-3 or a NFC Forum Tag).

Verify that this card technology is enabled in the configuration (see page 8).

Verify that your card is physically compliant with the coupler's RF field level and sensitivity (basically: card's antenna compliant with ISO/IEC 14443-1, card validated with ISO/IEC 10373-6 or -7).

Contacting support

To contact **SpringCard** technical support, please go to:

<https://www.springcard.com/en/contact?request=support>

For a fast and efficient processing of your support requests, please provide accurate information on the environment (contactless card, operating system, driver version, firmware version, etc) and all details you have on the issue itself.

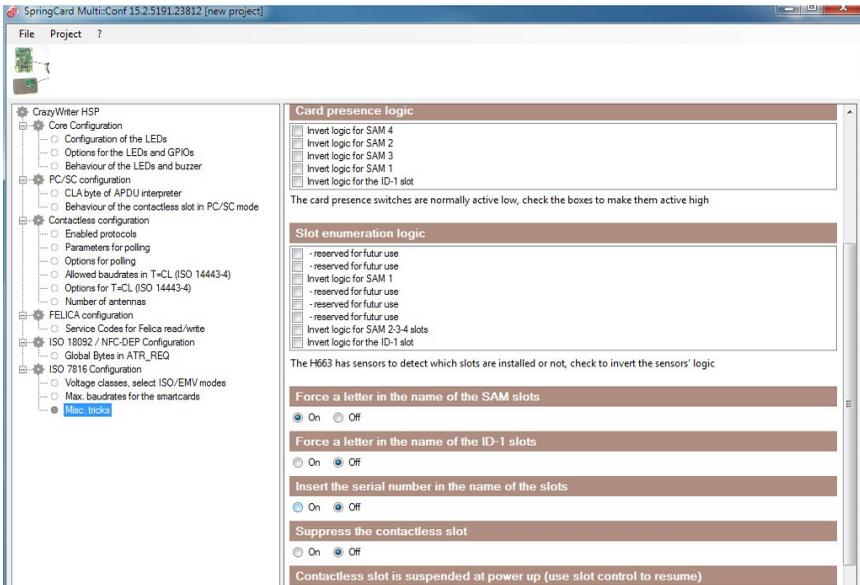
Going further – Device configuration

The Prox'N'Roll HSP PC/SC is highly configurable. Out-of-factory settings cover most of the use cases immediately, but advanced users may prefer to load a custom configuration into the device. For instance, it is possible to switch off the sound (beeper) or to disable some protocols, to silently ignore certain contactless cards.

To edit the configuration of the Prox'N'Roll HSP PC/SC, download and install MultiConf (part number SN14007):

<https://www.springcard.com/en/download/find/file/sn14007>

MultiConf is available only on Microsoft Windows, but once the device has been configured, its settings are preserved when connecting to another operating system.



Going further – Developers & integrators

PC/SC is an interoperability framework to develop smartcard-aware applications with no dependence between the application and the coupler (and driver), and with a standard API among Microsoft's and PCSC-Lite's implementations.

Therefore, there is no real specificities in developing with the **Prox'N'Roll HSP PC/SC**, and there are plenty of documentations, tutorials and even sample applications available on the web.

SpringCard's adds a stone to the building in the form of a free SDK featuring:

- A collection of reference utilities to explore all the functions of the MIFARE Classic, MIFARE Plus, MIFARE Desfire, MIFARE UltraLight C, ISO/IEC 15693 RFID labels including ICODE and TagIT, NFC Forum Tags, and more),
- A .NET wrapper that is portable among Windows and Mono, and a collection of examples in C#,
- The source code of most applications from the QuickStart.

The SDK is available within a ZIP archive:

<https://www.springcard.com/fr/download/find/file/pcsc-sdk>

Alternatively, you may explore or download the SDK on GitHub:

<https://github.com/springcard/springcard.pcsc.sdk>

Disclaimers – Legal notices

CE (all versions)

This product is CE marked according to the provisions of the R&TTE Directive (99/5/EC). Hereby, SPRINGCARD declares that this product is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC. For further information, please consult www.springcard.com.

FCC (SC16216 version only)

FCC Compliance Statement

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.

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antennae
- Increase the separation between the equipment and the receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

FCC RF Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. The antenna used for this transmitter must not transmit simultaneously with any other antenna or transmitter, except in accordance with FCC multi-transmitter product procedures.

FCC Caution

Any changes or modifications to the equipment not expressly approved by the party responsible for compliance could void user's authority to operate the equipment.

OEM integration (SC15254 version only)

This product is an OEM device, with possibility to be significantly altered by user through hardware enhancement/modifications and/or configuration changes, even at run-time. Thus, it is up to the manufacturer of the final equipment in which this device will be used to ensure compliance with regulations and standards (including CE and FCC marks) after having mounted and configured the device as it will be delivered to the end-user.

This product should be handled like a CMOS semiconductor device. The user must take all precautions to avoid build-up of static electricity while working with this device. The connectors and/or device pins should not be touched with bare hands.

Safety information

Please ensure that the product is properly used by observing the warnings and cautions below to prevent any risk and/or damage to property.

- Keep the product free of dust. It may damage mechanical and electronic parts of the product.
- Keep the product dry and away from water. It may damage the product.
- Do not use or store the product in high temperatures as this may reduce the life span of electronic devices and/or melt plastic parts of the product.
- Do not use or store the product in cold temperatures. Abrupt changes in temperatures may cause condensation and damage electronic circuits. Do not clean the product with cleaning solvents, toxic chemicals, or strong detergents as this may damage the product.
- Do not paint the product. Paint may interfere with the normal operation of the product.
- Do not drop or otherwise shock the product. It may damage the product or its internal electronic circuits.
- Do not cause impact to the product or touch it with sharp tools as this may damage the product.
- Do not disassemble, repair or modify the product as this may damage the product and invalidate the product warranty.
- Do not use the product near a microwave oven or a wireless communication device as this may cause malfunction or interference with the product.
- In any place where wireless communication is prohibited, such as hospitals or airplanes, turn off the power and refrain from using the product. In a place where wireless communication is prohibited, electromagnetic waves may cause hazards or accidents.

- Do not use the product near hazardous explosives. When there are near any explosion hazards, switch off the power supply and heed any regulations, instructions, and signs in the area.

Product warranty and disclaimer

Limited warranty

SPRINGCARD guarantees the product quality based on the technical specification stated in the product manual, and data regarding product warranty. Here, product warranty extends to the product only. SPRINGCARD will not be liable for any loss, damage of human life, or loss of property which may result from using the product beyond defective parts or flaws that occur due to problems in manufacture.

Warranty period

SPRINGCARD guarantees free-of-charge replacements of defective parts of the product or flaws that may have occurred due to problems in manufacture for a period of 2 years from the date of initial purchase.

Termination

Quality warranty of the product becomes effective on the date of initial purchase. In addition, the quality warranty of the product expires when the warranty period expires. However, in the following cases, the warranty will be terminated prematurely.

- In the event the product has been sold or transferred to a third party.
- In the event the manufacturer's name, serial number, product label, or other markings have been modified or removed.
- In the event any unauthorized person has tried to disassemble, repair, or modify the product.

Warranty service

To obtain product warranty service, contact the technical support using the contact page at www.springcard.com to receive a Return Agreement Number (RAN). Send the defective product, at your expense, to the address specified in the RAN. Take necessary measures to protect the product.

SPRINGCARD will provide free-of-charge repair or replacement service for the product when product defects occur within the scope of the product warranty and during the warranty period.

SPRINGCARD will provide charged repair or replacement service for the product when the product warranty period has been expired or when the product damage is beyond the scope of the product warranty. For further information on charged service, you may contact the support service of SPRINGCARD.

Disposal

This product (including all accessories and options) is not intended for household use. After use the device cannot be disposed of as household waste, and must be treated, recycled and disposed of in an environmentally sound manner.



EU only: in accordance with the WEEE (Waste Electrical and Electronic Equipment), SPRINGCARD can take back end of life devices.
Visit tech.springcard.com/weee for details and conditions

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3rd party licenses

FreeRTOS

FreeRTOS is a market leading real time operating system (or RTOS) from Real Time Engineers Ltd.

SPRINGCARD devices runs on FreeRTOS v8.2.0.

FreeRTOS is distributed under a modified GNU General Public License (GPL) that allows to use it in commercial, closed-source products.

For more information, or to download the source code of FreeRTOS, please visit www.freertos.org

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