M519-SUV

Getting Started Guide

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Document identification

Category	User manuals
Group	PN5190 family
Reference	PMI24096
Version	AA
Status	Initial release
Key-words	PC/SC, Smart Reader, SpringProx Legacy, RS-232, RS-TTL, RS-485, SDK
Abstract	Getting started with M519-SUV reader
Document name	M519-SUV Getting Started Guide (EN)
Date	13/08/2024

Revision history

Version	Date	Author.	Valid. by		Appr. par	Remarks
			Techn.	Qualit.		
AA	13/08/24	CFE	XXX	XXX	XXX	

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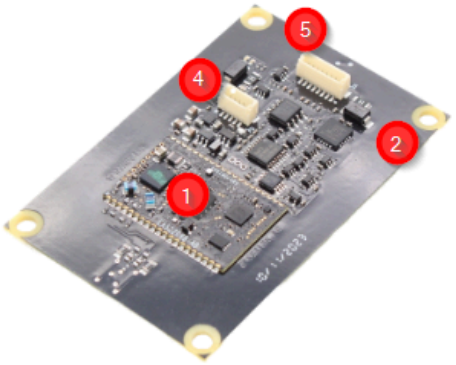

# 1	M519 module
# 2	Antenna (front)
# 3	Antenn (rear)
# 4	**USB JST 5PTS** connector
# 5	JST 8PTS serial link connector
	To use the product in USB mode, connect it to the host system via J2 (#4). To use the product in Serial mode, connect it to the host system via J1 (#5). **Never power the product through both J1 and J2 simultaneously.**

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1. OVERVIEW

The M519-SUV is available under several order codes, each of them corresponding to a specific factory configuration. The factory configuration defines both:

- The electrical level of the Serial interface (RS-TTL, RS-232, or RS-485)
- The operating mode and communication protocol used by the module (CCID PC/SC, Smart Reader, RFID Scanner, etc.).

Please ensure that the order code on the label matches the one you ordered. Refer to the table below to verify the factory configuration :

Order code	Product description	Host connection	Option (Protocol)
SC23137	M519-SUV (PC/SC | USB)	USB	
SC23219	M519-SUV (PC/SC | RS-TTL)	Serial	
SC23220	M519-SUV (PC/SC | RS-232)	Serial	
SC23221	M519-SUV (RFID Scanner AZERTY)	USB	
SC23222	M519-SUV (RFID Scanner QWERTY)	USB	
SC23223	M519-SUV (RDR | RS-TTL)	Serial	Mk1, JSON, $SCRDR
SC23224	M519-SUV (RDR | RS-232)	Serial	Mk1, JSON, $SCRDR
SC23225	M519-SUV (RDR | RS-485)	Serial	Mk1, JSON, $SCRDR
SC23227	M519-SUV (SpringProx Legacy | RS-232)	Serial	

Note : The configuration of the M519-SUV may have been altered since it left the factory. If in doubt, connect the M519-SUV via USB and use the SpringCard Companion software to restore the factory configuration corresponding to the order code indicated on the label.

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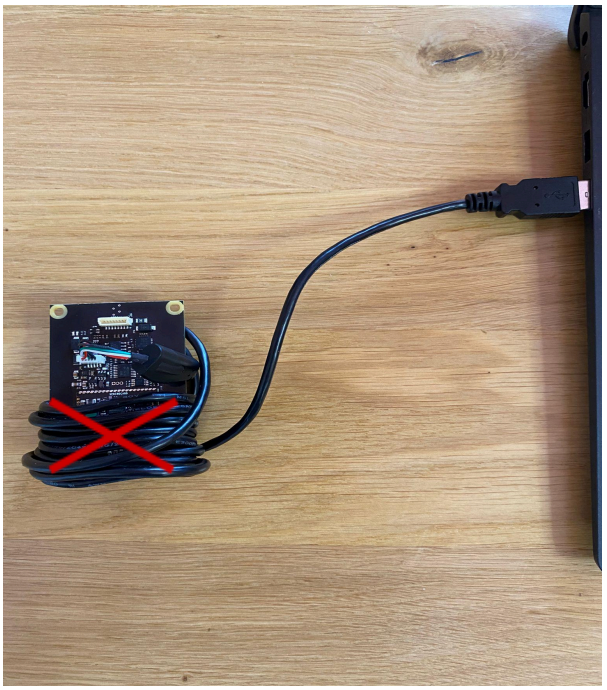
2. HARDWARE INSTALLATION

The M519-SUV product in USB mode uses a JST 5-pin to USB-A cable, 1.5 meters in length (Part No. SC15252, available for purchase from SpringCard). Do not wrap the cable around the product, avoid proximity to sources of electromagnetic interference, and do not use an USB extension cord.



If you choose a different USB connector, please have its performance validated by SpringCard.

The M519-SUV in Serial mode uses an 8-pin JST cable. SpringCard offers two models, each 300 mm in length :

- JST 8-pin to free wires (1 mm pitch), part number SC15046
- JST 8-pin to JST 8-pin (1 mm pitch), part number SC15145

You can visit this Farnell supplier **link** if you wish to create your own JST connector.

SpringCard also offers a **USB-to-Serial interface** that can be configured to RS-TTL, RS-232, or RS-485 to match the serial protocol defined on the M519-SUV and allow connection to a PC. The part number for this interface is SC24051.

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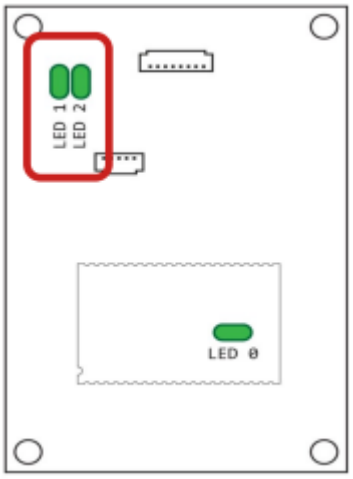
Note : If you are unsure of the electrical level of the Serial interface (RS-TTL, RS-232, or RS-485) of the device after multiple adjustments or tests, you can determine its current configuration by observing the LED sequence during power-up :



LED 1	LED 2	Serial interface	Remark
ON	ON	RS-TTL	
ON	OFF	RS-232	
OFF	ON	RS-485	
OFF	OFF	RS-TTL	Invalid configuration, should not occur

3. SOFTWARE INSTALLATION

In general, the M519-SUV is a peripheral dependent on an application running on the host. During the integration phase, the developer of the end-application will follow the application notes and/or use the SDKs associated with the M519-SUV, either directly or through a driver.

The following sections are designed to help you explore the M519-SUV and its usage until the end-application becomes available.

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3.1 USB communication

The relevant part numbers are as follows: SC23137, SC23221, SC23222.

3.1.1 SC23137

On Windows, the M519-SUV in CCID (PC/SC) configuration is supported by the SpringCard USB PC/SC driver SD16055, starting from version 22.09. The driver can be installed via Windows Update and is also available as a setup package for automatic deployment.

The product SC23137 (M519-SUV (PC/SC | USB)) shares the same driver (part number SD16055) as all other SpringCard USB PC/SC couplers. The link to the driver is available here:

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

Note : Without user intervention to prompt Windows Update immediately after connecting the M519-SUV to the computer, Windows often associates it with its default CCID driver rather than downloading the official SpringCard driver. The default driver has several limitations that make it less satisfactory in use. If needed, force an update check for drivers on Windows Update or use the setup package to ensure the correct driver is installed.

Advice for network administrators : The driver installation can proceed unattended using the command line switch /SILENT.

On Linux, other UNIX systems and macOS

The product is fully supported by the open-source project through its CCID driver starting from version 1.5.3. Please refer to the following page for more information :

https://pcsclite.apdu.fr/

Technical articles related to using SpringCard couplers with PCSC-Lite are compiled here :

https://tech.springcard.com/guides/pcsc-unix-with-pcsclite/

Our PC/SC SDK, which includes projects and tools, is available at the following link :

https://www.springcard.com/en/download/find/file/pcsc-sdk

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3.1.2 SC23221 and SC23222

The products SC23221 (M519-SUV (USB RFID Scanner AZERTY)) and SC23222 (M519-SUV (USB RFID Scanner QWERTY)) operate in keyboard emulation mode. The product is autonomous in reading card data and transmitting it to the PC as keystroke sequences, as if an operator were typing them on a keyboard.

By default, the M519-SUV RFID Scanner reads the protocol serial numbers (UIDs) of all supported technologies. To retrieve user data from the cards, you need to configure its Card Processing Templates.

SpringCard Companion allows you to create and apply configurations to the products. To apply a configuration without user intervention, you can also use SpringCoreConfig.exe via command line. The software and installation procedure can be found here :

https://tech.springcard.com/2021/getting-started-with-springcard-companion/

3.2 Communication via Serial Interface (RS-TTL, RS-232, RS-485)

The relevant part numbers are as follows: SC23219, SC23220, SC23223, SC23224, SC23225, SC23227.

3.2.1 SC23219 and SC23220

The operating mode of the SC23219 (M519-SUV (PC/SC | RS-TTL)) and SC23220 (M519-SUV (PC/SC | RS-232)) products introduced this year supports a streamlined version of the PC/SC system over a serial link.

Following the development of PC/SC drivers for USB, Bluetooth, and Ethernet, the SpringCard engineering team has created a new library (PCSC-Lite over Serial Link) to enable serial devices to communicate with contactless cards according to the PC/SC standard from a microcontroller, with or without a real-time kernel. For implementations on embedded processors under Linux or similar systems, using the USB interface is generally simpler.

This library is available here :

https://github.com/springcard/springcard-ccid-serial

The use of this operating mode is detailed in document PNA23174.

https://www.springcard.com/en/download/find/file/pna23174

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3.2.2 SC23223, SC23224 and SC23225

By default, the M519-SUV Smart Reader reads the protocol serial numbers (UIDs) of all supported technologies. To retrieve user data from the cards, you need to configure its Card Processing Templates.

SpringCard Companion allows you to create and apply configurations to the products. To apply a configuration without user intervention, you can also use SpringCoreConfig.exe via the command line.

3.2.3 SC23227 (M519-SUV (SpringProx Legacy | RS-232))

The SpringProx Legacy protocol is the historical protocol used by the first SpringCard products nearly 25 years ago. It is recommended not to use it anymore.

Our SDK includes reference codes for sample applications, which can be compiled on most operating systems, including embedded Linux systems.

https://www.springcard.com/en/download/find/file/springprox-sdk

The application note is detailed in the document below :

https://files.springcard.com/pub/[pna23189-aa]_using_the_m519_in_springprox_legacy_mode.pdf

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