



M110-SUV User Guide

How to use/flash an M110-SUV module

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Category

Notices, fiches produits, manuels

Family

Famille 125K

Reference

PMU25194 AA

Diffusion

Internal

Date

24/07/2025

Version

AA

State

Release

Page count

14

REVISION HISTORY

Ver.	Date	Author	Verifier	Approb.	Details
AA	2025-07-23	MBA	JDA	2025-07-24	Initial revision

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1 Software requirements

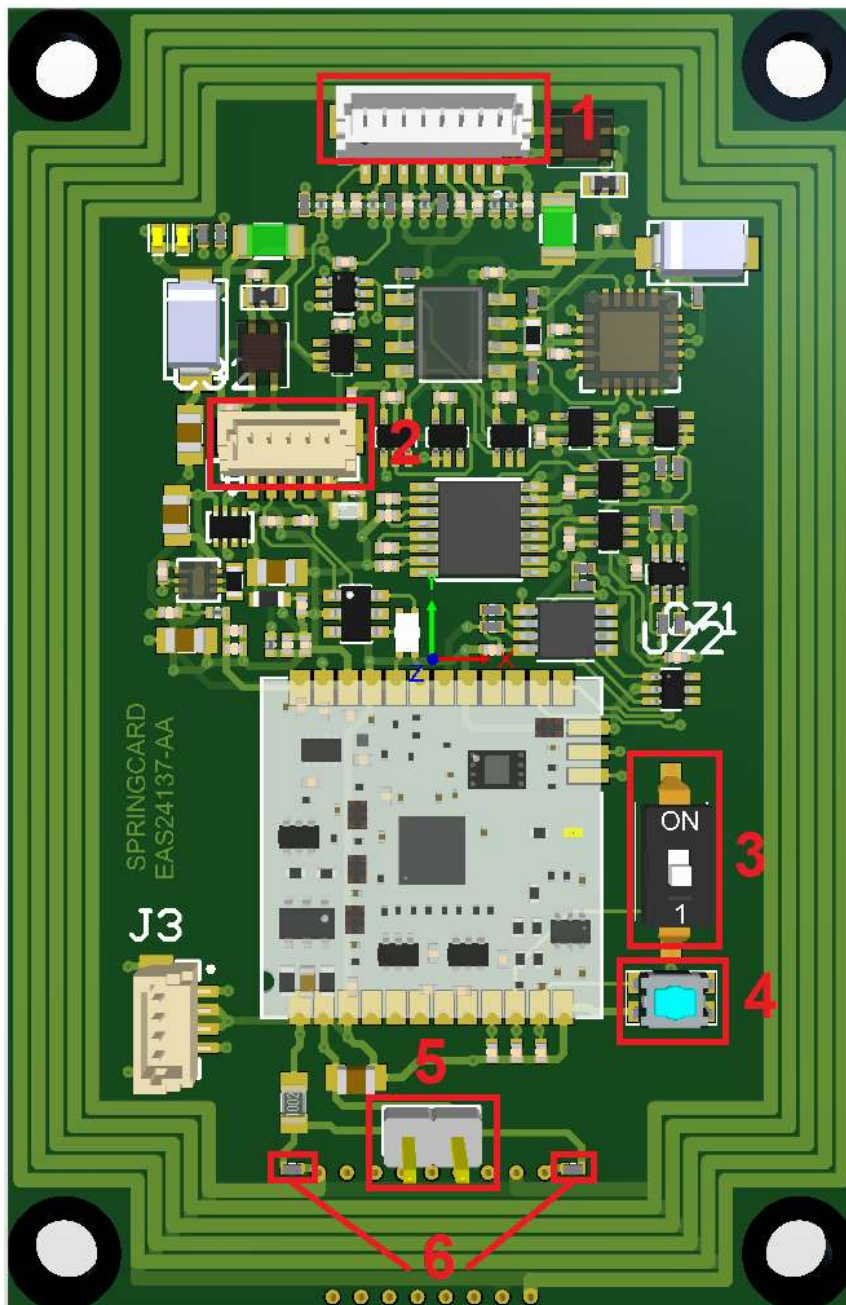
M110-SUV upgrade binaries shall be uploaded to the module using SpringCoreFlash, which is part of the SpringCoreTools suite (<https://www.springcard.com/en/download/find/file/sq20029>).

This tool is currently only available for the Microsoft Windows (intel) platform.

Please note that SpringCoreFlash is not able to define if an upgrade of the module is required or not and will overwrite any previously flashed firmware.

Note: VBUS has priority over UART on /RESET when /FLASH is asserted.

2 Board pinout



- (1) UART interface connector.
- (2) USB connector.
- (3) Flash (DFU) switch (/FLASH is asserted when the switch is on connector (2) side. /FLASH is only probed by the bootloader on /RESET.
- (4) Reset button
- (5) External antenna connector (remove both (6) to use).
- (6) On-board antenna (do not use (5) if populated).

3 USB mode

The M110-SUV will start in USB mode if it is hooked to a computer using connector (2).
A serial interface could be plugged on connector (1) but will not be used at all in this case.

Depending on the product's configuration, the product may be seen as:

- An USB-HID keyboard (aka SmartReader mode)
- A WinUSB device for debugging/reconfiguration purposes

3.1 USB-HID keyboard emulation

The purpose of this mode is to quickly and easily read tags without the need to install any specific software on the computer. In this mode, the M110-SUV acts as an USB keyboard, will probe for all known tag types and type the result on the test computer.

The firmware can output results in different format, using different keymaps.

The default settings are:

- String mode
- French keymap

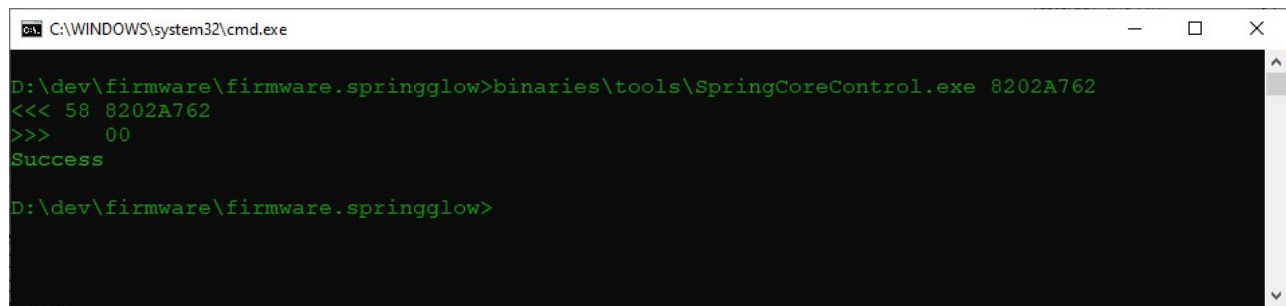
3.2 Output format

3.2.1 String output



This is the default mode.

You can switch to this mode using the following command (a product reset is required to apply the new setting): *SpringCoreControl.exe 8202A762*



```

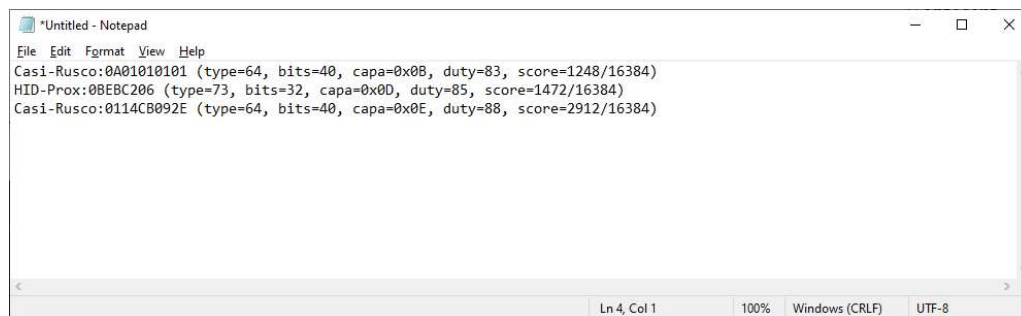
C:\WINDOWS\system32\cmd.exe

D:\dev\firmware\firmware.springglow>binaries\tools\SpringCoreControl.exe 8202A762
<<< 58 8202A762
>>> 00
Success

D:\dev\firmware\firmware.springglow>

```

3.2.2 Full debug output



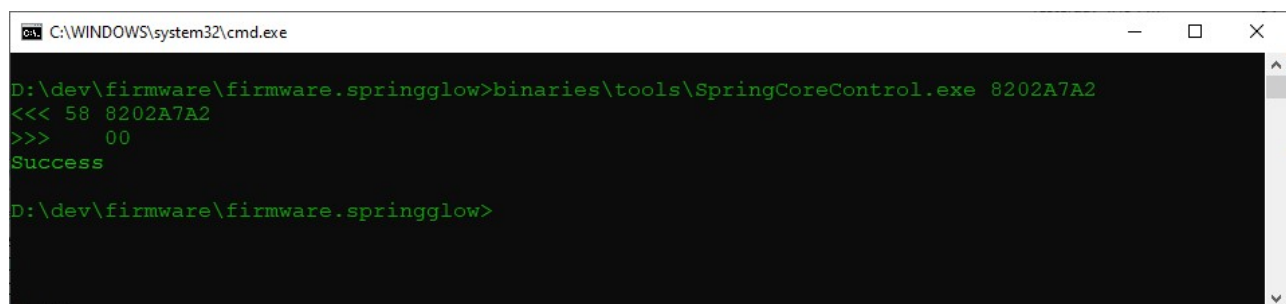
```

"Untitled - Notepad
File Edit Format View Help
Casi-Rusco:0A01010101 (type=64, bits=40, capa=0x00, duty=83, score=1248/16384)
HD-Prox:0BEBEC206 (type=73, bits=32, capa=0x00, duty=85, score=1472/16384)
Casi-Rusco:0114CB092E (type=64, bits=40, capa=0x0E, duty=88, score=2912/16384)

Ln 4, Col 1 100% Windows (CRLF) UTF-8

```

You can switch to this mode using the following command (a product reset is required to apply the new setting): *SpringCoreControl.exe 8202A7A2*



```

C:\WINDOWS\system32\cmd.exe

D:\dev\firmware\firmware.springglow>binaries\tools\SpringCoreControl.exe 8202A7A2
<<< 58 8202A7A2
>>> 00
Success

D:\dev\firmware\firmware.springglow>

```

3.2.3 Hexadecimal output



```

"Untitled - Notepad
File Edit Format View Help
0BEBEC206
0BEBEC205
0114CB092E

Ln 3, Col 1 100% Windows (CRLF) UTF-8

```

You can switch to this mode using the following command (a product reset is required to apply the new setting): *SpringCoreControl.exe 8202A722*

```
C:\WINDOWS\system32\cmd.exe

D:\dev\firmware\firmware.springglow>binaries\tools\SpringCoreControl.exe 8202A722
<<< 58 8202A722
>>> 00
Success

D:\dev\firmware\firmware.springglow>
```

```
C:\WINDOWS\system32\cmd.exe

D:\dev\firmware\firmware.springglow>binaries\tools\SpringCoreControl.exe 8202A700
<<< 58 8202A700
>>> 00
Success

D:\dev\firmware\firmware.springglow>
```

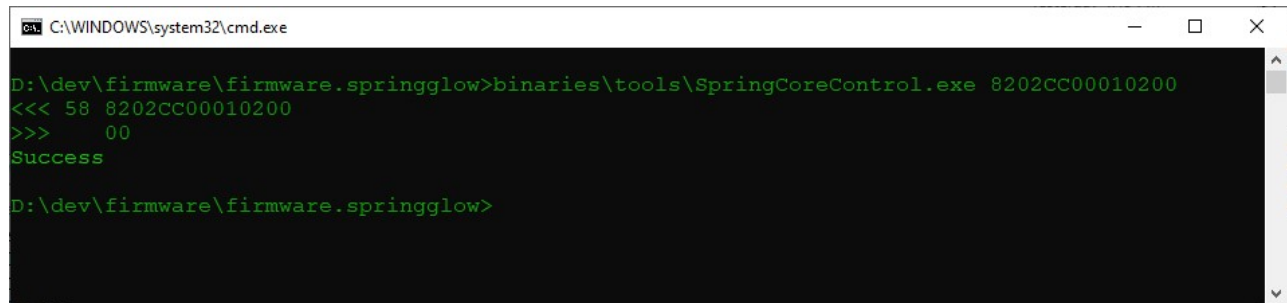
3.3 Default card type selection

The default configuration (at startup) enables all well-known card technologies. You can modify this setting using the following command: *SpringCoreControl.exe 8202CCxxxxxxx*

Where xxxxxxxx is a bitfield representation of the card technologies to read:

Bit	Description
0	Casi-Rusco
1	HITAG-1
2	HITAG-2
3	EM4x50
4-8	0 (unused)
9	HID-Prox
10	0 (unused)
11	Cotag
12	ioProx
13	Indala
14	NexWatch
15	AWID
16	G-Prox
17	Pyramid
18	Keri
19-20	0 (unused)
21	Nedap
22-31	0 (unused)

Example, enable G-Prox and ioProx (a product reset is required to apply the new setting):
SpringCoreControl.exe 8202CC00010200

A screenshot of a Windows command prompt window. The title bar shows 'C:\WINDOWS\system32\cmd.exe'. The command prompt is at 'D:\dev\firmware\firmware.springglow>'. The user has entered 'binaries\tools\SpringCoreControl.exe 8202CC00010200'. The output shows '<<< 58 8202CC00010200', '>>> 00', and 'Success'. The prompt is now 'D:\dev\firmware\firmware.springglow>'.

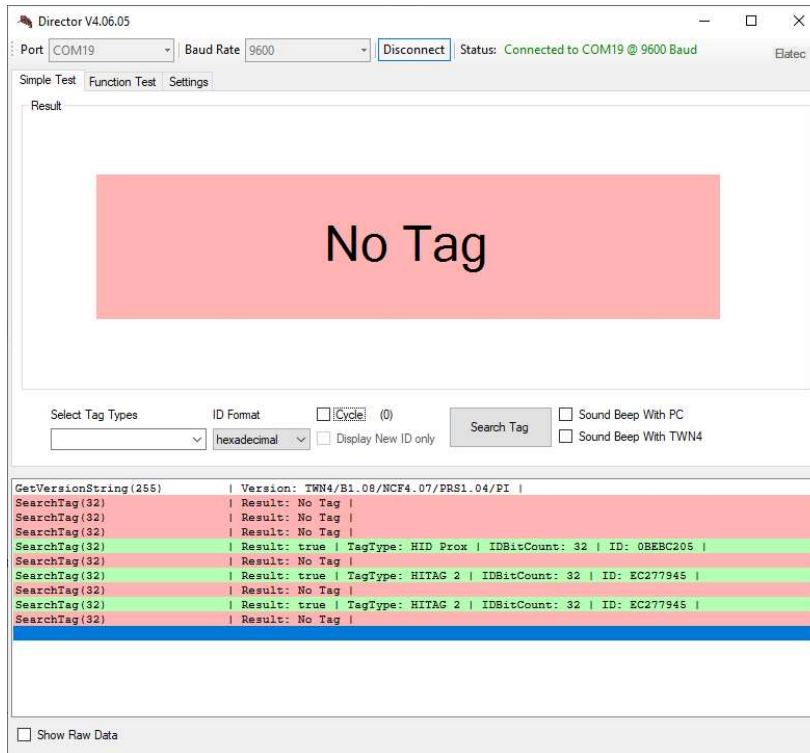
```
C:\WINDOWS\system32\cmd.exe
D:\dev\firmware\firmware.springglow>binaries\tools\SpringCoreControl.exe 8202CC00010200
<<< 58 8202CC00010200
>>> 00
Success
D:\dev\firmware\firmware.springglow>
```

3.4 WinUSB device for debugging purposes

This mode is used for debugging, research and reconfiguration purposes.

4 UART mode

The M110-SUV will start in UART (STid UART mode) mode if only a serial interface is plugged in connector (1). Defaults UART settings are 9600/8N1.

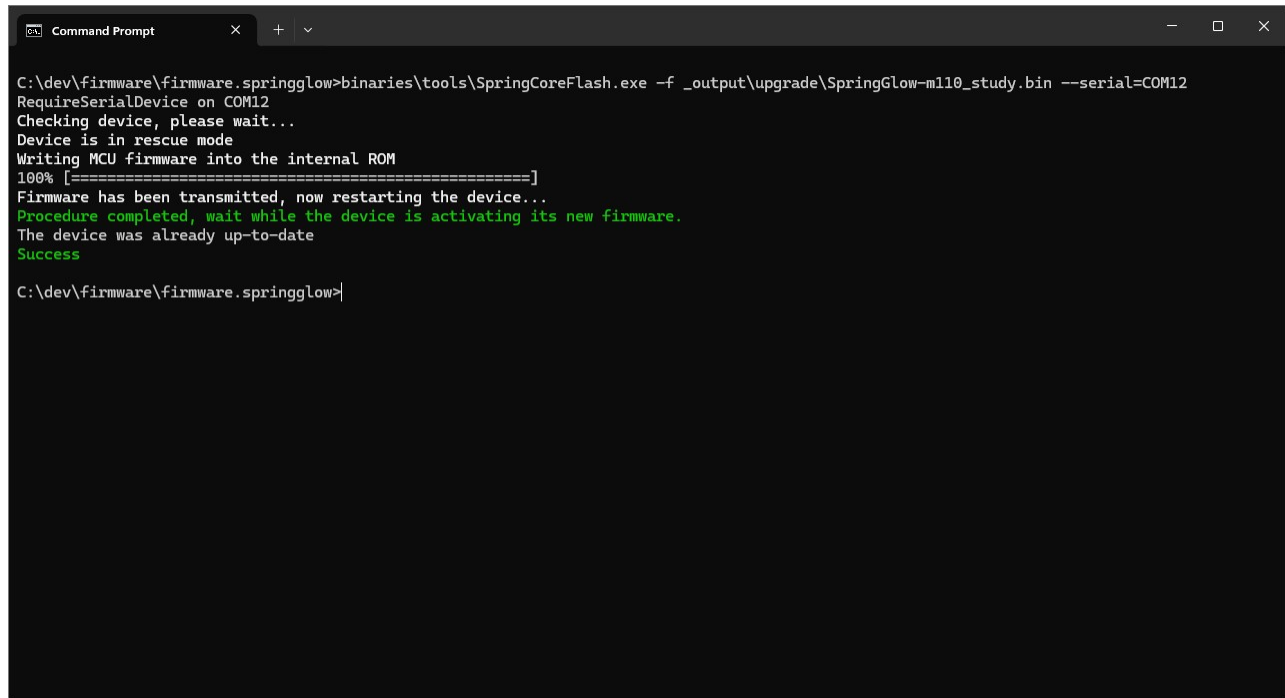


Please note that the current development firmware polls for tag all the time, regardless of the use of the `searchTag` command.

5 Firmware upgrade over UART

Set the M110-SUV to operate over UART using connector (1). Assert /FLASH by placing switch (3) on the connector (2) side then press button (4).

SpringCoreFlash.exe -f firmware_upgrade_file.bin --serial=COMxx



```
C:\dev\firmware\firmware.springglow>binaries\tools\SpringCoreFlash.exe -f _output\upgrade\SpringGlow-m110_study.bin --serial=COM12
RequireSerialDevice on COM12
Checking device, please wait...
Device is in rescue mode
Writing MCU firmware into the internal ROM
100% [=====]
Firmware has been transmitted, now restarting the device...
Procedure completed, wait while the device is activating its new firmware.
The device was already up-to-date
Success

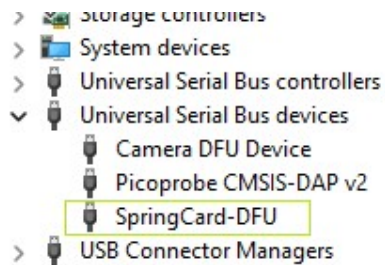
C:\dev\firmware\firmware.springglow>
```

Please note that the bootloader will try to start the newly uploaded firmware at the end of the flash operation (regardless of the /FLASH pin's level). Do not forget to reset switch (3) to its default position.

6 Firmware upgrade over USB

Set the M110-SUV to operate over USB using connector (2). Assert /FLASH by placing switch (3) on the connector (2) side then press button (4).

The device shall be detected as a SpringCard-DFU device when in DFU mode:



SpringCoreFlash.exe -f firmware_upgrade_file.bin

```
Command Prompt
C:\dev\firmware\firmware.springglow>binaries\tools\SpringCoreFlash.exe -f _output\upgrade\SpringGlow-m110_study.bin
Checking device, please wait...
Device is in rescue mode
Writing MCU firmware into the internal ROM
100% [=====]
Firmware has been transmitted, now restarting the device...
Procedure completed, wait while the device is activating its new firmware.
The device was already up-to-date
Success
C:\dev\firmware\firmware.springglow>
```

Please note that the bootloader will try to start the newly uploaded firmware at the end of the flash operation (regardless of the /FLASH pin's level). Do not forget to reset switch (3) to its default position.

7 STid command list

Command	Legacy	Header	Remark
<i>searchTag</i>	yes	0x0500	
<i>setRFOff</i>	yes	0x0501	
<i>setTagTypes</i>	yes	0x0502	
<i>getTagTypes</i>	yes	0x0503	
<i>getSupportedTagTypes</i>	yes	0x0504	
<i>reset</i>	yes	0x0001	
<i>getDeviceUID</i>	yes	0x0008	
<i>setCOMParameters</i>	yes	0x0109	
<i>LEDOOn</i>	yes	0x0411	
<i>LEDOff</i>	yes	0x0412	
<i>GetUSBType</i>	yes	0x0005	
<i>GetVersionString</i>	yes	0x0004	<i>max_length</i> different than FF is used as a keepalive!
<i>StartBootloader</i>	yes	0x0002	
<i>DiagLEDOOn</i>	yes	0x0408	
<i>DiagLEDOff</i>	yes	0x0409	
<i>DiagLEDToggle</i>	yes	0x040A	
<i>setRFCapa</i>	no	0x0505	Force capacitor selection (1 byte, from 0 to 15)
<i>setRFDuty</i>	no	0x0506	Force duty cycle selection (1 byte, from 0 to 100)
<i>getRFSettings</i>	no	0x0507	Get active capacitor selection and duty cycle (2 bytes)

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