

# STSW-STUSB021 Quick Start Guide

# STUSB

Installing STUSB4531 NVM flasher



# Introduction

This document describes how to install STUSB4531 Non Volatile Memory flasher ([STSW-STUSB021](#)).

This tool is useful to access STUSB4531 Non Volatile Memory.

Related SOFTWARE	
<b>STSW-STUSB021</b>	STUSB4531 NVM flasher
<b>Operating System</b>	Windows
Related HARDWARE	
<b>NUCLEO-C071RB</b> or <b>NUCLEO-F072RB</b>	STM32 Nucleo-64 development board with STM32C071RB MCU
	STM32 Nucleo-64 development board with STM32F072RB MCU
<b>USB cable</b>	With data support
<b>EVAL-SCS006V1 (*)</b> or <b>EVAL-SCS007V1 (*)</b>	STUSB4531 mini dongle
	STUSB4531 evaluation board



(\*) and following revisions (if available)



# Supported Hardware

## MINI-DONGLE EVAL-SCS006V1 (\*)

**EVAL-SCS006V1**




STUSB4531 reference design  
Fast & easy migration to USB-C up to 100 W (20 V - 5 A)

The board is pre-configured with 4 power profiles (datasheet configuration).

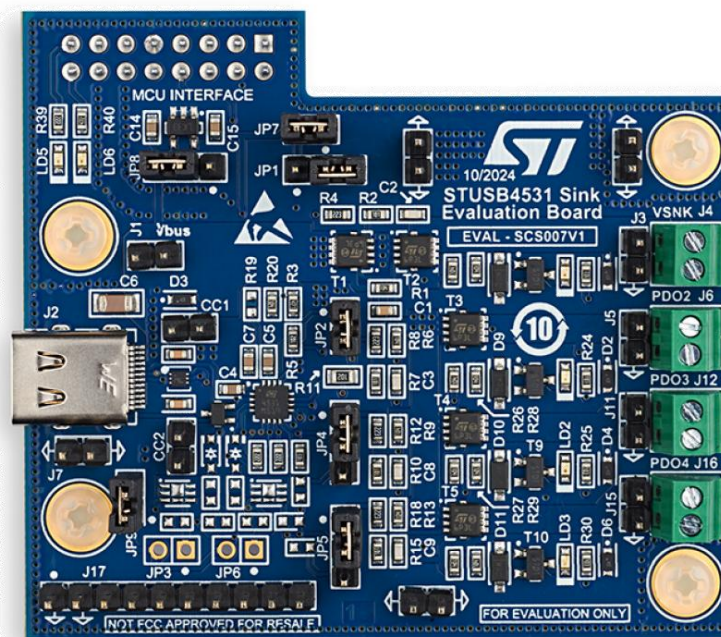
- PDP: 30W
- PDO1 (fixed): 5 V / 3 A
- PDO2 (fixed): 9 V / 3 A
- PDO3 (fixed): 15 V / 2 A
- PDO4 (variable): 9-20 V / 1.5 A

After connection to compatible USB PD source, a LED turns ON according to the USB PD negotiation result with the following colors:

- Blue: PDO1
- Blue + red: PDO2
- Blue + green: PDO3
- Blue + yellow: PDO4



## EVALUATION BOARD EVAL-SCS007V1 (\*)



(\*) and following revisions (if available)



# Installation process

**1** NUCLEO FW upgrade

from **1** to **5**

**2** Hardware configuration:

- Case 1: with EVAL-SCS007V1
- Case 2: with EVAL-SCS006V1

from **6** to **7**

from **8** to **9**

**3** Flasher set-up

from **10** to **18**

**4** Open the Flasher and use

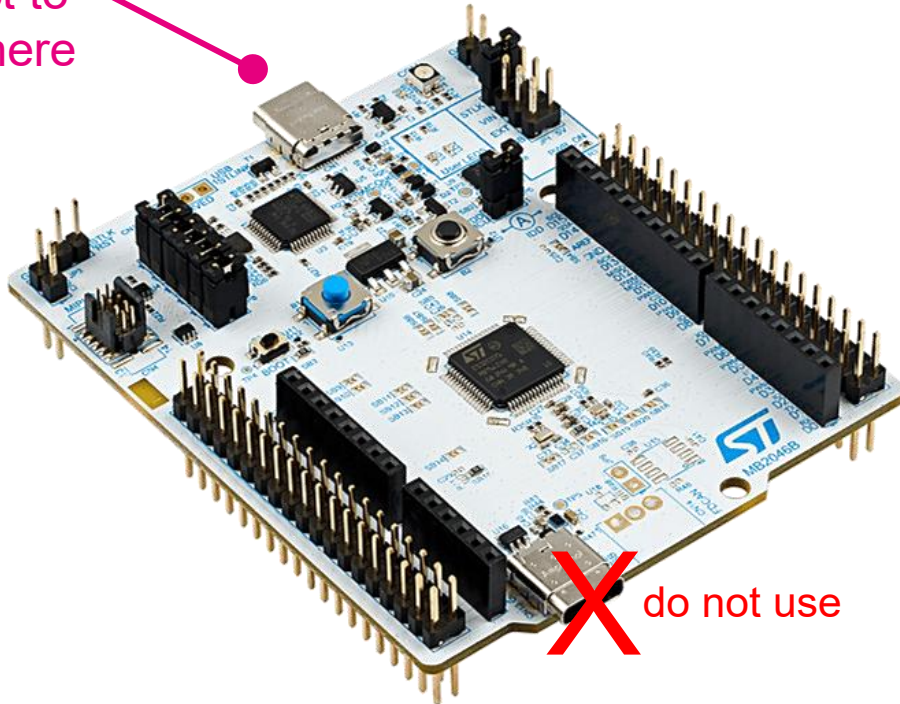
from **19** to **21**



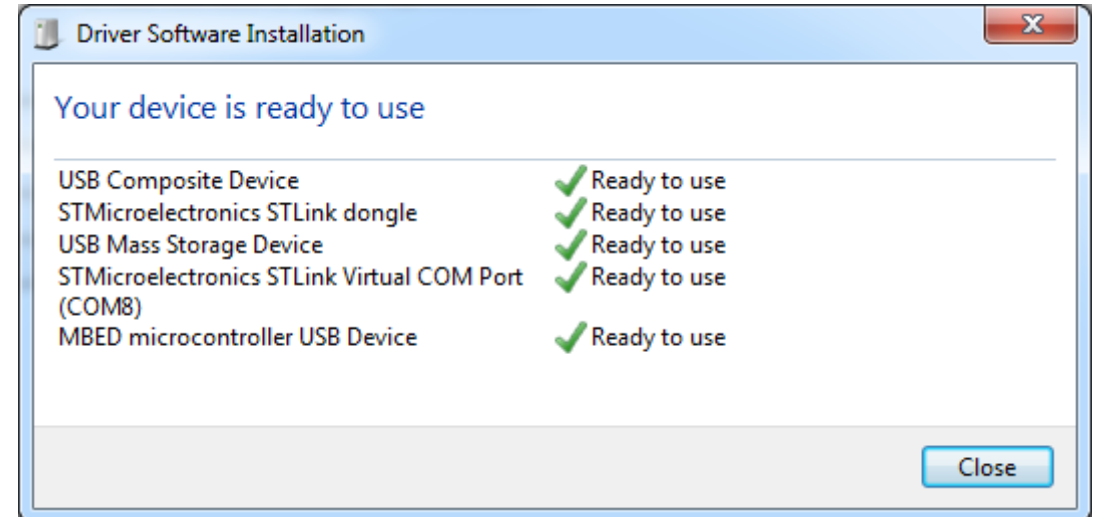
# NUCLEO FW upgrade (1/4)

- 1 Connect the NUCLEO-C071 (or NUCLEO-F072) to the laptop using USB-C cable

Connect to laptop here



- 2 Please make sure the device drivers are installed successfully:





# NUCLEO FW upgrade (2/4)

## 3 Download and install [STSW-LINK007](#)

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**STSW-LINK007** ACTIVE Save to myST

ST-LINK, ST-LINK/V2, ST-LINK/V2-1, STLINK-V3 boards firmware upgrade

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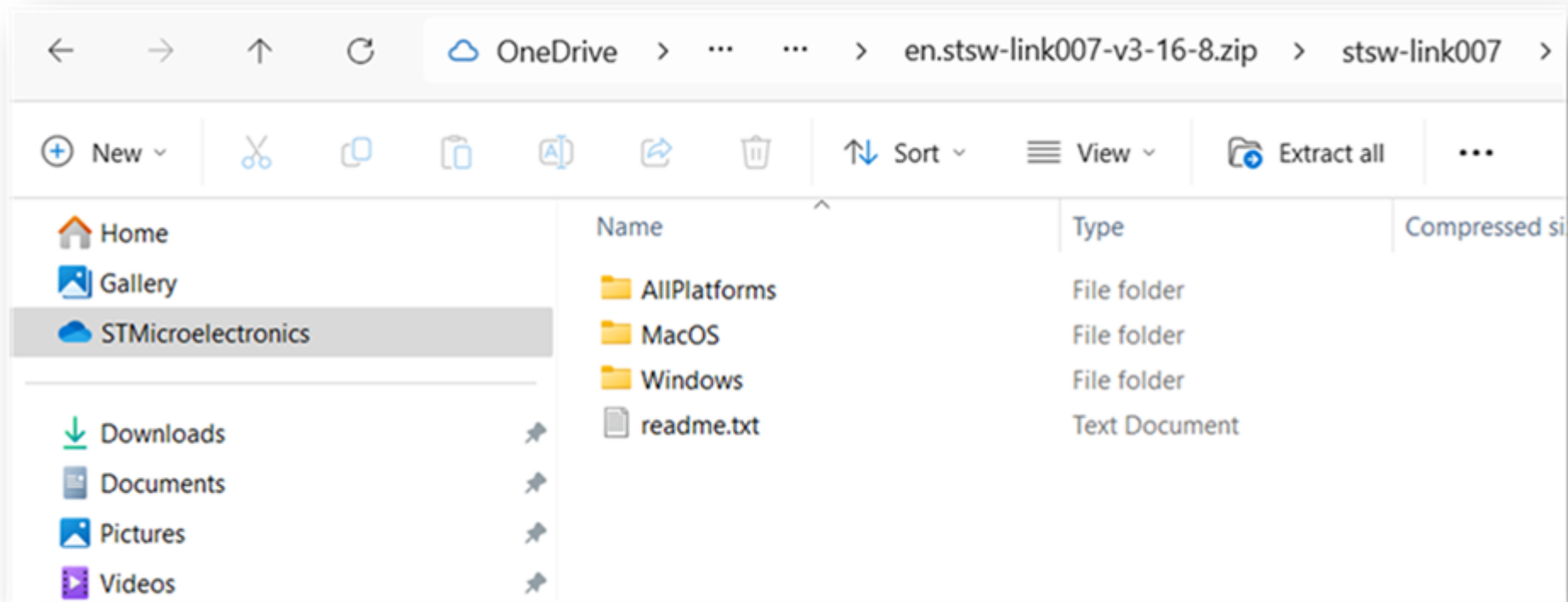
Press “Get Software”  
Then “Get latest”  
And accept License Agreement with your MyST account





# NUCLEO FW upgrade (3/4)

- 4 Select your operating system and run the [STLINKUpgrade.exe](#) to upgrade the NUCLEO-C071





# NUCLEO FW upgrade (4/4)

5 Select the STM32 Debug+Mass storage+VCP option

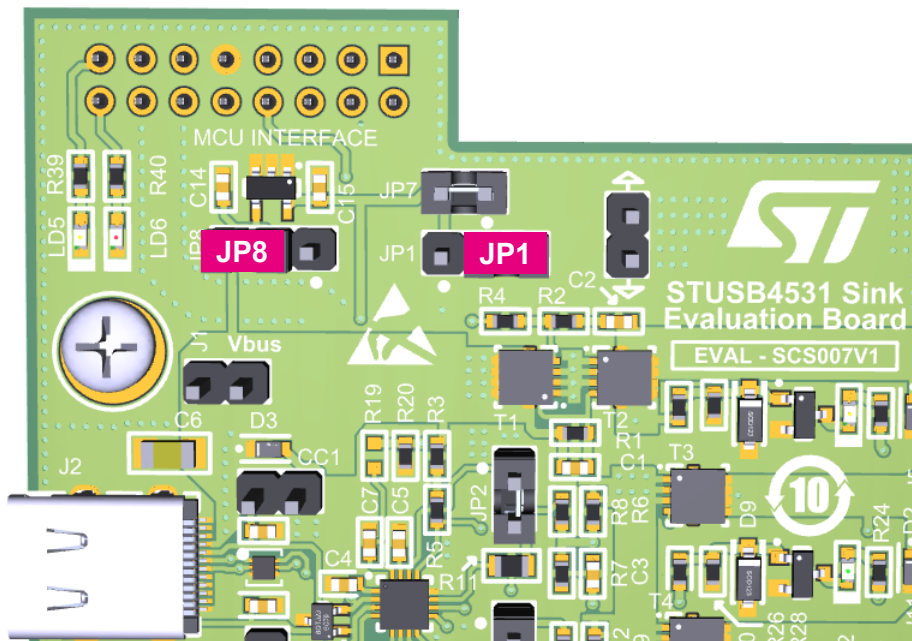




# Hardware Configuration (1/4)

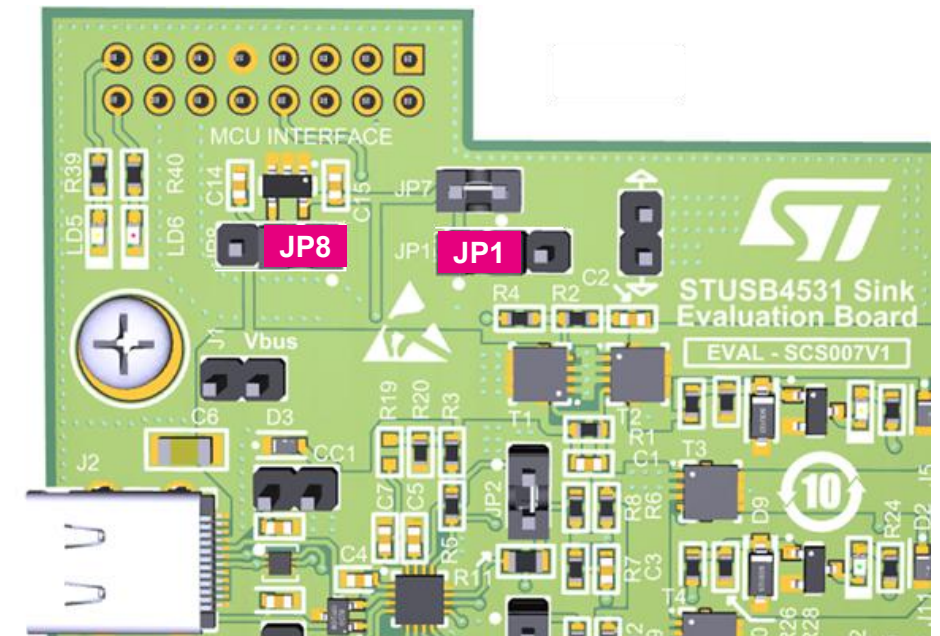
## 6 Case 1: Using EVAL-SCS007V1: Power the board from the NUCLEO

By default, JP1 and JP8 are in external position:  
STUSB4531 is powered by USB-C port (VBUS)



Set JP1 and JP8 in internal position:  
STUSB4531 is powered by Nucleo board

Change JP1 & JP8  
Jumpers position

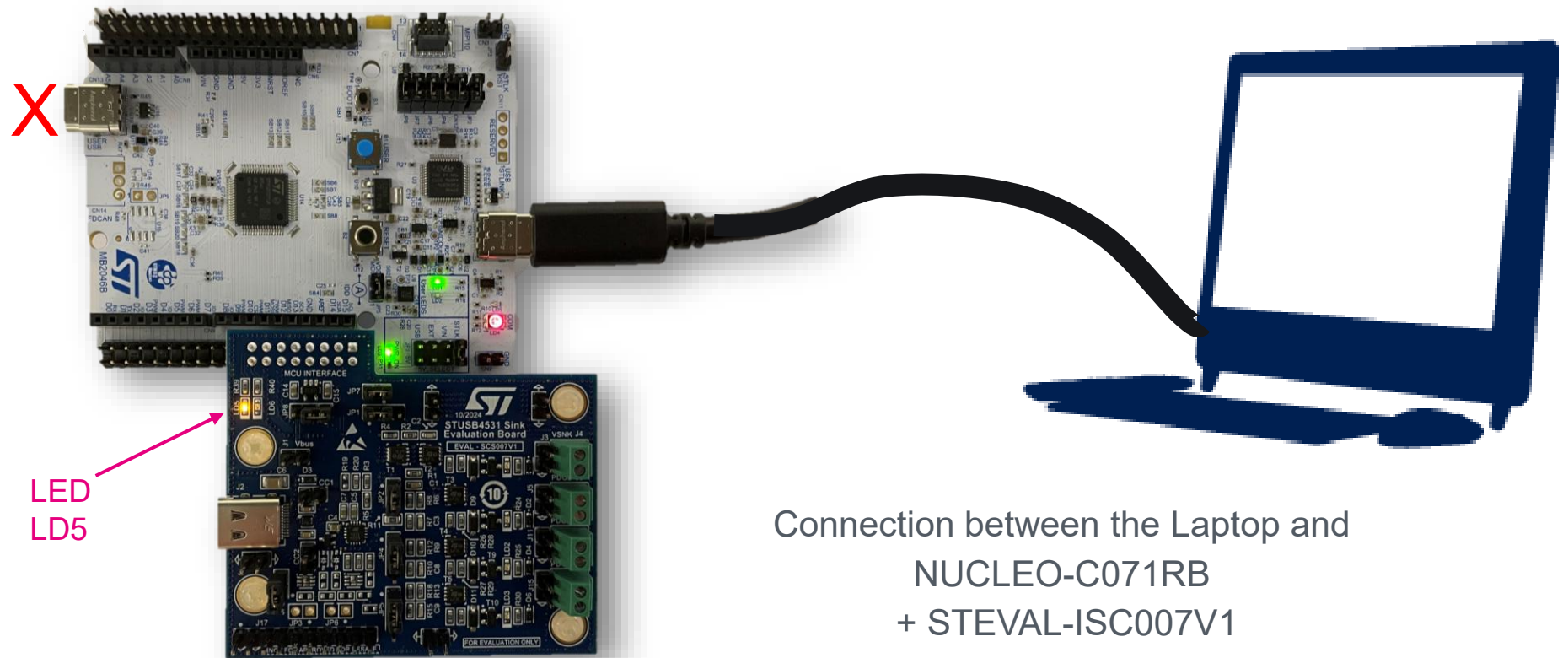


**Explanation:** In order to access to STUSB4531 NVM or I<sup>2</sup>C registers from the NVM flasher or a GUI, the STUSB4531 must be always ON, even if the STUSB4531 is not attached to a source. That's why, STUSB4531 power supply must come from the system, and not from VBUS



# Hardware Configuration (2/4)

## 7 Case 1: Using EVAL-SCS007V1: Connect to the NUCLEO and to the laptop



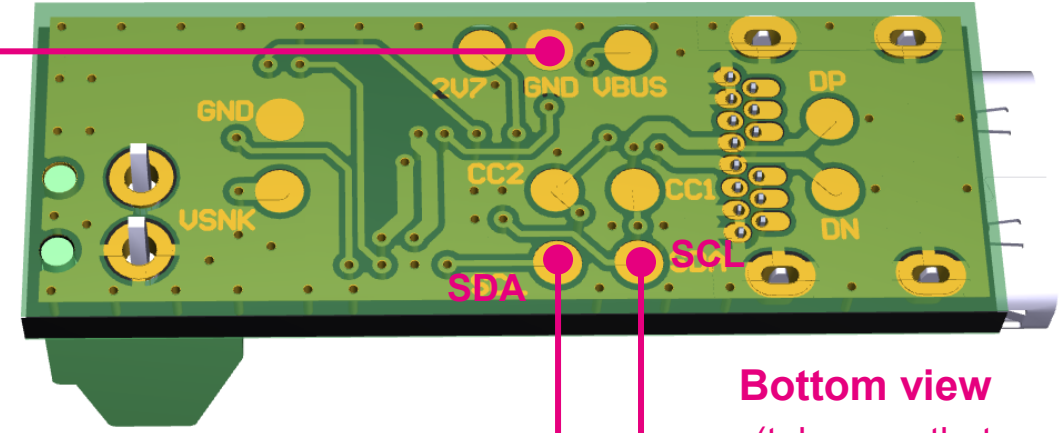
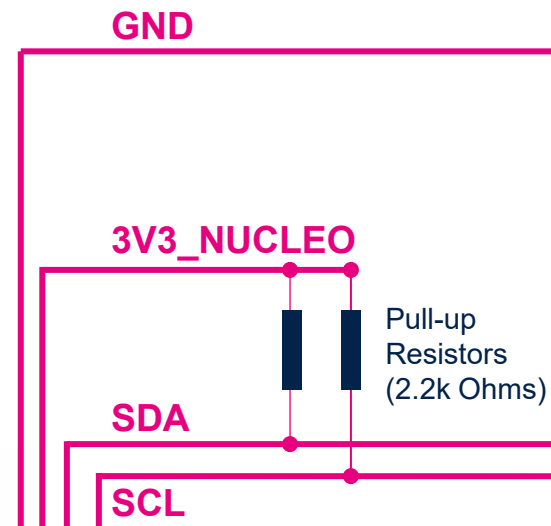
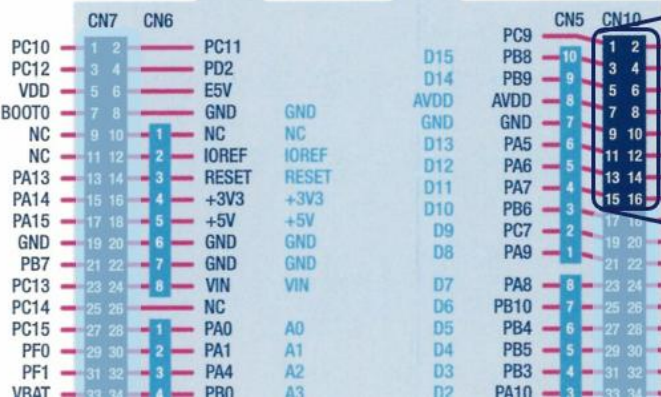
→ GO to 10



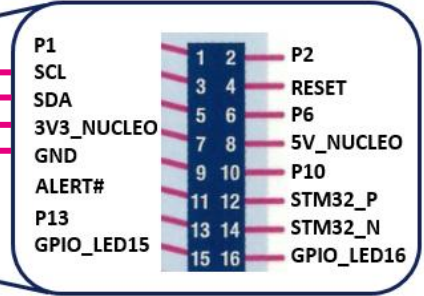
# Hardware Configuration (3/4)

## 8 Case 2: Using EVAL-SCS006V1: Connect to the NUCLEO

NUCLEO-C071RB  
NUCLEO-F072RB



Bottom view  
(take care that SCL and SDA labels are inverted on PCB)

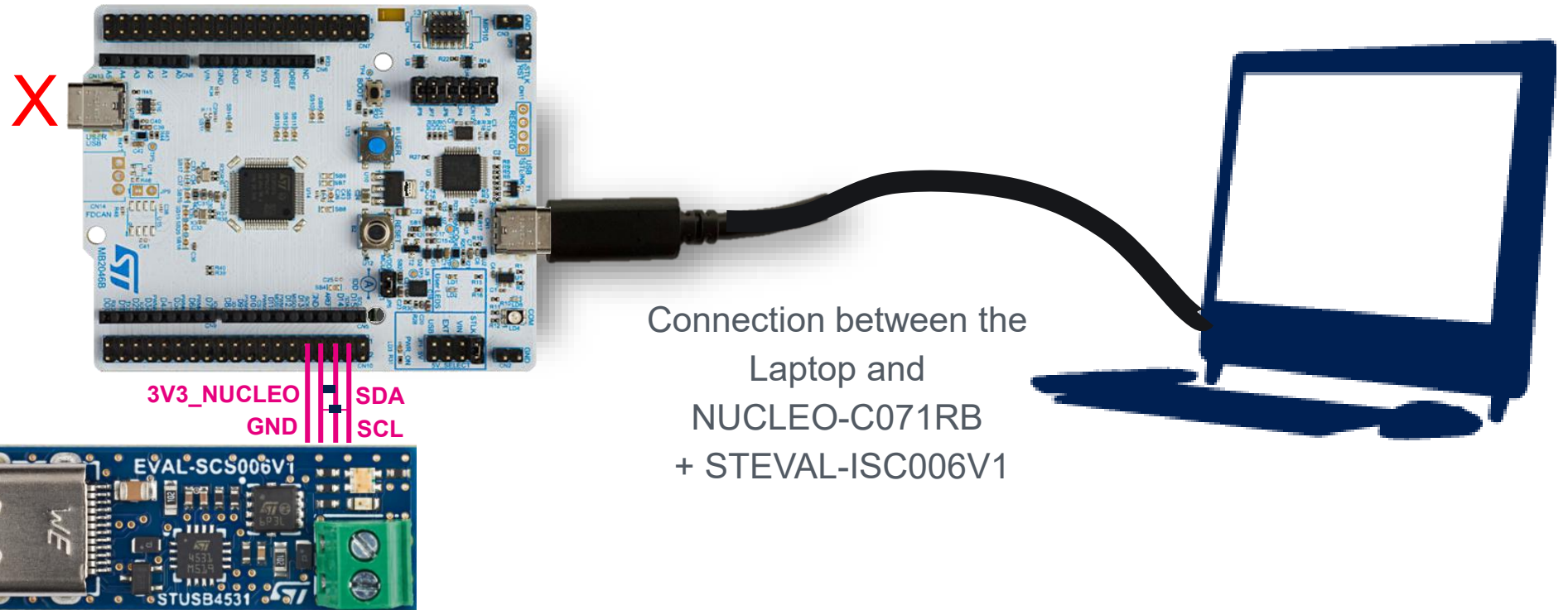


please make sure SDA and SCL signals from the STUSB4531 board are properly connected to their counterpart from NUCLEO-C071B / NUCLEO-F072RB



# Hardware Configuration (4/4)

## 9 Case 2: Using EVAL-SCS006V1: Power the board from the USB-C port



**Explanation:** at the opposite of EVAL-SCS007V1, EVAL-SCS006V1 is powered from VBUS exclusively. In order to access to STUSB4531 NVM or I<sup>2</sup>C registers from the NVM flasher or the GUI, the EVAL-SCS006V1 must be attached to a SOURCE (A to C cable, power bank, AC adapter, dockin etc...)



# Flasher set-up

(1/5)

- 10 Download the STUSB4531 flasher package by searching [STSW-STUSB021](#) from [www.st.com](http://www.st.com) home page:

The screenshot shows the ST website search interface. At the top left is the ST logo. A search bar contains the text 'STSW-STUSB021'. Below the search bar, there are filter options: 'Filters' and 'Clear filters'. Under 'Filters', there are two tabs: 'Most Used' (selected) and 'All Filters'. The 'Most Used' tab shows a 'PRODUCT CATEGORY' list with two items: 'Amplifiers and comparators (74)' and 'Microcontrollers & microprocessors (40)'. To the right of the filters, it says 'Showing 1,038 results.' Below this, a search result is displayed with a yellow 'BEST RESULT' tag and a 'RESOURCE' tag. The result title is 'STSW-STUSB021'. The description reads: 'The **STSW-STUSB021** is a command-line tool dedicated to loading or reading the STUSB4531 configuration, which is stored into the IC non-volatile memory (NVM).' Below the description is the URL: <https://www.st.com/en/embedded-software/stsw-stusb021.html>





# Flasher set-up (2/5)

11 Then click on “Get Software” from the bottom of the page

Get Software						
Part Number	General Description	ECCN (EU)	ECCN (US)	Supplier	Download	
+ STSW-STUSB021	NVM customization library for STUSB4531	-	-	ST		<a href="#">Get latest</a>

12 Download will start after accepting the License Agreement, and filling contact information.

## License Agreement

[Download as .pdf](#) ↓

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# Flasher set-up (3/5)

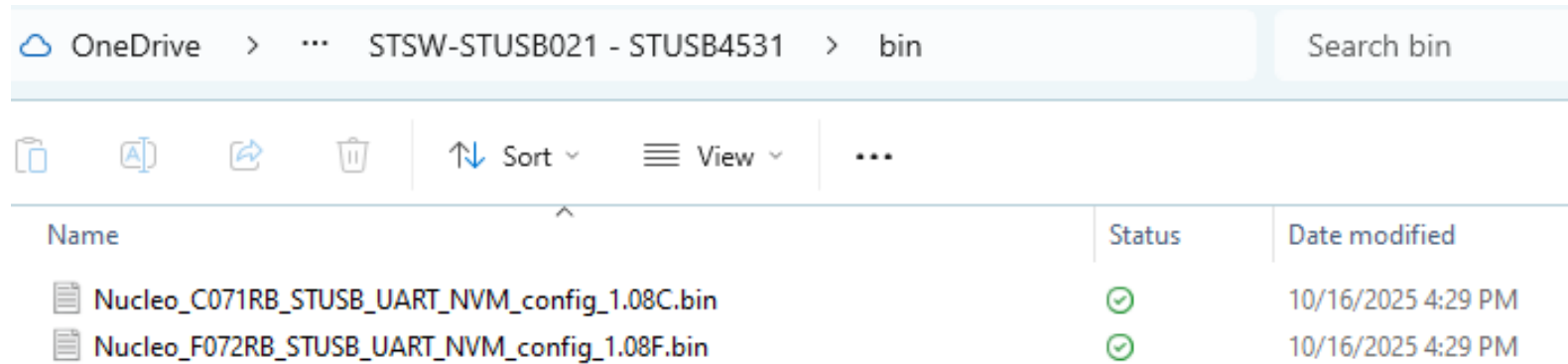
- 13 Save the file **stsw-stusb021.zip** on your laptop and unzip:

Name	Status	Type	Size
bin	✓	File folder	
cfg	✓	File folder	
doc	✓	File folder	
CMD_STUSB4531_flasher.com	✓	MS-DOS Applicati...	8,015 KB
STSW_STUSB021.bat	✓	Windows Batch File	1 KB

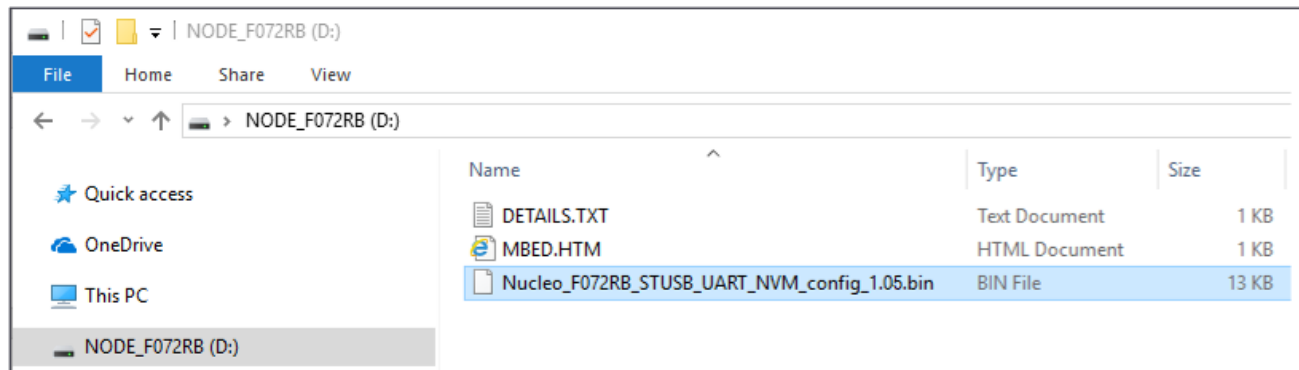


# Flasher set-up (4/5)

- 14 The STM32 Nucleo board must be flashed with the correct binary file contained in the bin directory



- 15 Connect the Nucleo board to the Laptop (see 7 or 9 )  
Drag and drop the appropriated BIN file to the Nucleo board (NODE\_C071RB or NODE\_F072RB)





# Flasher set-up

(5/5)

- 16 Press the NUCLEO-C071RB “RESET” button (B2 – Black push button).
- 17 If using the EVAL-SCS007V1, the LED LD5 should be blinking (see [7](#) )
- 18 The board is now configured to act as a USB to I<sup>2</sup>C bridge between the STSW-STUSB020/1 and STUSB4531.



# Open the flasher

19 Open the flasher  
by clicking on  
STSW\_STUSB021.bat

```
C:\WINDOWS\system32\cmd. x + v

*****
***   Welcome to CMD_STUSB4531_flasher   ***
*****

[INFO] usage: CMD_STUSB4531_flasher.com [-h] [-c COM] [-i [I2C_ADDRESS]] [-v] [-f FILE] [-s]
STUSB4531 NVM command line flasher

options:
  -h, --help            show this help message and exit
  -c COM, -C COM, --COM COM, --com COM
                        To select ST Link COM Port
  -i [I2C_ADDRESS], --i2c_address [I2C_ADDRESS]
                        I2C address (28 or 29)
  -v, --verbose         verbose active
  -f FILE, --file FILE  input file to load into NVM
  -s, --save            save read data into text file

[INFO] Available COM ports with STUSB4531 detected:
        COM9 (I2C address(es): 0x28)

[INFO] Please provide at least one argument. See usage above.

C:\Users>
```





# Command line options

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`CMD_STUSB4531_flasher.com [-h] [-c COM] [-i [I2C_ADDRESS]] [-v] [-f FILE] [-s]`

options	Description
-h --help	show this help message and exit
-c COM -C COM --COM COM --com COM	To select ST Link COM Port
-i [I2C_ADDRESS] --i2c_address [I2C_ADDRESS]	I2C address (28 or 29)
-v --verbose	verbose active
-f FILE --file FILE	input file to load into NVM
-s, --save	save read data into text file



# Example

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```
C:\WINDOWS\system32\cmd. x + v
C:\Users\STSW-STUSB021 - STUSB4531> CMD_STUSB4531_flasher.com -c COM9 -f cfg/STUSB4531_custom_config.nvm -v

*****
*** Welcome to CMD_STUSB4531_flasher ***
*****

[INFO] Only I2C address 0x29 detected on COM9. Using -i 29 automatically.

=====
COMMUNICATION
=====
Communication OK with STUSB4531 on COM9 @0x29

=====
READ NVM OPERATION
=====
===== Read Process Start =====
Read All Sector Succeed= True
Data present in nvm_data_backup table are the followings:
nvm_data_backup[0]=['83', '04', '31', '45', '00', '00', '00', '00']
nvm_data_backup[1]=['10', '32', '11', 'F7', '87', '00', '00', '00']
nvm_data_backup[2]=['C0', '20', '00', '97', '03', '3C', '03', '00']
nvm_data_backup[3]=['A6', '3C', '00', '58', '00', 'C8', '5A', '1E']
===== Read Process Complete =====
===== Exit Mode Start =====
Exit mode op succeed= True
===== Exit Mode Complete =====
Read NVM complete with success

[INFO]: The following unique sectors have been written from the input file:
Sector0, Sector1, Sector2, Sector3
```



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