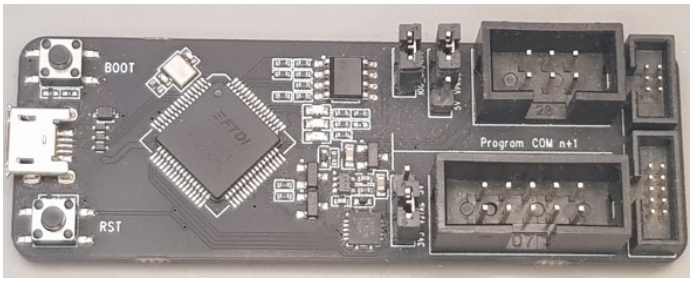
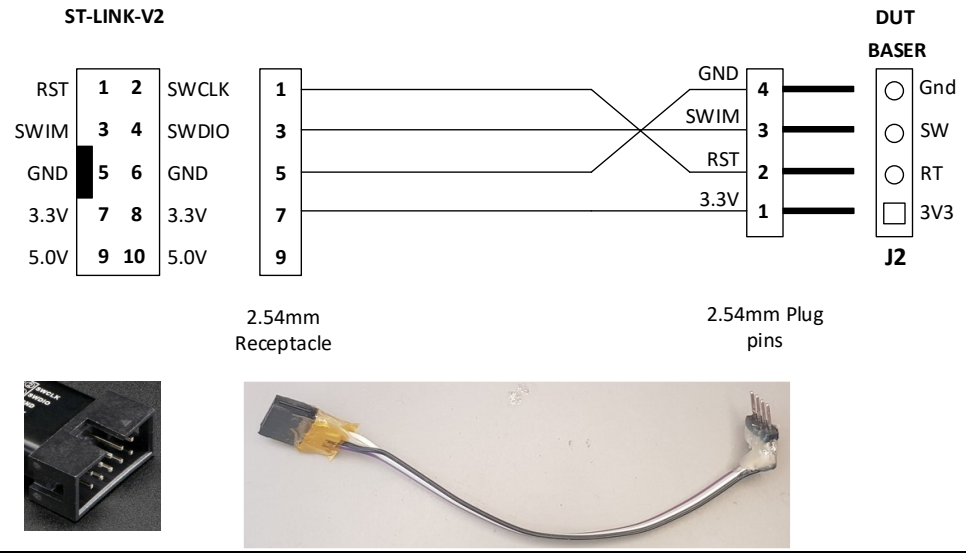
This guide provides instructions to program the STM8S003K3 and ESP32-S3-MINI-N8 modules in the USB Insight Hub hardware.

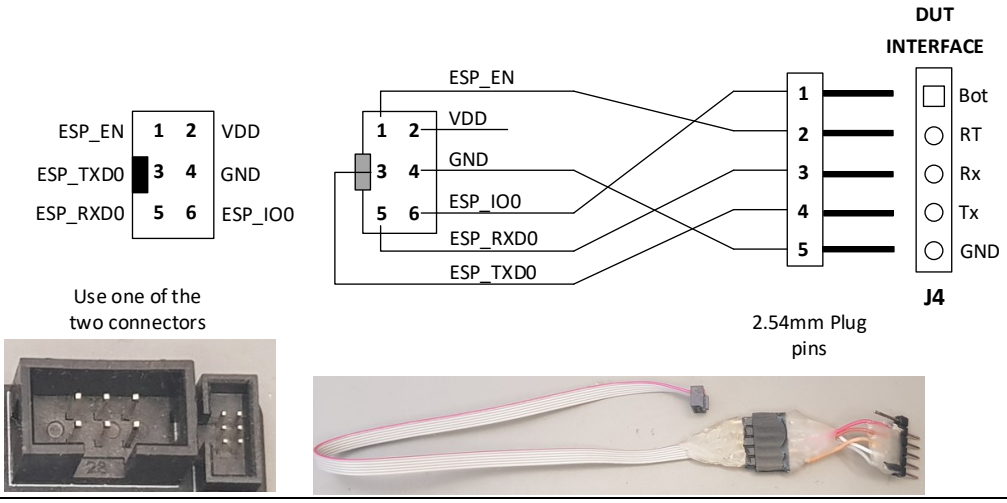
1. Tools required

1	**ST-Link-V2**	Programmer for STM8S003K3T6 (U1 in BASER PCB)
		 https://www.aliexpress.us/item/3256806122245932.html

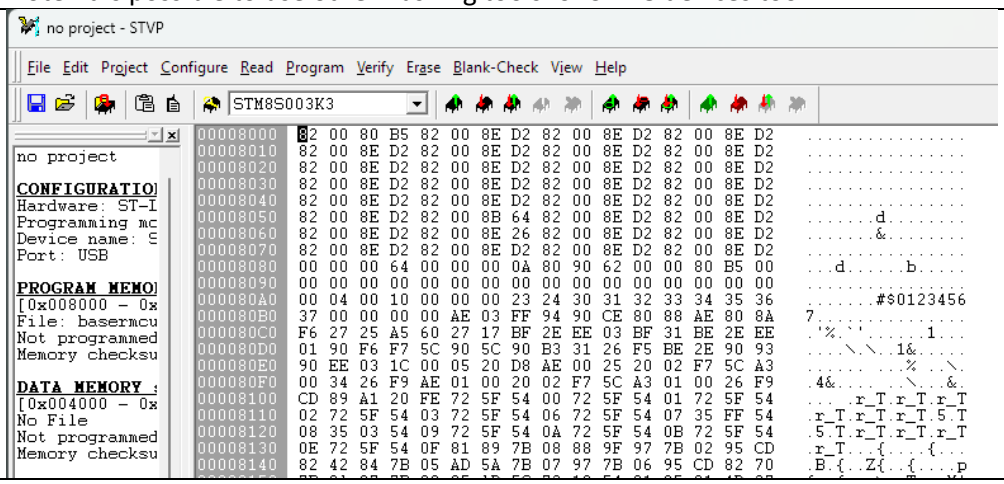
2	**ESP-Prog**	Programmer for ESP32-S3-MINI-1-N8 (U2 in INTERFACE PCB)
		 https://www.aliexpress.us/item/3256802911926640.html

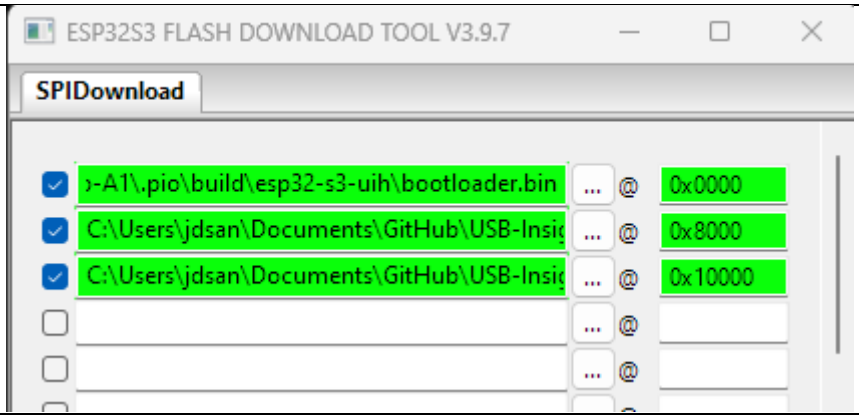
3	**USB 2 Cable or USB 3 Cable**	USB A to USB Type C Cable (for power)
		

4	**STM8 Prog. cable**	Adapter cable from ST-Link-V2 to programming header J2 in BASER PCB
		

5	**ESP32 Prog. cable**	Adapter cable from ESP-Prog to programming header J4 in INTERFACE PCB
		

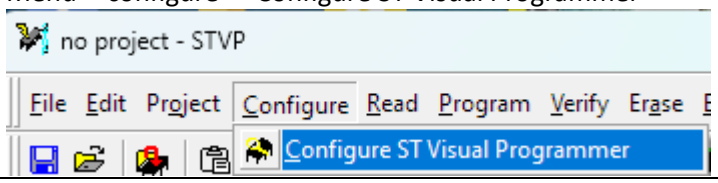
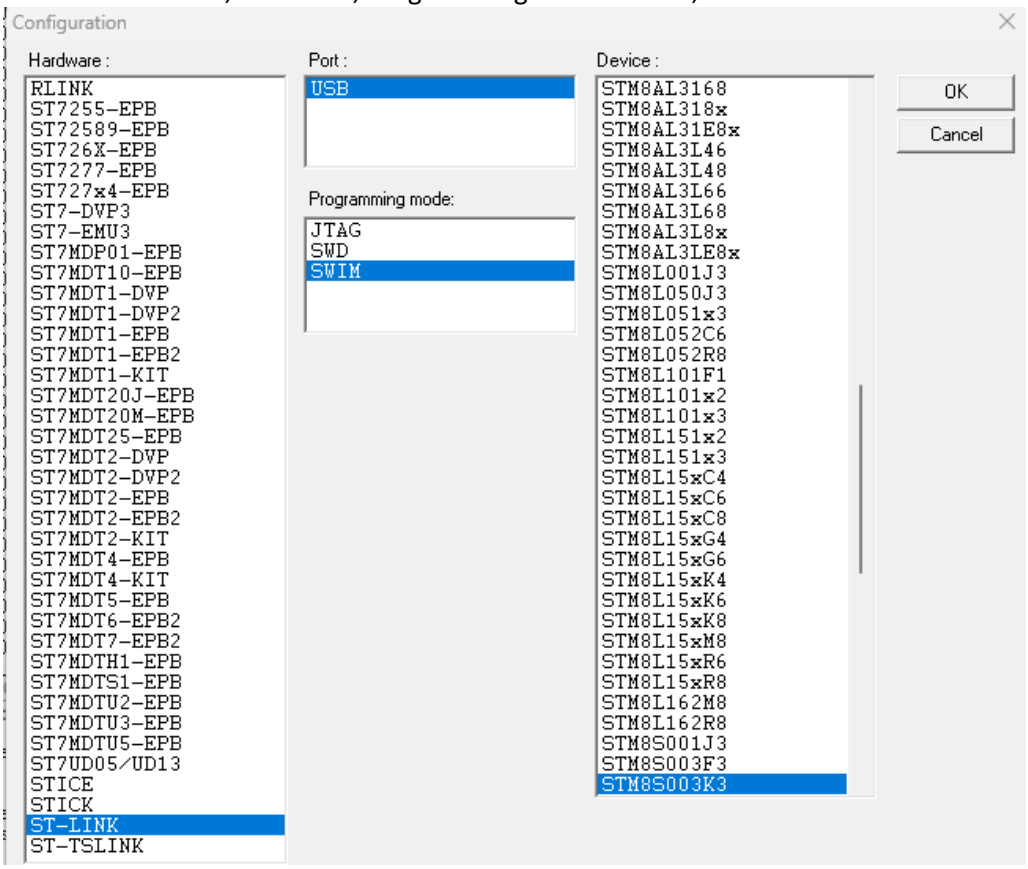
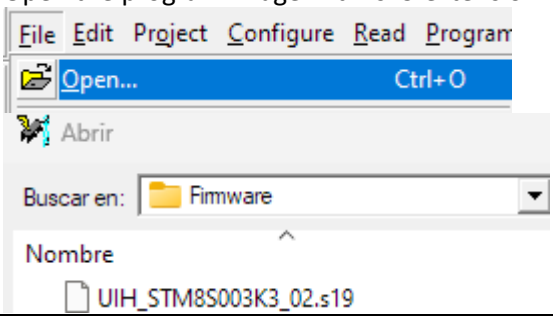
6	**Windows PC**	Windows 10 or 11 x64 programming and test machine [7] and [8]
		-1x USB A 2.0 or 3.0 port to connect to ST-Link-V2 -1x USB A 2.0 or 3.0 port to connect to ESP-Prog

7	**ST Visual Programmer**	[Software] STVP - Version 65 Note: It is possible to use other flashing tools for STM8 devices too.
		

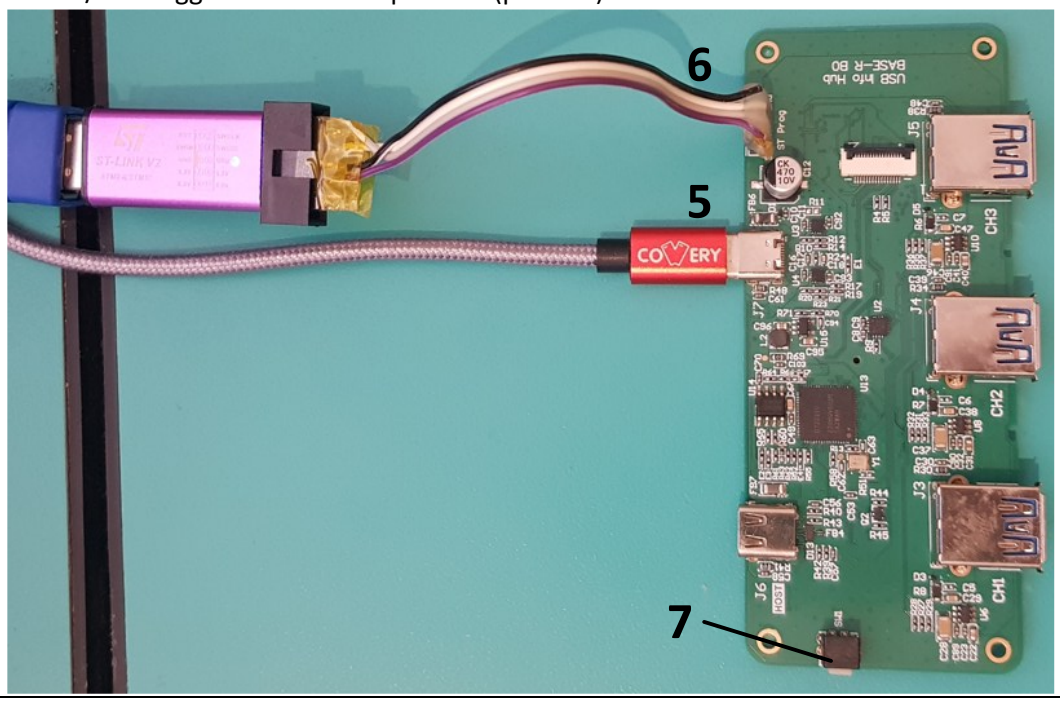
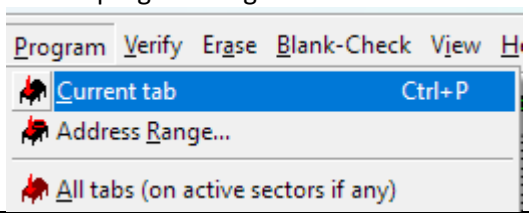
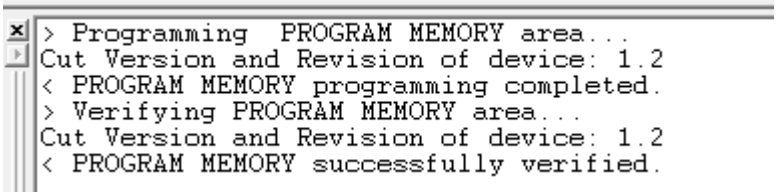
8	**Flash Download Tool**	[Software] 3.9.7
		

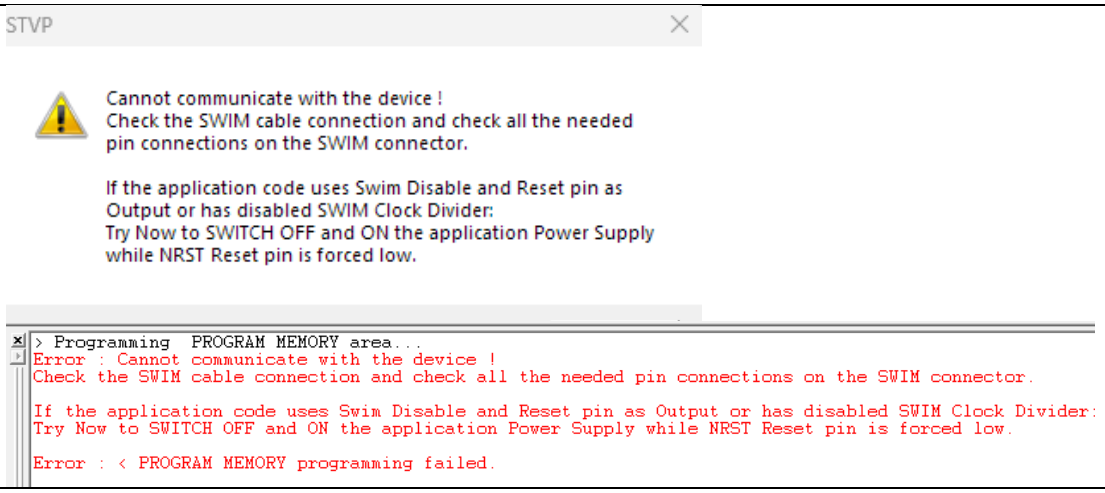
2. STM8S003K3T6 Flashing

2.1 Programming setup

Step	
1	Install ST Visual Programmer Version 65 (previous versions could also work)
2a	Configure the part and programming method: Menu-> configure -> Configure ST Visual Programmer 
2b	Select: Hardware: **ST-LINK**, Port: **USB**, Programming mode: **SWIM**, Device: **STM8S003K3**  Press “OK”
3	Open the program image with .s19 extension 
4	Connect ST-LINK programmer to the computer USB

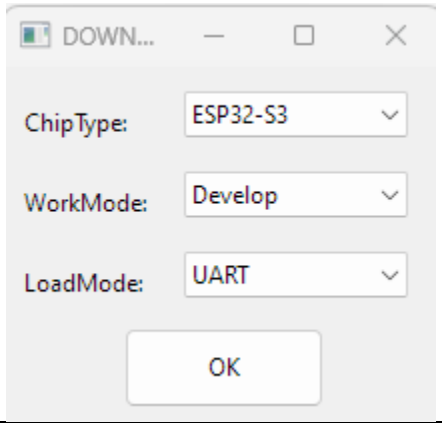
2.2 Programming steps

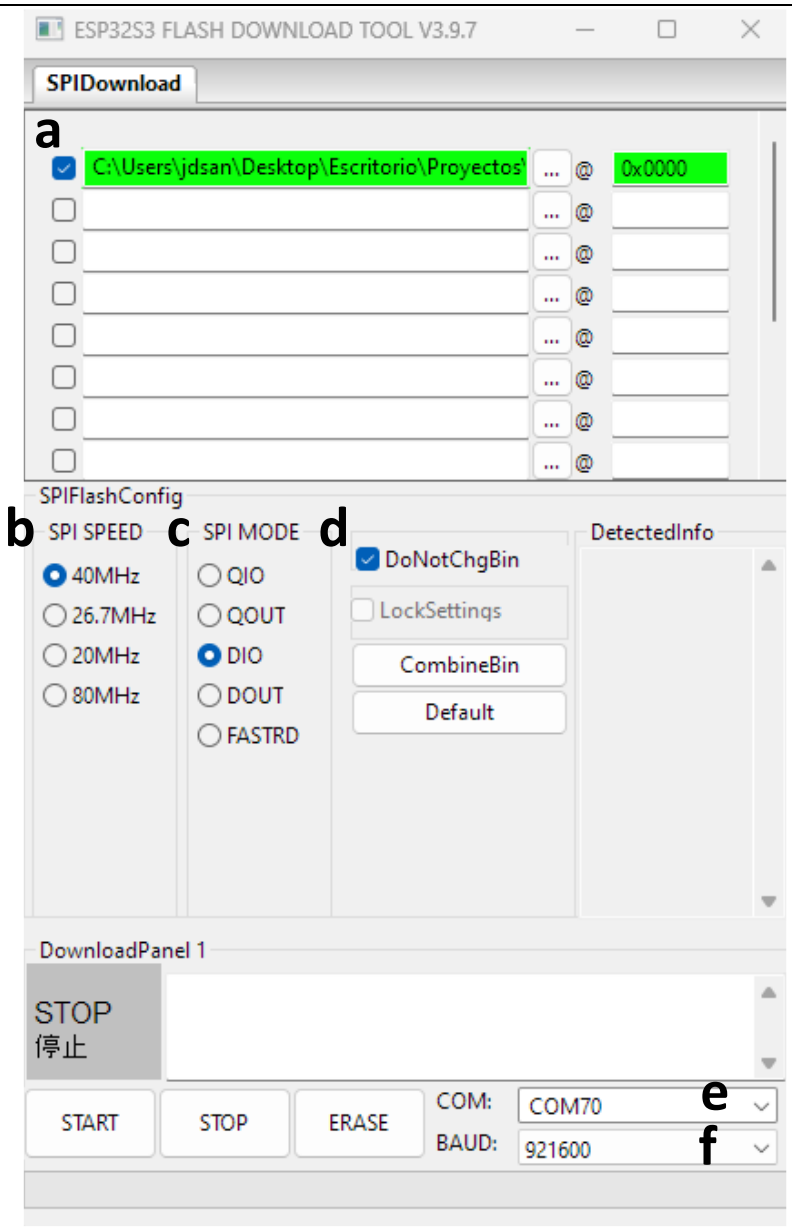
Step	
5	Connect 5V to the Aux PWR USB Type-C connector of the DUT using cable [3]
6	Connect ST-LINK programmer to the DUT using cable [4]
7	Press ON/OFF toggle switch to ON position (pressed) 
8	Initiate programming 
9	A successful programming shows the following in the STVP log area  If there is no power in the board, the following error appears, check the connections and repeat steps 6 to 8.

	
10	Press ON/OFF toggle switch to OFF position (pressed)
11	Disconnect USB cable and programming cable.

3. ESP32-S3-MINI-1-N8 Flashing

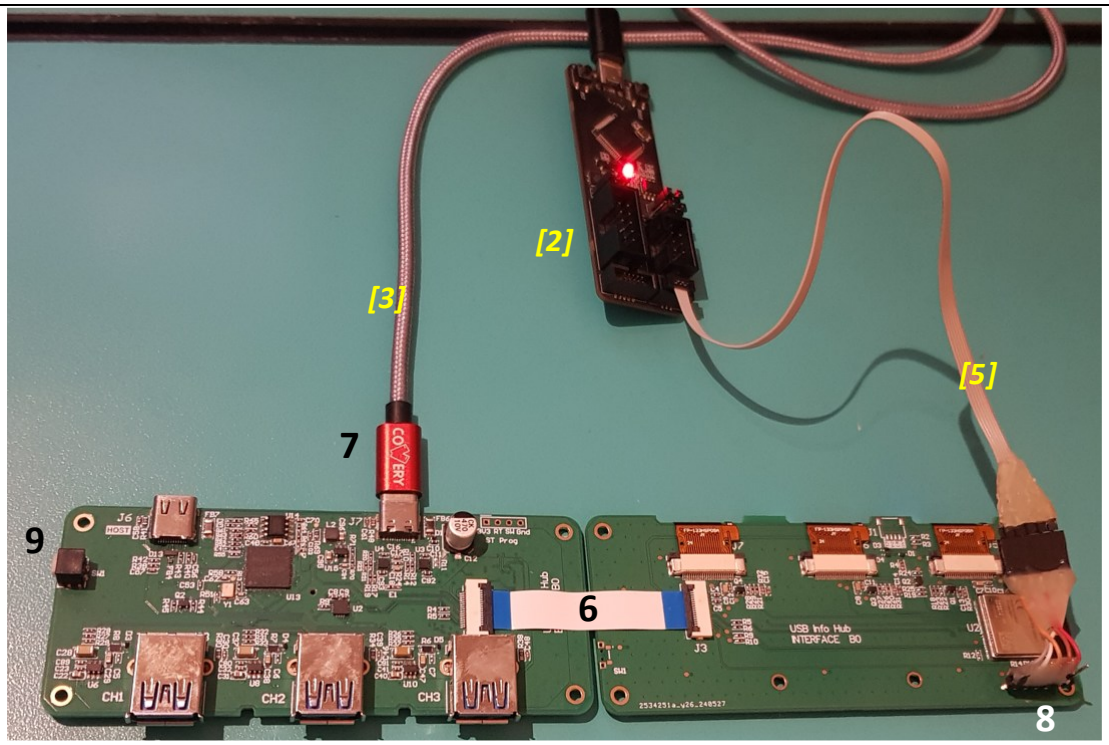
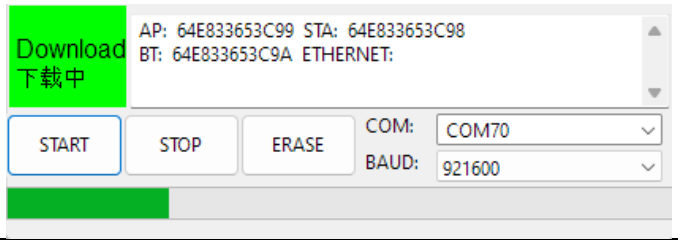
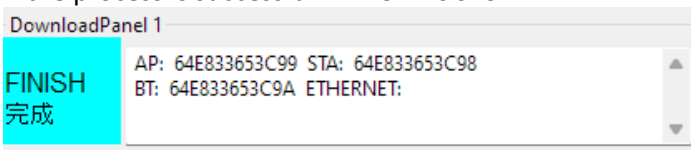
3.1 Programming setup

Step	
1	Download an unzip the Flash Download tool 3.9.7 (https://dl.espressif.com/public/flash_download_tool.zip)
2	Connect ESP-Prog [2] to the Windows computer
3	Open the executable file flash_download_tool_3.9.7.exe
4	Configure the target and communication method 
5	a. Select the firmware file (only one file used, with offset starting at 0x0000. This .bin file contains the bootloader, the partition table and the application sections in one).  b. Flash SPI Speed: 40MHz c. Flash SPI Mode: DIO d. Select DoNotChgBin e. COM: Select the programmer serial port number f. BAUD: 921600



3.2 Programming steps

6	BASEPCB and INTERFACE PCB must be connected through the board to board flexible flat cable.
7	Connect 5V to the Aux PWR USB Type-C connector of the DUT using cable [3]
8	Connect ESP-PROG programmer to the DUT using cable [5] like shown in the picture
9	Press ON/OFF toggle switch to ON position (pressed)

	
10	Press START to download the firmware 
11	If the process is successful “FINISH” is shown 
12	Press ON/OFF toggle switch to OFF position (pressed)
13	Disconnect USB cable and programming cable.