
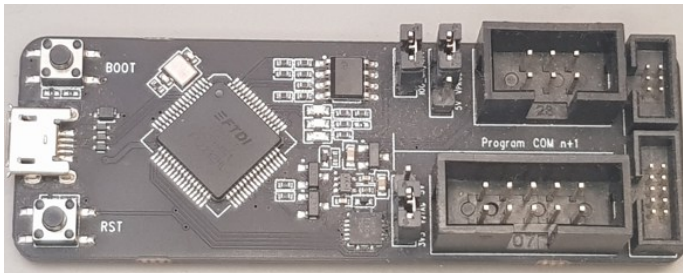



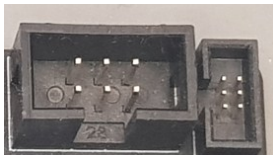


This guide provides instructions to program the STM8S003K3 and ESP32-S3-MINI-N8 modules in the USB Insight Hub hardware.

## 1. Tools required

<b>1</b>	<b>ST-Link-V2</b>	Programmer for STM8S003K3T6 (U1 in BASER PCB)
		 <p><a href="https://www.aliexpress.us/item/3256806122245932.html">https://www.aliexpress.us/item/3256806122245932.html</a></p>
<b>2</b>	<b>ESP-Prog</b>	Programmer for ESP32-S3-MINI-1-N8 (U2 in INTERFACE PCB)
		 <p><a href="https://www.aliexpress.us/item/3256802911926640.html">https://www.aliexpress.us/item/3256802911926640.html</a></p>
<b>3</b>	<b>USB 2 Cable or USB 3 Cable</b>	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	
		<div><div>ST-LINK-V2</div><div><div><div>RST</div><div>1</div><div>2</div><div>SWCLK</div></div><div><div>SWIM</div><div>3</div><div>4</div><div>SWDIO</div></div><div><div>GND</div><div>5</div><div>6</div><div>GND</div></div><div><div>3.3V</div><div>7</div><div>8</div><div>3.3V</div></div><div><div>5.0V</div><div>9</div><div>10</div><div>5.0V</div></div></div><div><div>2.54mm Receptacle</div><div></div></div></div> <div><div><div><div>GND</div><div>4</div></div><div><div>SWIM</div><div>3</div></div><div><div>RST</div><div>2</div></div><div><div>3.3V</div><div>1</div></div></div><div><div>2.54mm Plug pins</div><div></div></div></div> <div><div>DUT BASER</div><div><div><div><div><div></div><div>Gnd</div></div><div><div></div><div>SW</div></div><div><div></div><div>RT</div></div><div><div></div><div>3V3</div></div></div><div>J2</div></div></div></div>	

5	ESP32 Prog. cable	Adapter cable from ESP-Prog to programming header J4 in INTERFACE PCB
		<div><div><div><div>ESP_EN</div><div>1</div><div>2</div><div>VDD</div></div><div><div>ESP_TXD0</div><div>3</div><div>4</div><div>GND</div></div><div><div>ESP_RXD0</div><div>5</div><div>6</div><div>ESP_IO0</div></div></div><div>Use one of the two connectors</div><div></div><div><div><div>ESP_EN</div><div>1</div><div>2</div><div>VDD</div></div><div><div>3</div><div>4</div><div>GND</div></div><div><div>5</div><div>6</div><div>ESP_IO0</div></div><div><div>ESP_RXD0</div></div><div><div>ESP_TXD0</div></div></div><div><div><div>1</div><div>2</div><div>3</div><div>4</div><div>5</div></div><div><div>2.54mm Plug pins</div></div></div><div><div><div>DUT</div><div>INTERFACE</div></div><div><div><div>Bot</div><div>RT</div><div>Rx</div><div>Tx</div><div>GND</div></div><div>J4</div></div></div></div>

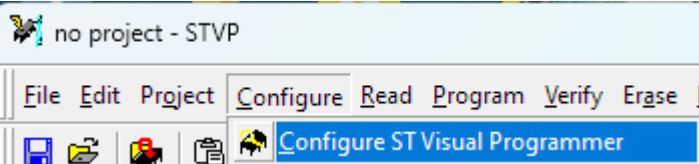
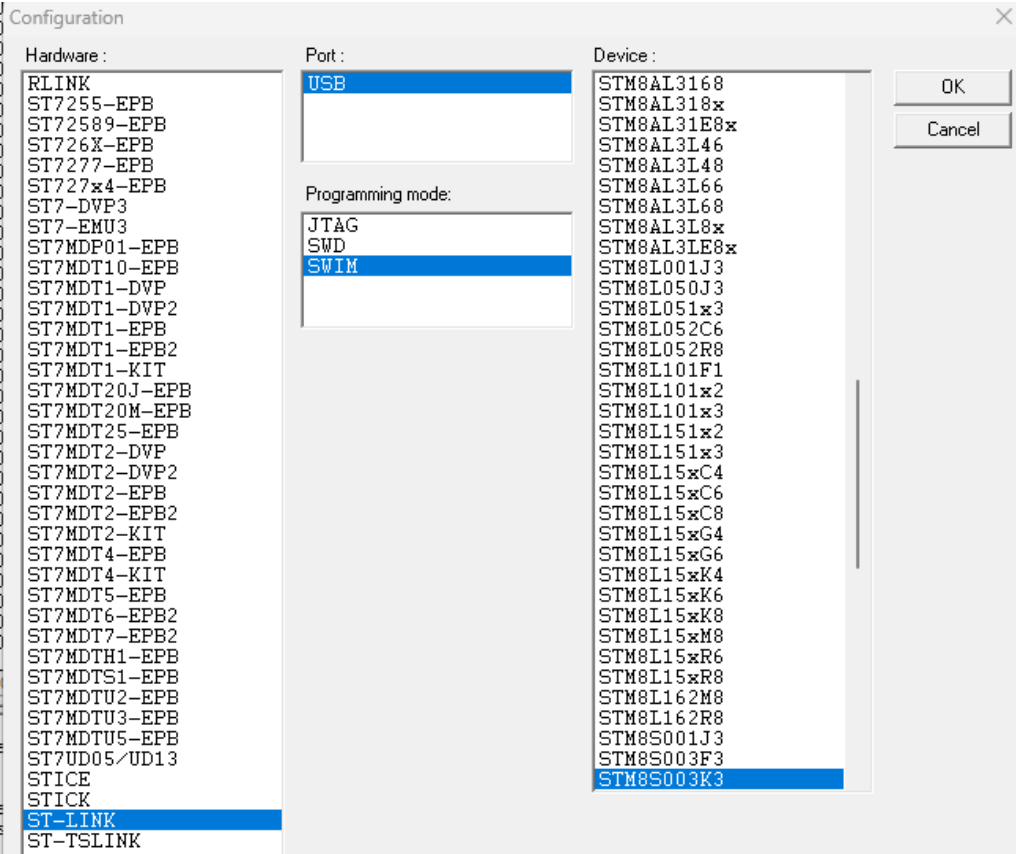
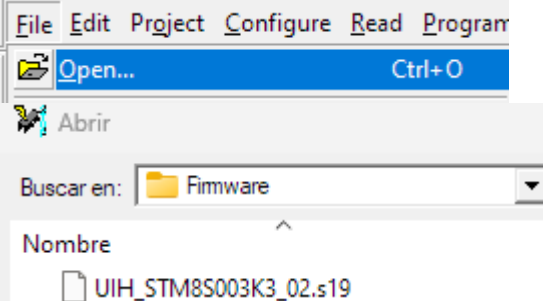
<b>6</b>	<b>Windows PC</b>	Windows 10 or 11 x64 programming and test machine [7] and [8]
		-1x USB A 2.0 or 3.0 port to connect to ST-Link-V2 -1x USB A 2.0 or 3.0 port to connect to ESP-Prog

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

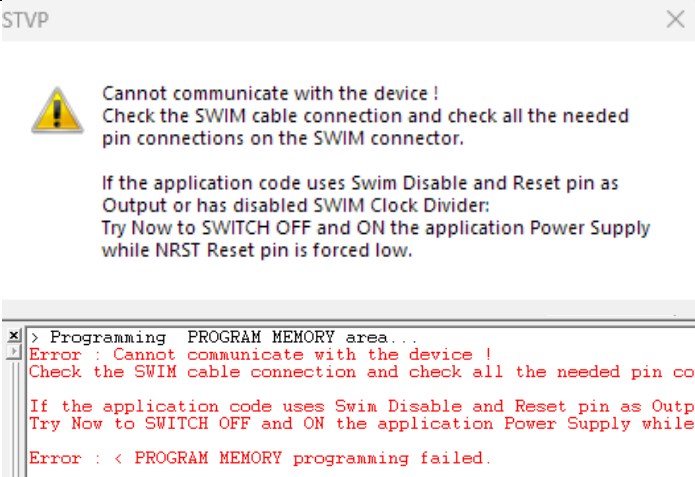

## 2. STM8S003K3T6 Flashing

### 2.1 Programming setup

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

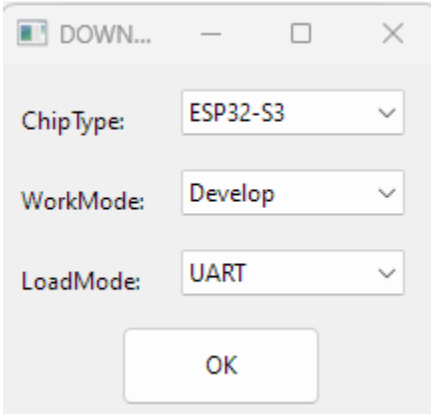

## 2.2 Programming steps

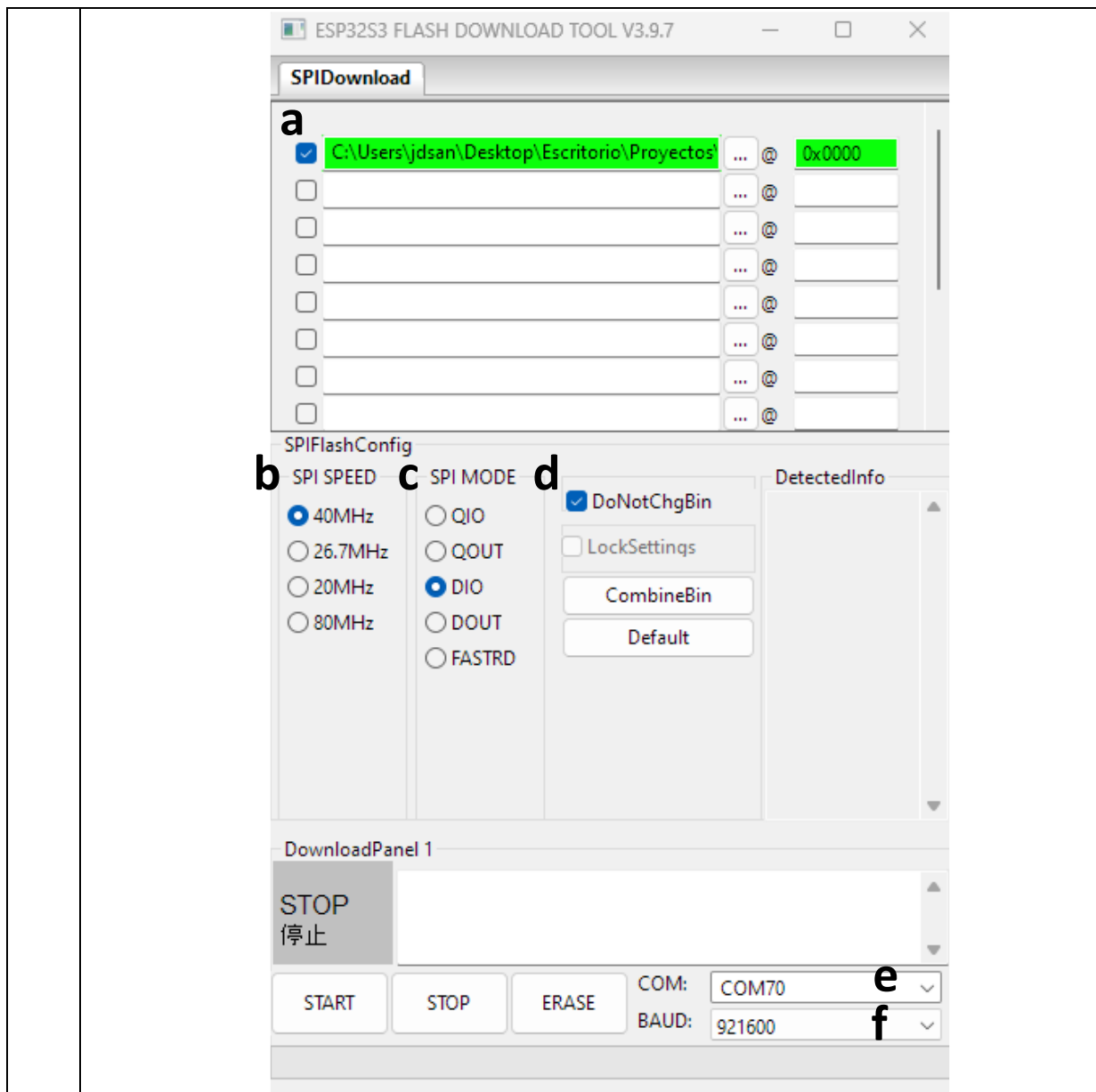
Step	
5	Connect 5V to the Aux PWR USB Type-C connector of the DUT using cable [3]
6	Connect ST-LINK programmer to the DUT using cable [4]
7	Press ON/OFF toggle switch to ON position (pressed) <div data-bbox="306 421 1361 1104" data-label="Image"> </div>
8	Initiate programming <div data-bbox="279 1144 798 1346" data-label="Image"> </div>
9	A successful programming shows the following in the STVP log area <div data-bbox="279 1391 1053 1576" data-label="Text"> <pre> &gt; Programming PROGRAM MEMORY area... Cut Version and Revision of device: 1.2 &lt; PROGRAM MEMORY programming completed. &gt; Verifying PROGRAM MEMORY area... Cut Version and Revision of device: 1.2 &lt; PROGRAM MEMORY successfully verified. </pre> </div> <p>If there is no power in the board, the following error appears, check the connections and repeat steps 6 to 8.</p>

	 <p>STVP</p> <p> Cannot communicate with the device ! Check the SWIM cable connection and check all the needed pin connections on the SWIM connector.</p> <p>If the application code uses Swim Disable and Reset pin as Output or has disabled SWIM Clock Divider: Try Now to SWITCH OFF and ON the application Power Supply while NRST Reset pin is forced low.</p> <pre>&gt; Programming PROGRAM MEMORY area... Error : Cannot communicate with the device ! Check the SWIM cable connection and check all the needed pin connections on the SWIM connector.  If the application code uses Swim Disable and Reset pin as Output or has disabled SWIM Clock Divider: Try Now to SWITCH OFF and ON the application Power Supply while NRST Reset pin is forced low.  Error : &lt; PROGRAM MEMORY programming failed.</pre>
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

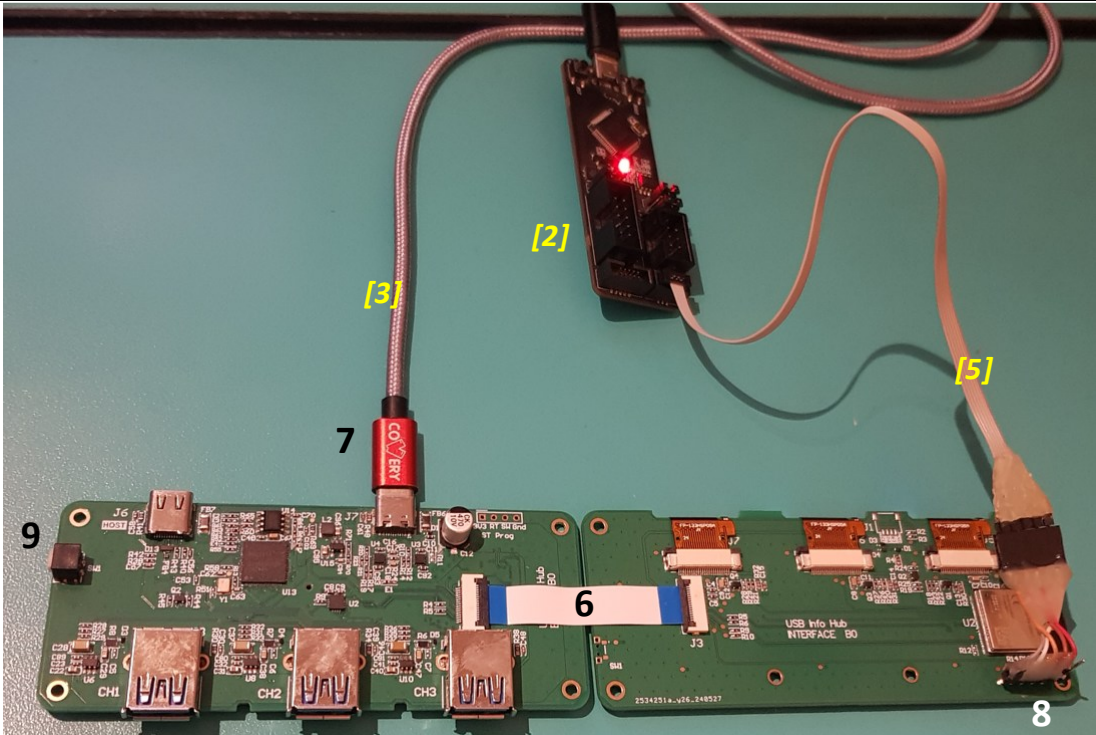
Step	
1	Download and unzip the Flash Download tool 3.9.7 ( <a href="https://dl.espressif.com/public/flash_download_tool.zip">https://dl.espressif.com/public/flash_download_tool.zip</a> )
2	Connect ESP-Prog [2] to the Windows computer
3	Open the executable file flash_download_tool_3.9.7.exe
4	Configure the target and communication method 
5	<ol style="list-style-type: none"> <li>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).   </li> <li>Flash SPI Speed: 40MHz</li> <li>Flash SPI Mode: DIO</li> <li>Select DoNotChgBin</li> <li>COM: Select the programmer serial port number</li> <li>BAUD: 921600</li> </ol>



### 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	<p>Press START to download the firmware</p> <div data-bbox="263 940 933 1176"> <div>Download 下载中</div> <div>AP: 64E833653C99 STA: 64E833653C98 BT: 64E833653C9A ETHERNET:</div> <div>START STOP ERASE</div> <div>COM: COM70 BAUD: 921600</div> <div></div> </div>
11	<p>If the process is successful “FINISH” is shown</p> <div data-bbox="263 1209 949 1355"> <div>DownloadPanel 1</div> <div>FINISH 完成</div> <div>AP: 64E833653C99 STA: 64E833653C98 BT: 64E833653C9A ETHERNET:</div> </div>
12	Press ON/OFF toggle switch to OFF position (pressed)
13	Disconnect USB cable and programming cable.