
Getting started with the graphical user interface for the STEVAL-AKI001V1/ STEVAL-AKI002V1 evaluation boards

Introduction

The [STSW-AKI](#) is the graphical user interface that allows using easily the [STEVAL-AKI001V1/STEVAL-AKI002V1](#) evaluation boards, when connected to a [NUCLEO-L476RG](#) development board.

The boards host [ADC120](#) and [ADC1283](#), respectively, which are eight-channel pure CMOS 12-bit analog-to-digital converters. The [ADC120](#) and [ADC1283](#) feature eight single-ended multiplexed inputs. The output serial data are straight binary and SPI compatible.

The architecture is based on a successive-approximation register with an internal track-and-hold cell.

The [STSW-AKI](#) allows reading each channel of these devices. It converts and directly shows the values from the on-board temperature sensors. It also allows viewing the evolution of the measured values through a graph.

1 Getting started

1.1 System requirements

To operate correctly, the **STSW-AKI** needs the following system requirements:

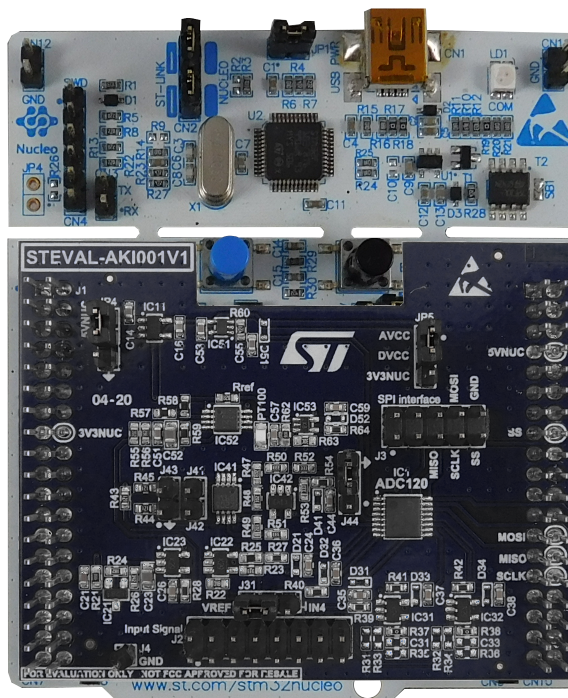
- a **NUCLEO-L476RG** development board
- a mini-B USB cable
- the **AKI_BIN_for_NucleoL476RG** software
- a **STEVAL-AKI001V1** or **STEVAL-AKI002V1**
- Windows OS
- **STSW-LINK009**

1.2 Hardware configuration

1.2.1 STEVAL-AKI001V1

Plug the **STEVAL-AKI001V1** on the **NUCLEO-L476RG** development board through ST morpho connectors, as shown below.

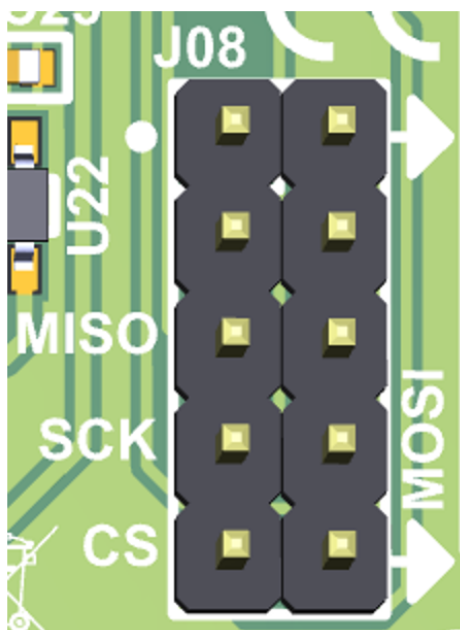
Figure 1. STEVAL-AKI001V1 and NUCLEO-L476RG stack



1.2.2 STEVAL-AKI002V1

Connect the **STEVAL-AKI002V1** to the **NUCLEO-L476RG** using the pinout shown below.

Figure 2. SPI connectors on the STEVAL-AKI002V1 and pinout for the connection to the NUCLEO-L476RG



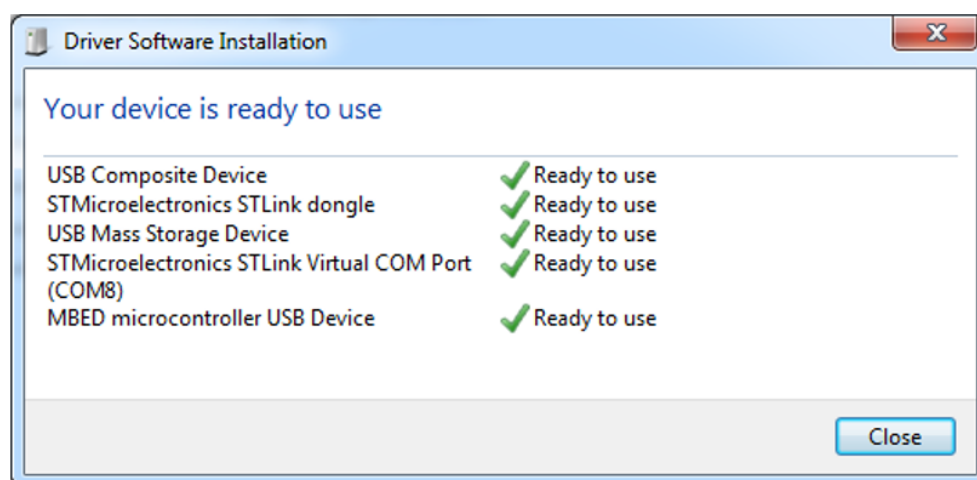
Nucleo PIN	SPI pin
PB12	Chip select
PB13	SCLK
PB14	MISO
PB15	MOSI

1.3 Software configuration

1.3.1 NUCLEO-L476RG connection

- Step 1.** Connect the NUCLEO-L476RG to a laptop/PC using a mini-B USB cable.
- Step 2.** Ensure that the ST-LINK is installed and updated.

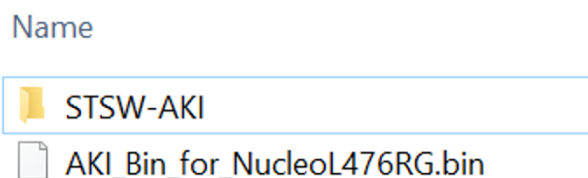
Figure 3. ST-LINK installed



- Step 3.** Download the STSW-AKI GUI package.
- Step 4.** Click on the [Get Software] button.
- Step 5.** Accept the license agreement.

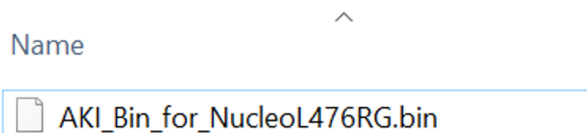
- Step 6.** Save the STSW-AKI.zip file on your laptop/PC and unzip it.
The zip contains:
- the STSW-AKI folder with the *STSW-AKI.exe* to be launched on the laptop/PC
 - the *AKI_Bin_for_NucleoL476RG.bin* to be uploaded onto the NUCLEO-L476RG.

Figure 4. Unzipping the STSW-AKI.zip file



- Step 7.** Upload the binary onto the NUCLEO-L476RG.
- Step 7a.** Connect the NUCLEO-L476RG to the laptop/PC via a USB mini-B cable.
- Step 7b.** Use the *AKI_Bin_for_NUCLEOL476RG.bin* binary file.

Figure 5. AKI_Bin_for_NUCLEOL476RG.bin



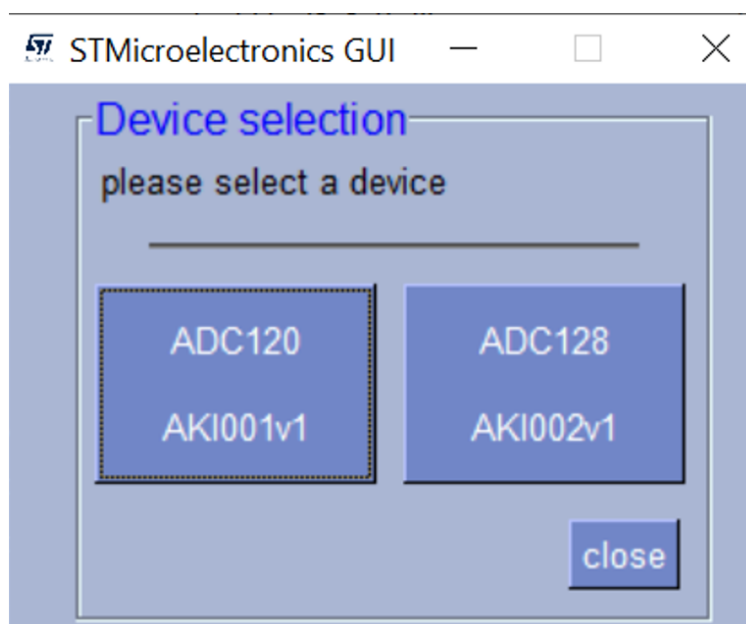
- Step 7c.** Drag and drop the binary onto the NUCLEO-L476RG (*NODE_L476RG*).

2 Using the GUI

2.1 Device selection

Step 1. In the STSW-AKI folder, click on the *STSW_AKI.exe* file to open the GUI.
The following window appears.

Figure 6. Device selection window



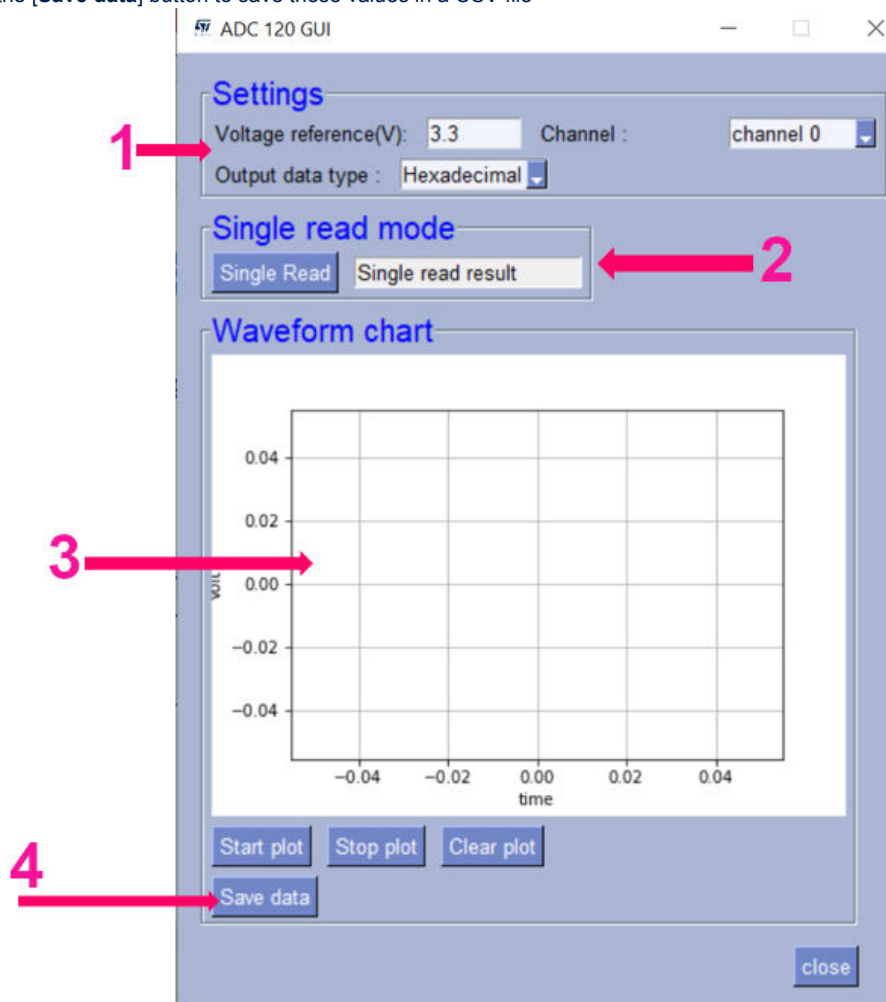
Step 2. Click on the device you want to use.

2.2 Interface

The following window appears showing the GUI interface.

Figure 7. STSW-AKI interface

1. From **[Settings]**, you can select the desired settings
2. In the **[Single read mode]** box, a value appears, according to your settings
3. In the **[Waveform chart]**, a graph shows the returned ADC values
4. Click on the **[Save data]** button to save these values in a CSV file

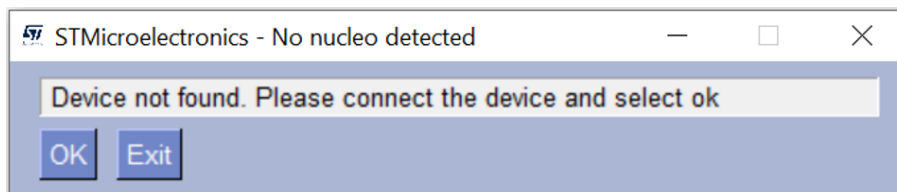

Table 1. SPI speeds used by the GUI to communicate with devices

Product	SPI speed used by the GUI
ADC120	500 Ksps
ADC1283	125 Ksps

2.3 Troubleshooting

2.3.1 Device not found

If the **NUCLEO-L476RG** is not detected, the following image appears.

Figure 8. “Device not found” window


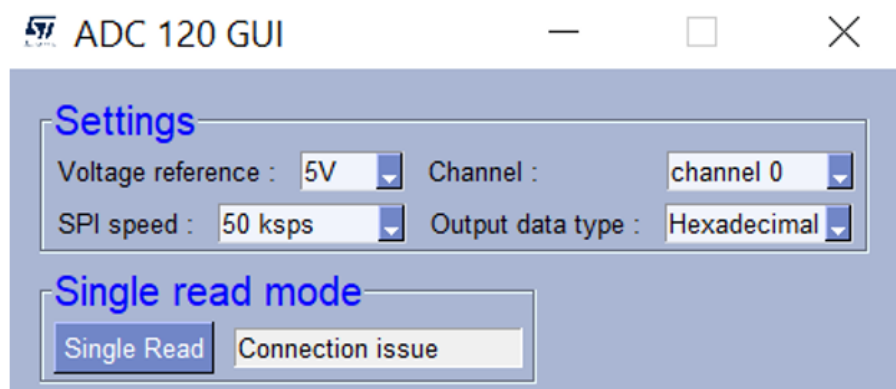
To solve this issue:

1. Connect the appropriate STM32 Nucleo development board (NUCLEO-L476RG).
2. Ensure that the [ST-LINK](#) is installed and updated.
3. Connect just one development board
4. Click on the [OK] button.

2.3.2

Connection issue

If an unwanted disconnection or a problem occurs while reading the device, a “Connection issue” appears on the single read mode communication box.

Figure 9. Connection issue message


To solve this issue:

1. Close the GUI.
2. Disconnect and reconnect the [NUCLEO-L476RG](#).
3. Restart the GUI.
4. If the problem persists, check if the board is correctly connected.

Revision history

Table 2. Document revision history

Date	Revision	Changes
14-Mar-2023	1	Initial release.

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