



ATMEL SAMV71 Xplained Board Setup Guide

**Audio Weaver
November 2017**

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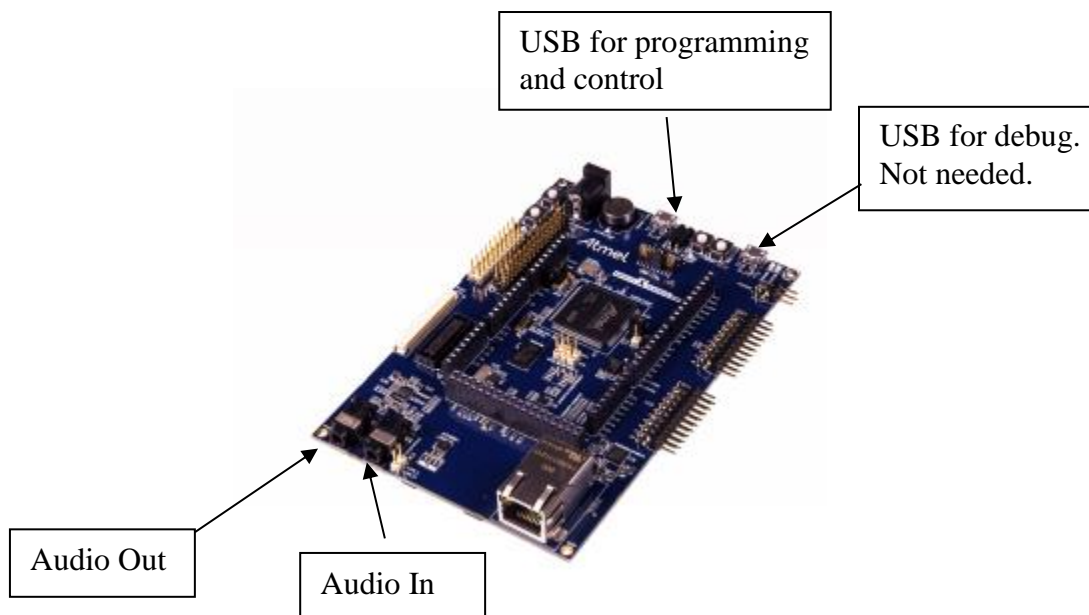
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Overview

This document describes how to use Audio Weaver with the ATMEL SAMV71 Xplained Ultra board. This is a low cost evaluation board for the SAMV71 series of Cortex-M7 processors.

Features

Audio I/O:	2-in via ADC. 2 out via DAC. @ 48 kHz
CPU clock speed	300 MHz
Tuning interface:	USB HID device
Flash file system support:	Yes
Booting from flash:	Yes
Fundamental block size:	32 samples
Native data type:	Single precision floating-point



Setup

The board has two USB connections:

- DEBUG USB. This connection is not needed at all.
- TARGET USB. Use this for programming and control.

Erase Flash Memory

The first step is to erase the flash memory on the SAMV71 board. Above the processor chip is a jumper labeled “Erase” on the board. Place a jumper on the erase pins, plug in the TARGET USB cable and hold the reset button for five seconds then release. Unplug the USB cable. Disconnect the “Erase” jumper.

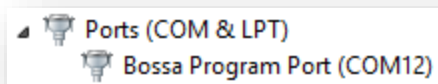
Program the Firmware

Next the Audio Weaver firmware must be programmed to the SAMV71 board flash memory. A free utility is available from Atmel for this purpose named SAM-BA. Download from this URL:

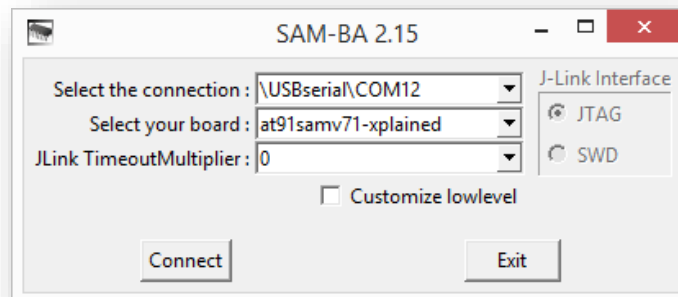
<http://www.atmel.com/tools/atmelsam-bain-systemprogrammer.aspx>

Follow the instructions for installing the application and the USB driver.

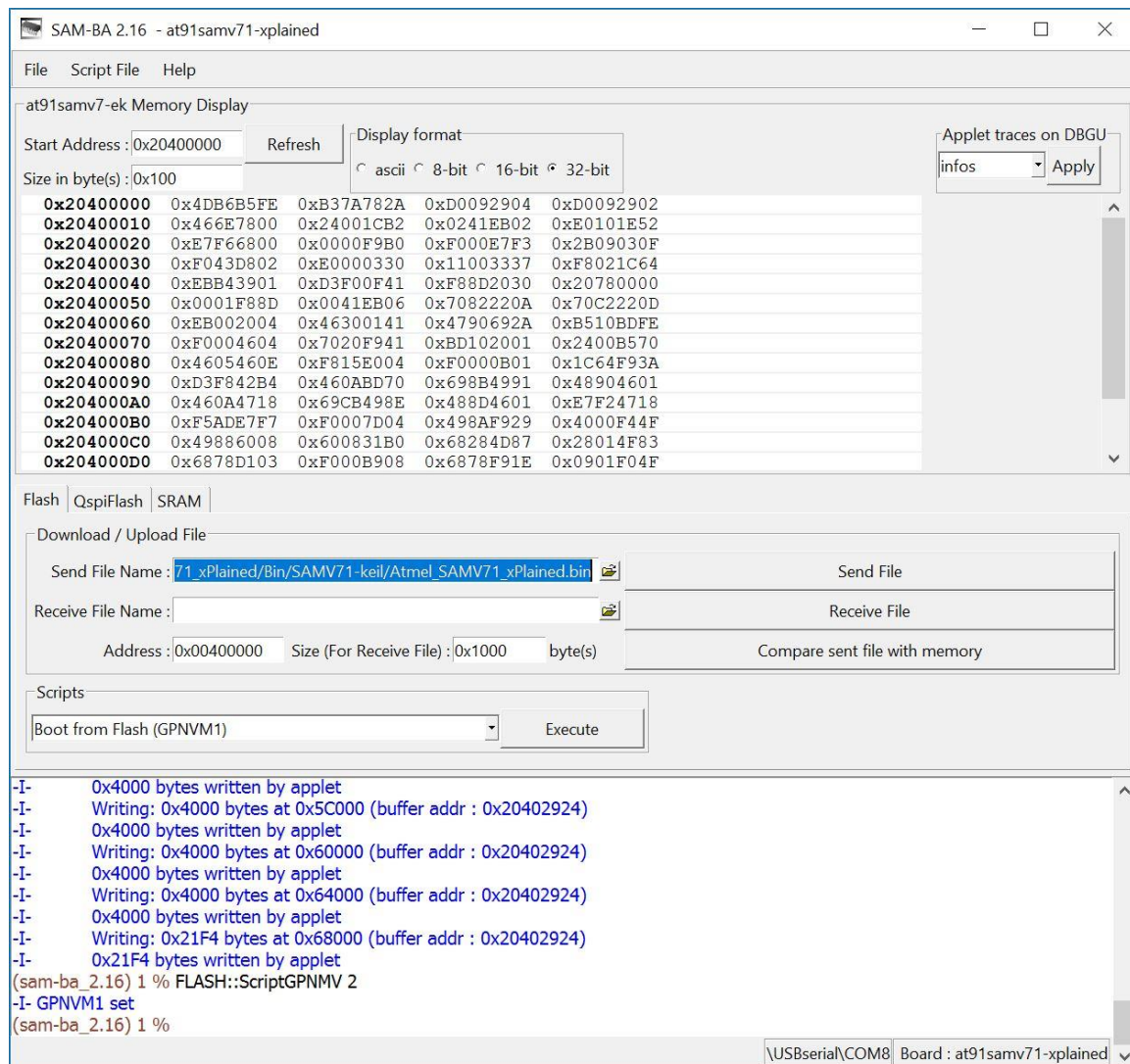
When successfully installed you should see a virtual COM device appear in device manager if you have plugged in the USB cable to the TARGET USB connector.



With the USB cable plugged in, launch SAM-BA and the following dialog box appears:



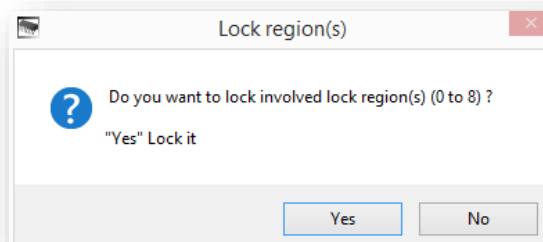
Select the COM port that was assigned in Device Manager. Next select the “at91samv71-xplained” board, then hit the “Connect” button. The main programming GUI will appear.



Click on the Browse button to the right of the Send File Name edit box. Navigate to the binary image file that contains the device firmware. The file is named AtmelSAMV71.bin as shown in the figure above.

Next, click on the “Send File” button.

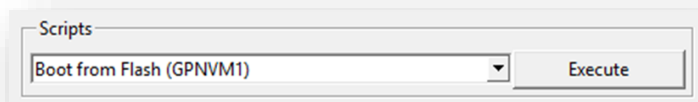
For older versions of SAM-BA a popup may appear:



Select “No” to continue. When finished you should see something like:

```
loading history file ... 0 events added
SAM-BA console display active (Tcl8.5.9 / Tk8.5.9)
(sam-ba_2.15) 1 %
(sam-ba_2.15) 1 % send_file {Flash} "C:/Temp/AtmelSAMV71.bin" 0x00400000 0
-I- Send File C:/Temp/AtmelSAMV71.bin at address 0x00400000
first_sector 0 last_sector 8
-I- Writing: 0x20000 bytes at 0x0 (buffer addr : 0x20402980)
-I- 0x20000 bytes written by applet
-I- Writing: 0x35D2 bytes at 0x20000 (buffer addr : 0x20402980)
-I- 0x35D2 bytes written by applet
Do not lock
(sam-ba_2.15) 1 %
```

As a last step, click on the “Flash” tab, select “Boot from Flash (GPNVM1)” from the Scripts droplist and then press the “Execute” button.



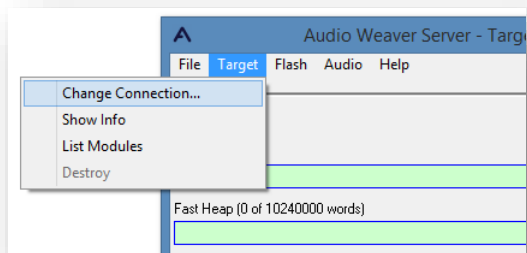
Connecting Audio Weaver to the Target

Power cycle the board by unplugging then re-plugging the USB cable connected to the USB port labeled “TARGET USB” on the board. An additional USB Input Device should show up in Device Manager under Human Interface Devices. *The Bossa Program Port which appeared earlier when programming the board should no longer be seen.* If it still appears then the board was not properly programmed.

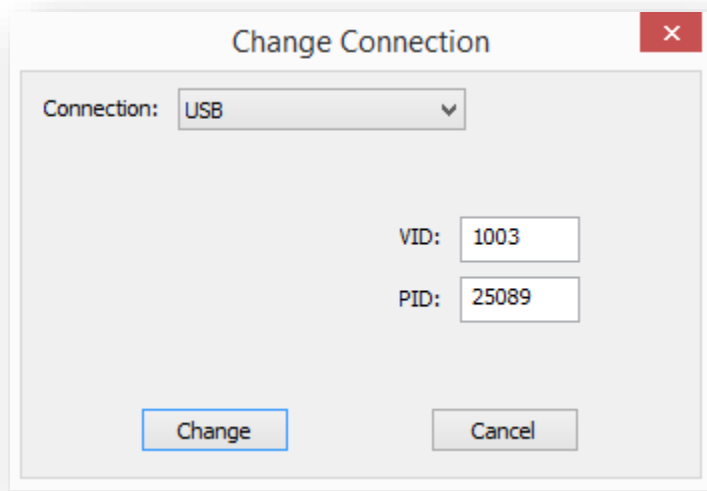
If the board was successfully flashed, after power cycling, LED0 should be flashing orange.

Plug in an analog audio source and speakers to the audio jacks. You will not hear audio being rendered by the SAMV71 Xplained Ultra board until an Audio Weaver model is running on the board

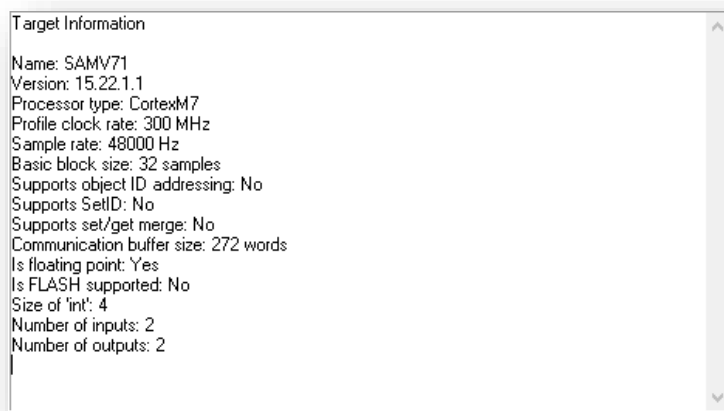
Launch Audio Weaver Designer application. Then from the Server Window (not from the Designer window) select the menu item Target→Change Connection




In the drop list select “USB” and change the PID and VID settings if necessary as shown below

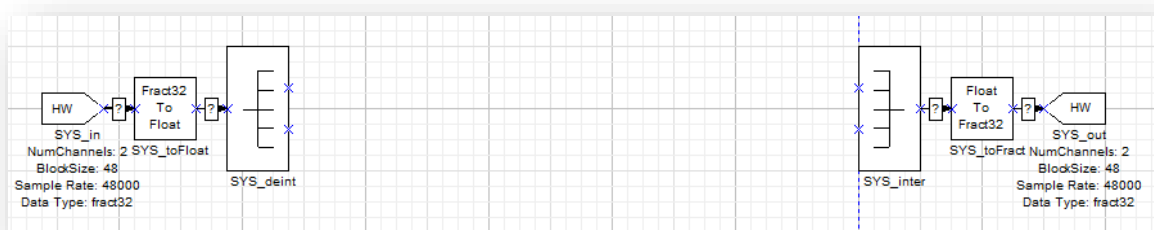


Click on the “Change” button. This window will dismiss and the Server window will update to reflect the connection to the Discovery board. You’ll see



At this point the Audio Weaver Server is able to communicate with the board. To make sure that the Audio Weaver Designer sees this change, click on the “Reconnect to Server” button .

The default system drawn in Audio Weaver Designer is shown below.



The target has a fundamental block size of 32 samples and operates at a fixed sample rate of 48 kHz. The left input pin indicates 2 channels of input (stereo) and this is the analog audio input. The right output pin is also stereo and this is the audio being output to the DAC.

GPIO Pin Assignment

GPIO Block Pin Number	Board Input Pin Name	Board Output Pin Name
1	SW0	LED0
2	SW1	LED1
3	EH1 PIN5	EH1 PIN5
4	EH1 PIN6	EH1 PIN6

5	EH2 PIN5	EH2 PIN5
6	EH2 PIN6	EH2 PIN6