



GETTING STARTED WITH THE XVF3610 FAMILY OF DEVICES ON THE VOICE REFERENCE DESIGN EVALUATION KIT

xmos.ai/vocalfusion-voice-interfaces/#3610

DEMONSTRATIONS

- XVF3610-UA - direct connection over USB to the host allowing signal analysis and evaluation
 - XVF3610-INT - integration into RPi system, using I2S, running an AVS client

GETTING THE LATEST FIRMWARE

The kit is shipped with the XVF3610-UA firmware pre-installed so on power up it will enumerate as a USB device (v5.1.0). Check for the latest version of the firmware here: xmos.ai/vocalfusion-voice-interfaces/#3610.

To update the firmware or swap between -UA and -INT configurations follow the steps below.

- Download the firmware release archive from xmos.ai/vocalfusion-voice-interfaces/#3610 and extract to a directory of your choice.
- Download the XTC Tools from xmos.ai/tools on your chosen host.
- Connect either end of the ribbon cable to the XTAG4 and the other end to the XK-VOICE-L71 board as shown (Image shows connection to RPi, standalone operation is also supported).



- Connect the XTAG4 via USB to the host computer running the XTC tools and power on the board (either via RPi or directly via USB).
- On the host computer open a 'XTC Tools Command Prompt'.
- Navigate to the directory with the extracted firmware and execute the following commands to download the two variants of firmware (replacing vX_X_X with the version required):
- -UA: `xflash --boot-partition-size 0x100000 --factory app_xvf3610_ua_vX_X_X.xe --data data_partition_factory_ua_vX_X_X.bin`
- -INT: `xflash --boot-partition-size 0x100000 --factory app_xvf3610_int_vX_X_X.xe --data data_partition_factory_int_vX_X_X.bin`

STANDALONE - UA DEMONSTRATION

Requirements:

- XK-VOICE-L71 flashed with XVF3610-UA firmware
- Powered speaker(s) with 3.5mm jack connection
- Host system running either Windows, macOS, Linux or Android
- USB A to Micro cable for connection to the host

1

CONFIGURE THE HARDWARE

Connect the host system to the micro-USB socket and the speakers to the jack plug as shown.



Either mono, or stereo speakers can be used.

2

RECORD CAPTURED VOICE

1. Open a music player on host PC and play a stereo file.
2. Check music is playing through powered speakers.
3. Adjust volume using music player or speakers.
4. Open Audacity and configure to communicate with kit. Input Device: XVF3610 Voice Processor and Output Device: XVF3610 Voice Processor



RECORD CAPTURED VOICE CONT.

5. Set recording channels to 2 (Stereo) in Device

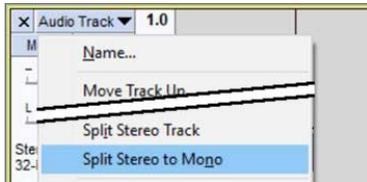


6. Set Project Rate to 48000Hz in Selection Toolbar.

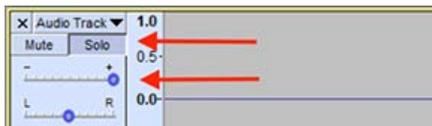
Project Rate (Hz):

48000

7. Click Record (press r) to start capturing audio streamed from XV3610 device.
8. Talk over music; move around room while talking.
9. Stop music player.
10. Click Stop (press space) to stop recording. Audacity records single audio channel streamed from XV3610 kit including extracted voice signal.
11. Click dropdown menu next to Audio Track and select *Split Stereo To Mono*.



12. Click *Solo* on left channel of split processed audio. Increase *Gain* slider if necessary.



13. Click Play (press space) to playback processed audio.

Only your voice is audible. Playback music is removed by acoustic echo cancellation; voice is isolated by interference canceller; background noise is removed by noise suppression algorithms.

INTEGRATED AMAZON AVS DEMONSTRATION

Requirements:

- XK-VOICE-L71 flashed with XV3610-INT firmware
- Powered speaker(s) with 3.5mm jack connection
- Raspberry Pi model 3 or 4 with power unit
- HDMI monitor, USB keyboard and mouse
- SD card (minimum 16GB size)
- Amazon Developer Account

Detailed instructions

- <https://github.com/xmos/vocalfusion-avs-setup>

1 ASSEMBLE THE HARDWARE

Connect the XV-VOICE-L71 to the Raspberry Pi ensuring that the connector fully lines up, as shown below.



2 PREPARE THE RASPBERRY PI SYSTEM

Prepare the Raspberry Pi System image on the SD card as described on <https://github.com/xmos/vocalfusion-avs-setup>

3 CONNECT THE SYSTEM

Connect the speakers, HDMI monitor cable, mouse and speakers as shown below:



4 INSTALL & CONFIGURE

Install the Amazon Alexa SDK and configure the Raspberry Pi Audio, by following the instructions here: <https://github.com/xmos/vocalfusion-avs-setup>

5 RUN DEMO

Once the installation is complete, the demo can be run by typing `avsrn` in a terminal. The demo will now operate as an Alexa virtual assistant.

