

VocalFusion 4-Mic Kit for Amazon AVS: Getting Started Guide

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Welcome to the **xCORE VocalFusion 4-Mic Kit for Amazon AVS** getting started guide.

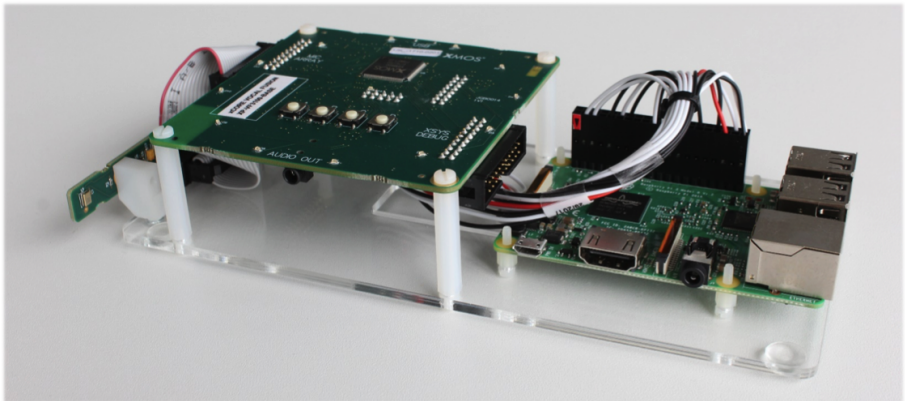


Figure 1:
VocalFusion
4-Mic Kit for
Amazon AVS
with
Raspberry Pi

This getting started guide will get you talking with Alexa using the XMOS XVF3000 far-field voice processor and the Amazon Alexa Voice Service (AVS) Software Development Kit (SDK) running on a Raspberry Pi.

1 Before you start

To complete this guide, you will need:

- ▶ **VocalFusion 4-Mic Kit for Amazon AVS**
XK-VF3000-L33-AVS - see Fig 1
- ▶ **Raspberry Pi 3** - buy at:
<http://www.amazon.com/dp/B01CD5VC92>
- ▶ **Raspberry Pi micro-USB power supply** (min. 2A) - buy at:
<https://www.raspberrypi.org/products/raspberry-pi-universal-power-supply>
- ▶ **MicroSD card** (min. 16GB)
- ▶ **Powered mono speaker** with audio 3.5mm analogue plug, for example:
AYL Mini Capsule Speaker: <http://www.amazon.com/dp/B0070YAVLI>
Logitech Z50 Speaker: <http://www.amazon.com/dp/B00EZ9XLF8>
- ▶ **USB keyboard** and **mouse**
- ▶ **Monitor** with HDMI input
- ▶ **HDMI cable**
- ▶ **Fast-Ethernet connection** with internet connectivity
- ▶ **An Amazon Developer account**

If you do not already have one, this guide will explain how to create one

2 Set up VocalFusion Kit and Amazon Voice Services (AVS)



2.1 Setup xCORE VocalFusion 4-Mic Kit hardware

Follow the xCORE VocalFusion 4-Mic Kit for Amazon AVS - Hardware Setup Guide:

<https://www.xmos.com/published/xk-vf3000-133-avs-hardware-setup-guide>



2.2 Configure microSD card

You need to install Raspbian OS on your microSD card.

Note: this guide uses Raspbian **Stretch**. The use of the other versions of Raspbian has not been tested and so is not recommended.

The easiest way to install Raspbian is to load NOOBS (New Out Of the Box Software) onto the card.

Either, purchase a new microSD card with NOOBS preinstalled. For example:

16GB: <http://www.amazon.com/dp/B01H5ZN0YG>

Or, download NOOBS and copy to your own microSD card by following the official Raspberry Pi guide:

<https://www.raspberrypi.org/documentation/installation/noobs.md>



2.3 Connect Raspberry Pi and install Raspbian

Insert the microSD card in to the Raspberry Pi, connect your peripherals (keyboard, mouse, monitor and Ethernet) and apply power. Then follow the on screen instructions to install Raspbian.



2.4 Register Alexa device

Register Your Device with Amazon by following the steps on this page:

<https://github.com/alexa/alexa-avs-sample-app/wiki/Create-Security-Profile>

Notes:

It can be easier to configure your new Alexa device and Amazon developer account from a browser on your Raspberry Pi, as you can then easily copy the *ProductID*, *ClientID* and *ClientSecret* keys.

The *Allowed Origins* and *Allowed Return URLs* should be entered as **http**, not **https**.



2.5 Install Amazon Alexa Voice Service (AVS)

XMOS provides an automated installation script to configure the Raspberry Pi audio system to connect to the xCORE VocalFusion 4-Mic Kit and install and configure the Alexa Voice Service Device SDK on the Raspberry Pi.

This script follows the procedures as described in the Amazon Alexa [avs-device-sdk](https://github.com/alexavs-device-sdk) GitHub repository:

<https://github.com/alexavs-device-sdk/wiki/Raspberry-Pi-Quick-Start-Guide>

Open a terminal on the Raspberry Pi and clone a XMOS GitHub repository:

```
cd ~
git clone https://github.com/xmos/vocalfusion-avs-setup
```

Run the automated installation script from the same terminal:

```
source ~/vocalfusion-avs-setup/auto_install.sh
```

The script will ask for the *ProductID*, the *ClientID* and *ClientSecret* keys as generated in the previous step. You will also be prompted to review the Sensory (keyword engine) license agreement. The script will then configure the Raspberry Pi audio system, download and update dependencies, and build and configure the AVS Device SDK. Please be patient - the script takes around 2 hours to complete!

The final step of the script will open <http://localhost:3000> in a Raspberry Pi browser. Enter your Amazon developer credentials and then close the browser window when instructed.

Further details about the script are available from the XMOS GitHub repository:

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



2.6 Configure audio device

Once the installation script has finished, reboot the Raspberry Pi to complete configuration of the new audio device:

```
sudo reboot
```

After the reboot, the Raspberry Pi will now use the XVF3000 device for audio.



2.7 Run Amazon AVS

The automated installation script creates a number of aliases which can be used to execute the AVS Device SDK client, or run the unit tests. These aliases are listed in a Raspberry Pi terminal, above the prompt.

```
File Edit Tabs Help
available AVS aliases:
avsmake, avsruntime, avsunittest, avsunittest
remove .bash_aliases and open a new terminal to remove bindings
pi@raspberrypi:~ $
```

Run the AVS Device SDK client. At a terminal on the Raspberry Pi, type:

```
avsruntime
```



2.8 All done!

Congratulations, Alexa is now ready. Why not try:

Say “Alexa, what time is it?”

Say “Alexa, what is the weather?”

To adjust the playback volume, open a new terminal on the Raspberry Pi and type:

```
alsamixer
```



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