Gumstix Chatterbox for Raspberry Pi®
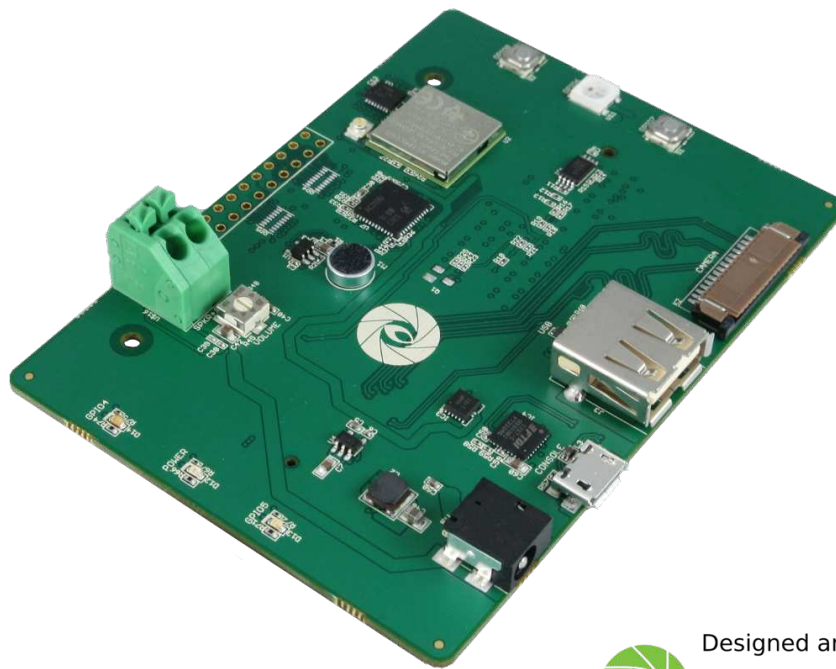## Quickstart Guide

Designed and built with

geppetto™

Revised March 20, 2018

Gumstix Chatterbox for Raspberry Pi® CM
Quickstart Guide

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Contents

Redwood City, CA • San Jose, CA • Vancouver, BC

1   Introduction

The Gumstix Chatterbox for the Raspberry Pi® Compute Module is a development expansion board for Amazon®'s Alexa™ Voice Services (**AVS**). Its features include:

- 2.5-Watt speaker driver

- on-board microphone

- WiFi/Bluetooth 4.0 + BLE module

- 2 programmable pushbuttons

- 2 programmable LEDs

- 1 RGB LED

- USB port

- 15-pin CSI-2 camera connector

- an unpopulated 20-pin GPIO header

This guide provides the instructions for getting an example AVS application running on the Chatterbox for Raspberry Pi® Compute Module (**RPCM**) using a custom disk image provided by Gumstix. You will require a WiFi connection to set up AVS. In order to configure WiFi, follow the instructions at the following page:
https://www.gumstix.com/support/faq/yocto-wifi/

2   Materials

You will require the following tools to set up your Chatterbox device:

- Chatterbox for RPCM

    https://store.gumstix.com/chatterbox-pi

- RPCM or RPCM 3:

    https://www.raspberrypi.org/products/compute-module-3/

    https://www.raspberrypi.org/products/compute-module-1/
    If you purchase an RPCM without a development kit, you will require a separate flashing tool. Gumstix provides the Pi Compute FastFlash here:

    https://store.gumstix.com/raspberry-pi-cm-fast-flash.html

- 5V AC/DC power adapter

    Eg. https://store.gumstix.com/5v35a-us-power-adapter.html

- External speaker

- USB Type-A to micro-B cable

- u.Fl WiFi/Bluetooth antenna

    https://store.gumstix.com/ufl-antenna.html

3 Step 1: Flashing the Compute Module's eMMC

Follow these instructions on your PC:

1. Download the disk image from the following link:

   https://gumstix-misc.s3.amazonaws.com/uploads/wo59555b.img.xz

2. Decompress the image. Windows users may have to download third-party software such as 7-Zip in order to extract the disk image.

3. Insert the microSD card into a reader connected to your PC.

4. Connect the RPCM to a development board or Pi Compute FastFlash

5. Write the disk image to the module's eMMC

   - Instructions for flashing disk images to the RPCM using the IO board can be found here:

     https://www.raspberrypi.org/documentation/hardware/computemodule/cm-emmc-flashing.md

   - Users flashing with the FastFlash:

     – There is no need to set "J4"

     – There is no need for an AC/DC adapter as power is provided through the USB connection

4 Step 2: Setting Up AVS

Follow these instructions to sign up for Amazon's Alexa Voice Service for developers:

1. in your browser, go to https://developer.amazon.com/alexa-voice-service and click *Sign In*.

2. login or register a new account with Amazon Developer.

3. Hover over *Your Alexa Consoles* and click on *Products*.

4. On the next screen, click on *Get Started*

5. Fill in the details for your device. When asked how end users will interact with the product, you may select touch-initiated and/or hands-free. The Chatterbox development board does not support far-field voice detection by default.

6. Select or create an LWA security profile for your device.

7. Read and agree to the AVS agreement and program requirements and click '*Finish*'

5 Step 3: Connecting the Board

The next step in setting up AVS on the Chatterbox is to connect the board's peripheral components. Use Figure 1 to help locate the board connections described below.

1. Connect the USB cable's micro-B end to the port labeled '`console`' and the Type-A end to a USB port on your PC.

2. Connect the WiFi antenna to the WiFi module's u.Fl connector.

3. Connect the external speaker's lead wires to the spring terminal points - red wire to '`SPKR+`', and black to '`SPKR-`'.

Gumstix Chatterbox for Raspberry Pi® Compute Board Overview

20-pin GPIO header

2.5 W speaker driver with volume control

2 user-programmable LEDs

On-board microphone

5V DC barrel connector

Serial console port

USB port

WiFi/Bluetooth with U.FL antenna connector

2 user-programmable pushbuttons

RGB LED

2-lane CSI-2 camera connector

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Back

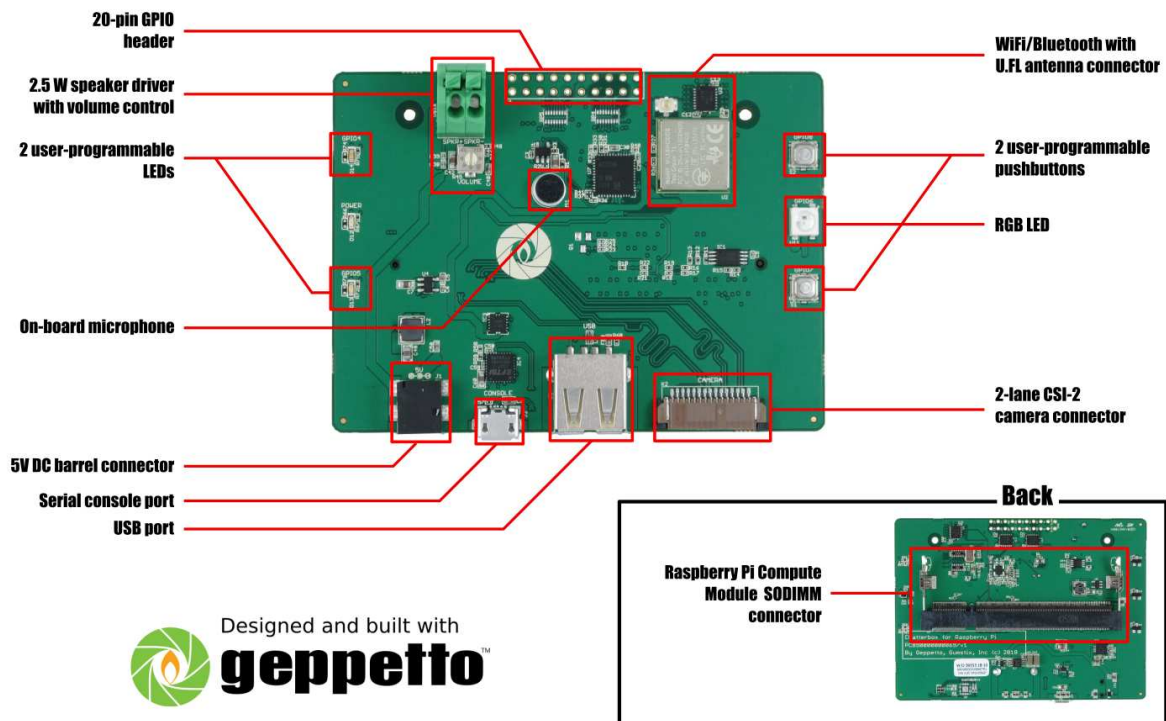Raspberry Pi Compute Module SODIMM connector

Figure 1: Board Layout Guide

4. Insert the gold edge of the RPCM into the Chatterbox's SO-DIMM slot, located on the back side of the board, at a 45° angle with the notch on the left-hand side and press the upper edge toward the board until the connector's retaining arms lock the CM into place.

6   Step 4: Configuring Chatterbox for RPCM

This step will set your development board up to connect to the Alexa Voice Service with the basic functionality provided by the example application included with the disk image provided.

1. Connect to the board's serial port by way of your PC.

   - Linux and Mac users: use the screen command from the terminal:

   ```
   #  sudo screen /dev/ttyUSBx 115200
   ```

   Replace 'ttyUSBx' with the name of the file that appears in the /dev directory when the board is connected.

   - Windows users: Terminal emulators such as PuTTY can be used to connect to the RPCM's serial port.

PuTTY can be downloaded from:
https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html

Use the app's setup wizard to connect to the device's COM port with a baud of 115200.

2. Once the login prompt appears, enter `pi` as the username and `raspberry` as the password.

3. <u>**IMPORTANT:**</u> The initial password on this disk image is the default password on all Raspbian images. It is recommended that you change this password immediately.

4. set up the WiFi connection following dricetions at:
https://www.raspberrypi.org/documentation/configuration/wireless/wireless-cli.md
then reboot the board.

5. You will need the device's IP address to continue. Type '`ifconfig`' and copy the IP address for `wlan0`.

6. Go back to your web browser and your 'AVS Products' dashboard, and click the '*Manage*' link for your product.

7. Click on the '*Security Profile* tab and add the following line to the 'Allowed Return URLs' field:

```
http://<device-ip-address>:3000/authresponse
```

8. Click the update button.

9. Open tbe Alexa configuration file at the RPCM's console:

```
#  vi /etc/alexa/AlexaClientSDKConfig.json
```

10. Copy the client secret, client ID and product ID from the AVS dashboard into the "*authDelegate*" properties of the config file.

11. Run the server authorization script in the RPCM's console:

```
#  python /etc/alexa/AuthServer.py
```

12. The script will display a URL. Enter this URL into your web browser and login to your Amazon Developer account as prompted.

13. Restart the Chatterbox. The Alexa voice service is now running on your **Gumstix Chatterbox for Raspberry Pi Compute**

External Links

https://developer.amazon.com/alexa-voice-service, 2
https://gumstix-misc.s3.amazonaws.com/uploads/wo59555b.img.xz, 2
https://store.gumstix.com/5v35a-us-power-adapter.html, 1
https://store.gumstix.com/chatterbox-pi, 1
https://store.gumstix.com/raspberry-pi-cm-fast-flash.html, 1
https://store.gumstix.com/ufl-antenna.html, 1
https://www.chiark.greenend.org.uk/\protect\unhbox\voidb@x\penalty\@M\{}sgtatham/putty/latest.
        html, 4
https://www.gumstix.com/support/faq/yocto-wifi/, 1
https://www.raspberrypi.org/documentation/configuration/wireless/wireless-cli.md, 4
https://www.raspberrypi.org/documentation/hardware/computemodule/cm-emmc-flashing.md, 2
https://www.raspberrypi.org/products/compute-module-1/, 1
https://www.raspberrypi.org/products/compute-module-3/, 1