

AUD-ESP-00519

IA8201 Raspberry Pi Quick Start Guide



This document serves as a quick start guide for the IA8201 Raspberry Pi. This quick start guide provides details on the product components, prerequisites, and hardware setup.



Table of Contents

Chapter 1: IA8201 Raspberry Pi	3
1.1 Overview	3
1.2 Components	3
1.3 Prerequisites	3
1.4 Discovering the SD card mount point and unmounting it.....	3
1.5 Hardware Setup	5
1.6 Startup.....	5
Chapter 2: Additional Support	7

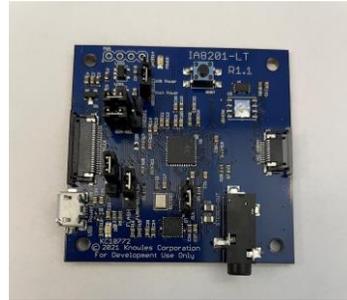
Chapter 1: IA8201 Raspberry Pi

1.1 Overview

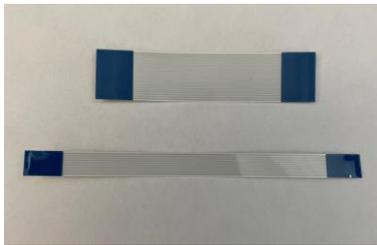
This guide will provide the steps to setting up the IA8201-LT with a Raspberry Pi along with standard software to enable Alexa keyword detection.

1.2 Components

- 1x Raspberry Pi Connector
- 1x IA8201-LT Board
- 1x 3-mic Array
- 1x 2-mic Array
- 2x Flex Cables



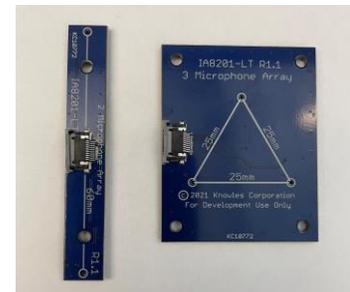
IA8201-LT
Board



Flex Cables



Raspberry Pi
Connector



Mic Arrays

1.3 Prerequisites to Flash Image

- Download IA8201 Raspberry Pi Release Image from solutions.knowles.com
- Linux PC for running flashing scripts (windows flashing is not supported currently).
- Raspberry Pi 3 Model B

1.4 Flashing SD Card with release image

- Go to a Bash shell on your machine see which devices are
- Run `lsblk -p` to see which devices are currently connected to your machine
- Insert SD card into your machine or SD card reader

- Run `lsblk -p` again and the new device should appear.
- The left column will give the device name and any partition. If any partitions have been mounted, unmount them all with `umount` (i.e. `umount /dev/sdX1`)

```
draj@k1dc-lnx06-ws:~$ lsblk -p
NAME                                MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
/dev/loop0                          7:0    0   408M  1 loop /snap/pycharm-community/240
/dev/loop1                          7:1    0   99.4M  1 loop /snap/core/11316
/dev/loop22                         7:22   0   55.5M  1 loop /snap/core18/2074
/dev/sda                            8:0    0  931.5G  0 disk
├─/dev/sda1                         8:1    0   500M  0 part /boot
├─/dev/sda2                         8:2    0    16G  0 part
└─┬─/dev/mapper/swapvg-lv_swap      253:3   0    16G  0 lvm  [SWAP]
   └─/dev/sda3                     8:3    0    50G  0 part
     └─/dev/mapper/rootvg-lv_root   253:0   0    50G  0 lvm  /
    /dev/sda4                     8:4    0   865G  0 part
```

- Navigate to the root folder of the release image “raspberry-pi-chelsea-iot-xxxx”
- Copy the “sdcard_setup.sh” file from “deploy\images\raspberry-pi\setup_sdcard.sh” to root folder
- **Steps below in Figure 1**
- Run `./setup_sdcard.sh -b=<lt-evm> /dev/sdX`
- This will ask you to confirm the device partitions, press “Y” to continue flashing. This will take a few minutes
- Run `sync`. This will ensure the write cache is flushed and it is safe to unmount your SD card
- Remove SD card and place in Raspberry Pi

```
-----Raspberry Pi Linux Bootable SD Card Utility-----
[sudo] password for draj:
SD Card Info
BYTES 7948206080, HEADS 4, SECTORS 16, CYLINDERS 242560
Raspberry Pi SDcard Partition
-----
TOTAL:7761920 KB
BOOT: 110592 KB
RFS:7651328 KB

About to wipe ALL data on /dev/sdb, enter 'Y' to proceed: Y

Creating Boot and RFS partitions
Done!!

Writing kernel image and dtb files
Done!!

Patching boot files...
Done!!

Updated cmdline.txt with new PARTUUID=afbbdba0
Done!!

Enable ssh service by default
Done!!

Install Raspberry Pi Root filesystem
Done!!

Updated /etc/fstab with new PARTUUID=afbbdba0
Done!!

Copy startup scripts files
Done!!

Copy sthal, stframework, vqclient & KW model files
Done!!

Setup System startup service
Done!!

SUCCESS: SD Card prepared with Raspberry Pi Image!!
```

Figure 1 - Device Flashing

1.5 Hardware Setup

- Connect Raspberry Pi to the Connector board.



Figure 2: Raspberry Pi and IA8201-LT

- Connect IA8201 through flex cable

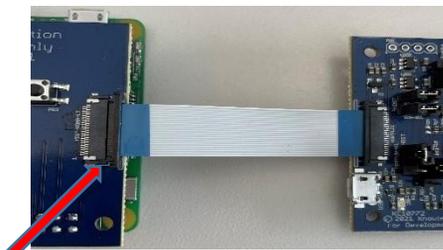


Figure 3: Open Flex Connector



Figure 4: Closed Flex Connector

- Open Flex connector by pressing on each side (shown by arrows in **Figure 3**)
- Place Flex in (blue side up) and close the connector by pushing the sides in. It will be flush as in **Figure 4**
- Connect your desired mic array with the other flex cable the same way to the IA8201-LT board



Open Flex Connector



Note: Left side of connector is open and right side is closed to illustrate difference in the pictures.

1.6 Start-up

- Connect Raspberry Pi to monitor and plug in micro USB

- Alternatively, find the IP address of the Raspberry Pi and use `ssh pi@<IPaddress>` and get the console to run the setup and commands

<https://www.raspberrypi.org/documentation/remote-access/ip-address.md>

- Boot-up dialogue will run and a login prompt will appear.
- Login using the following credentials:
 - **Username:** pi
 - **Password:** raspberry

```
***** Raspberry Pi Booted for first time *****
***** Run the AVS Device Setup Script *****

### Do the following to setup the device ###
### 1. exit this menu and login to console
### 2. switch to root using 'sudo su'
### 3. cd /home/pi/Alexa_SDK/Scripts/
### 4. ./setupAVS.sh$
### 5. enter the details the details and reboot

### Press any key to exit and start setup ###
### END OF CALYPSO BOOT-UP SCRIPT ###

raspberrypi login: pi
Password:
Linux raspberrypi 5.4.83-v7+ #1379 SMP Mon Dec 14 13:08:57 GMT 2020 armv7l

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.

SSH is enabled and the default password for the 'pi' user has not been changed.
This is a security risk - please login as the 'pi' user and type 'passwd' to set a new password.

Wi-Fi is currently blocked by rfkill.
Use raspi-config to set the country before use.
```

- Go to the raspberry pi terminal and run the `voice_wake` app
- At this point, uttering “Alexa” should flash the LED by the micro USB on the IA8201-LT board
- To enable a 5 second stream use `mkdir -p /data/data`
- After, run `voice_wake` and the data will be saved to the directory created

Note: To run AVS commands, please refer to our guide on solutions.knowles.com

Chapter 2: Additional Support

For additional support, including forums, FAQ's, and a support ticketing system, please visit:
<https://solutions.knowles.com/>.

Revision History

Revision	Description	Date
0.1	Initial release	6/25/2021