

OctoSound Card installation on:

Linux raspberrypi 6.1.34-v8+ #1657 SMP PREEMPT Fri Jun 16 12:36:29 BST 2023 aarch64
GNU/Linux

- Remove pulseaudio (if installed).

```
sudo apt-get remove --assume-yes pulseaudio
```

- Enable ARM i2C interface.

```
sudo raspi-config
```

```
  (3) Interface Options
```

```
    (P5) I2C
```

```
      Enable: Yes
```

- clone installer to a folder and install it:

```
git clone https://github.com/Audio-Injector/Octo.git
```

```
sudo dpkg -i audioinjector.octo.setup_0.4_all.deb
```

[output see Fig.1]

```

Selecting previously unselected package audioinjector.octo.setup.
(Reading database ... 38706 files and directories currently installed.)
Preparing to unpack audioinjector.octo.setup_0.4_all.deb ...
Unpacking audioinjector.octo.setup (0.4) ...
Setting up audioinjector.octo.setup (0.4) ...
updating the kernel
*** Raspberry Pi firmware updater by Hexxeh, enhanced by Andrews and Dom
*** Performing self-update
*** Relaunching after update
*** Raspberry Pi firmware updater by Hexxeh, enhanced by Andrews and Dom
*** We're running for the first time
*** Backing up files (this will take a few minutes)
*** Backing up firmware
*** Backing up modules 6.1.21-v8+
#####
WARNING: This update bumps to rpi-6.1.y linux tree
See: https://forums.raspberrypi.com/viewtopic.php?t=344246

'rpri-update' should only be used if there is a specific
reason to do so - for example, a request by a Raspberry Pi
engineer or if you want to help the testing effort
and are comfortable with restoring if there are regressions.

DO NOT use 'rpri-update' as part of a regular update process.
#####
Would you like to proceed? (y/N)
*** Downloading specific firmware revision (this will take a few minutes)
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload  Total   Spent    Left   Speed
100  116M    0  116M    0    0  1784k      0  --:--:--  0:01:06 --:--:-- 1882k
*** Updating firmware
*** Updating kernel modules
*** depmod 6.1.34-v7l+
*** depmod 6.1.34-v7+
*** depmod 6.1.34+
*** depmod 6.1.34-v8+
*** Updating VideoCore libraries
*** Using SoftFP libraries
*** Updating SDK
*** Running ldconfig
*** Storing current firmware revision
*** Deleting downloaded files
*** Syncing changes to disk
*** If no errors appeared, your firmware was successfully updated to 9a3a5f6db80eb8cc18e3d5b265422a23a8bbbedd
*** A reboot is needed to activate the new firmware
setting up /boot/config.txt
backing up /boot/config.txt to /boot/config.txt.2023-06-19.21.39.06
setting up /boot/config.txt
backing up /etc/asound.conf to /etc/asound.conf.2023-06-19.21.39.06
backing up /root/.asoundrc to /root/.asoundrc.2023-06-19.21.39.06
backing up /home/pi/.asoundrc to /home/pi/.asoundrc.2023-06-19.21.39.06

```

Figure 1: Output of “sudo dpkg -i audioinjector.octo.setup_0.4_all.deb”

seems ok?!

- Add the following lines to the /etc/modules file.

```
snd_soc_cs42xx8
snd_soc_cs42xx8_i2c
snd_soc_audioinjector_octo_soundcard
```

- reboot

-check if octocard is recognized (arecord and aplay): (Fig 2)

<pre>pi@raspberrypi:~\$ arecord -L null Discard all samples (playback) or generate zero samples (capture) sysdefault Default Audio Device anyChannelCount default hw:CARD=audioinjectoroc,DEV=0 audioinjector-octo-soundcard, AudioInject-HIFI cs42448-0 Direct hardware device without any conversions plughw:CARD=audioinjectoroc,DEV=0 audioinjector-octo-soundcard, AudioInject-HIFI cs42448-0 Hardware device with all software conversions sysdefault:CARD=audioinjectoroc audioinjector-octo-soundcard, AudioInject-HIFI cs42448-0 Default Audio Device dsnoop:CARD=audioinjectoroc,DEV=0 audioinjector-octo-soundcard, AudioInject-HIFI cs42448-0 Direct sample snooping device</pre>	<pre>pi@raspberrypi:~\$ aplay -L null Discard all samples (playback) or generate zero samples (capture) sysdefault Default Audio Device anyChannelCount default hw:CARD=vc4hdmi,DEV=0 vc4-hdmi, MAI PCM i2s-hifi-0 Direct hardware device without any conversions plughw:CARD=vc4hdmi,DEV=0 vc4-hdmi, MAI PCM i2s-hifi-0 Hardware device with all software conversions sysdefault:CARD=vc4hdmi vc4-hdmi, MAI PCM i2s-hifi-0 Default Audio Device hdmi:CARD=vc4hdmi,DEV=0 vc4-hdmi, MAI PCM i2s-hifi-0 HDMI Audio Output dmix:CARD=vc4hdmi,DEV=0 vc4-hdmi, MAI PCM i2s-hifi-0 Direct sample mixing device hw:CARD=audioinjectoroc,DEV=0 audioinjector-octo-soundcard, AudioInject-HIFI cs42448-0 Direct hardware device without any conversions plughw:CARD=audioinjectoroc,DEV=0 audioinjector-octo-soundcard, AudioInject-HIFI cs42448-0 Hardware device with all software conversions sysdefault:CARD=audioinjectoroc audioinjector-octo-soundcard, AudioInject-HIFI cs42448-0 Default Audio Device dmix:CARD=audioinjectoroc,DEV=0 audioinjector-octo-soundcard, AudioInject-HIFI cs42448-0 Direct sample mixing device</pre>
---	--

- check

Figure 2: "arecord -L "(left) and "aplay -L "(right) output
~.asoundrc and /etc/asound.conf (Fig 3)

```
pcm.!default {
#   type hw
#   card 0
  type plug
  slave.pcm "anyChannelCount"
}

ctl.!default {
  type hw
  card 0
}

~

pcm.anyChannelCount {
  type route
  slave.pcm "hw:0"
  slave.channels 8;
  ttable {
    0.0 1
    1.1 1
    2.2 1
    3.3 1
    4.4 1
    5.5 1
    6.6 1
    7.7 1
  }
}

ctl.anyChannelCount {
  type hw;
  card 0;
}
```

Figure 3: "~/.asoundrc" (left) and "/etc/asound.conf"
According to the installation instructions the Octocard should be working.

- Tentative to record a channel through arecord:

1) using hw

```
arecord -D hw:CARD=audioinjectoroc,DEV=0 -f cd -c 1 -d 1 -r 48000 test.wav
```

[output]

```
Recording WAVE 'test.wav' : Signed 16 bit Little Endian, Rate 48000 Hz, Mono
arecord: set_params:1349: Channels count non available
```

2) using plughw:

```
arecord -D plughw:CARD=audioinjectoroc,DEV=0 -f cd -c 1 -d 1 -r 48000 test.wav
```

```
Recording WAVE 'test.wav' : Signed 16 bit Little Endian, Rate 48000 Hz, Mono
overrun!!! (at least 0.132 ms long)
overrun!!! (at least 0.115 ms long)
overrun!!! (at least 0.114 ms long)
overrun!!! (at least 0.154 ms long)
overrun!!! (at least 0.119 ms long)
```

It records an empty file.

3) using plughw with Fs=96000:

```
arecord -v -D plughw:CARD=audioinjectoroc,DEV=0 -f cd -c 1 -d 1 -r 96000 test.wav
```

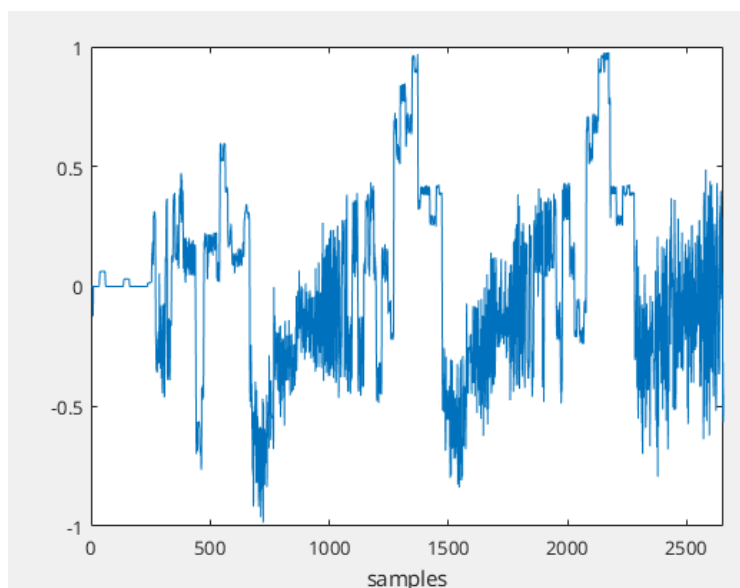
[output]

```
Recording WAVE 'test.wav' : Signed 16 bit Little Endian, Rate 96000 Hz, Mono
Plug PCM: Route conversion PCM (sformat=S16_LE)
Transformation table:
  0 <- 0*0.125 + 1*0.125 + 2*0.125 + 3*0.125 + 4*0.125 + 5*0.125 + 6*0.125 + 7*0.125
Its setup is:
stream      : CAPTURE
access     : RW_INTERLEAVED
format      : S16_LE
subformat   : STD
channels    : 1
rate        : 96000
exact rate  : 96000 (96000/1)
msbits     : 16
buffer_size : 32768
period_size : 8192
period_time : 85333
tstamp_mode : NONE
tstamp_type : MONOTONIC
period_step : 1
avail_min   : 8192
period_event : 0
start_threshold : 1
stop_threshold : 32768
```

```
silence_threshold: 0
silence_size : 0
boundary : 4611686018427387904
Slave: Hardware PCM card 1 'audioinjector-octo-soundcard' device 0 subdevice 0
Its setup is:
stream : CAPTURE
access : MMAP_INTERLEAVED
format : S16_LE
subformat : STD
channels : 8
rate : 96000
exact rate : 96000 (96000/1)
msbits : 16
buffer_size : 32768
period_size : 8192
period_time : 85333
tstamp_mode : NONE
tstamp_type : MONOTONIC
period_step : 1
avail_min : 8192
period_event : 0
start_threshold : 1
stop_threshold : 32768
silence_threshold: 0
silence_size : 0
boundary : 4611686018427387904
appl_ptr : 0
hw_ptr : 0
```

It records the wave file but something is not correct.

```
[MATLAB output: [y,Fs] = audioread("test.wav", 'native');]
```



- Tentative to record a channel through ecasound and jackd:

```
sudo apt install jackd2-dev
```

Allowed real time priority during installation.

```
sudo apt install ecasound
```

Run:

```
jackd -d alsa -d hw:1 -C
```

```
ecasound -q -C -f:s16_le,1,48000,i -i:jack,system:capture_3 -G:jack,esmi,notransport -  
f:s16_le,1,48000,i -o:test.wav
```

Again, something strange happens:

