

ODROID-N2 Sound Card

ODROID-N2 has a onboard audio DAC and audio driver with Adjustable Gain. HDMI output and SPDIF output are also available. This section shows how to output sound card components and audio.

ALSA driver

Using alsactl

Do **aplay -l** shows sound card list.

```
odroid@odroid:~$ aplay -l
**** List of PLAYBACK Hardware Devices ****
card : AMLAUGESOUND [AML-AUGESOUND], device : SPDIF-B-dit-hifi dit-hifi- []
  Subdevices: 1/1
  Subdevice #0: subdevice #0
card : AMLAUGESOUND [AML-AUGESOUND], device 1: TDM-C-T9015-audio-hifi T9015-
audio-hifi-1 []
  Subdevices: 1/1
  Subdevice #0: subdevice #0
card : AMLAUGESOUND [AML-AUGESOUND], device 2: SPDIF-dit-hifi dit-hifi-2 []
  Subdevices: 1/1
  Subdevice #0: subdevice #0
odroid@odroid:~$
```

Sound driver audio path Description

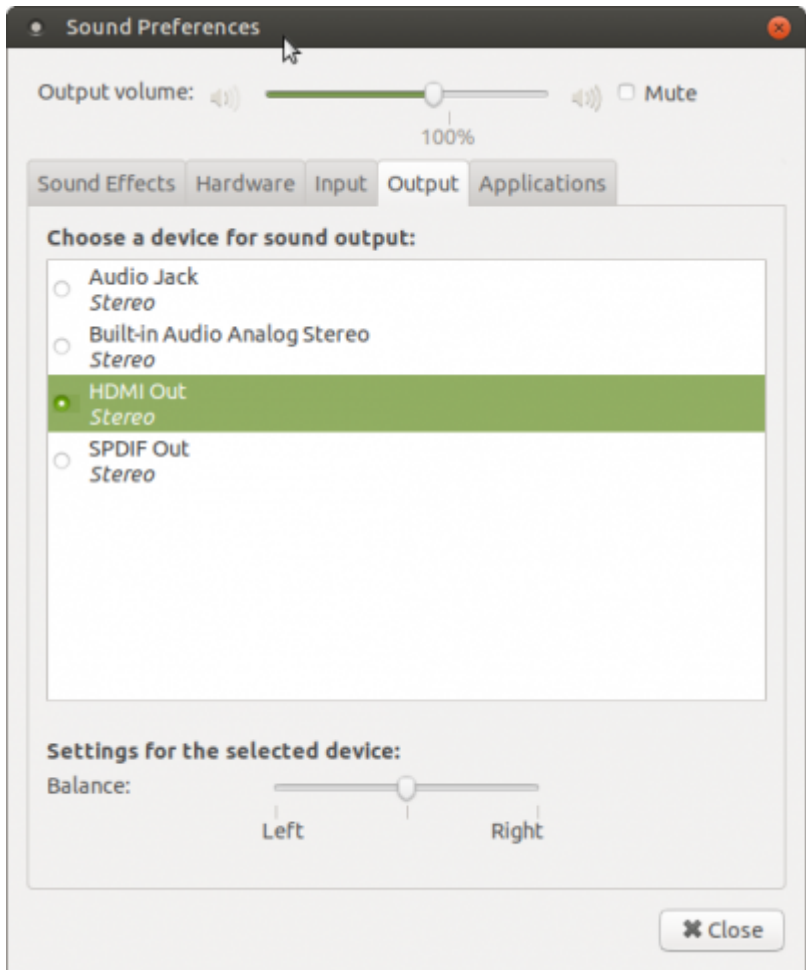
card 0: device 0: s922X spdif_B - hdmitx audio - **HDMI out**

card 0: device 1: s922X I2S - Internal audio DAC - audio driver(DIO2133) - 3.5pi **audio jack**

card 0: device 2: s922X spdif - spdif out - **spdif out** (GPIOA_11, ext_con J7-pin2)

Each device is output independently.

Sound Preference (Ubuntu 18.04 Mate)



Change the default sound output path

Ubuntu 18.04 Minimal

Ubuntu minimal image does not include pulseaudio. In this case, the way to set the sound output path is to set /etc/asound.conf. Default value is HDMI output.

```
root@odroid:~# cat /etc/asound.conf
pcm.!default {
    type plug
    slave {
        pcm "hw:0,0"
    }
}
root@odroid:~#
```

You can change the sound output path by edit /etc/asound.conf

```
pcm "hw:0,0" // HDMI output
pcm "hw:0,1" // Internal DAC(audio jack) output
pcm "hw:0,2" // SPDIF output
```

Ex) After changing the default sound output path to audio jack.

```
root@odroid:~# cat /etc/asound.conf
pcm.!default {
    type plug
    slave {
        pcm "hw:0,1"
    }
}
root@odroid:~#
```

Ubuntu 18.04 Mate

Ubuntu mate image does include pulseaudio.

In this case, the way to set the sound output path is to set /etc/pulse/default.pa

1. check your sound device number

The number "1" means the line-output on N2 Ubuntu 18.04 mate.

```
odroid@odroid:~$ pactl list short sources
          hdmi_out.monitor          module-alsa-sink.c          s16le 2ch 44100Hz
SUSPENDED
1          line_out.monitor          module-alsa-sink.c          s16le 2ch 44100Hz
SUSPENDED
2          spdif_out.monitor          module-alsa-sink.c          s16le 2ch 44100Hz
SUSPENDED
3          alsa_output.platform-auge_sound.analog-stereo.monitor    module-alsa-
card.c          s16le 2ch 44100Hz          SUSPENDED
```

2. Set the default with the device number

```
odroid@odroid64:~$ echo set-default-sink 1 | sudo tee -a
/etc/pulse/default.pa
```

Verify output

You can check the output with the 'aplay' command. testfile only supports wav format.

3.5pi audio jack

```
root@odroid:~# aplay -D hw:, testfile.wav
```

HDMI Output

The HDMI display device must support audio output.

```
root@odroid:~# aplay -D hw:,1 testfile.wav
```

SPDIF Output

A simple DIY is required to check spdif output.

The coaxial or optical output terminal must be connected to the GPIOA_11 pin.

It is the same as ODR0ID-C2. [S/PDIF Audio Output](#)

```
root@odroid:~# aplay -D hw:,2 testfile.wav
```

ODROID-C2 is HDMI and SPDIF same output, but ODR0ID-N2 is HDMI and SPDIF independent output.

MiXer

Volume control

Internal DAC (device 0) allows hardware volume control.

The initial value is 0.00dB, and the value set by amixer is saved and restored at reboot.

```
root@odroid:~# amixer sget 'DAC Digital'
Simple mixer control 'DAC Digital',
  Capabilities: pvolume
  Playback channels: Front Left - Front Right
  Limits: Playback - 255
  Mono:
  Front Left: Playback 254 [100%] [0.00dB]
  Front Right: Playback 254 [100%] [0.00dB]
root@odroid:~#
```

```
root@odroid:~# amixer sset 'DAC Digital' 95%
Simple mixer control 'DAC Digital',
  Capabilities: pvolume
  Playback channels: Front Left - Front Right
  Limits: Playback - 255
  Mono:
  Front Left: Playback 243 [95%] [-41.25dB]
  Front Right: Playback 243 [95%] [-41.25dB]
root@odroid:~#
```

```
root@odroid:~# amixer sset 'DAC Digital' 250
Simple mixer control 'DAC Digital',
  Capabilities: pvolume
  Playback channels: Front Left - Front Right
  Limits: Playback - 255
  Mono:
  Front Left: Playback 250 [98%] [-15.00dB]
  Front Right: Playback 250 [98%] [-15.00dB]
root@odroid:~#
```

Line-out Mute

Disable the 3.5-pi audio jack output. **Mute ON**

```
root@odroid:~# amixer sset 'LINE_OUT mute' on
Simple mixer control 'LINE_OUT mute',
  Capabilities: pswitch pswitch-joined
  Playback channels: Mono
  Mono: Playback [on]
root@odroid:~#
```

Enable the 3.5-pi audio jack output. **Mute OFF**

```
root@odroid:~# amixer sset 'LINE_OUT mute' off
Simple mixer control 'LINE_OUT mute',
  Capabilities: pswitch pswitch-joined
  Playback channels: Mono
  Mono: Playback [off]
root@odroid:~#
```

There are several other mixers. You can check it by running alsamixer.

Reduce the pop-noise from the audio jack

Our forum user @Amnezida found a good workaround to reduce the pop-noise significantly.
[Popping sound from audio jack after silence](#)

Activate the I2S Bus to add an external sound DAC

[Device tree example for enabling the I2S bus on 7-pin header](#)

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