

# Matrix - NanoHat PCM5102A

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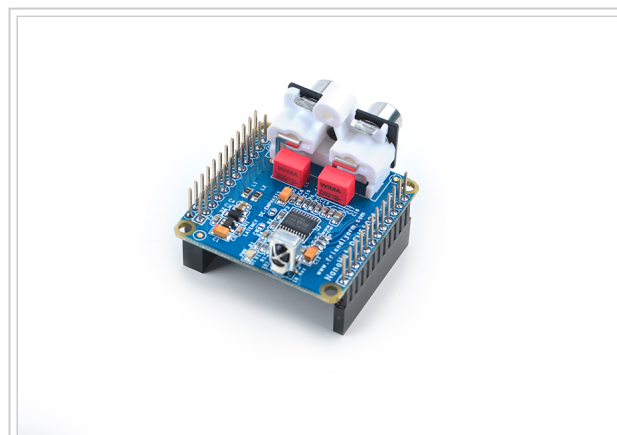
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## Introduction

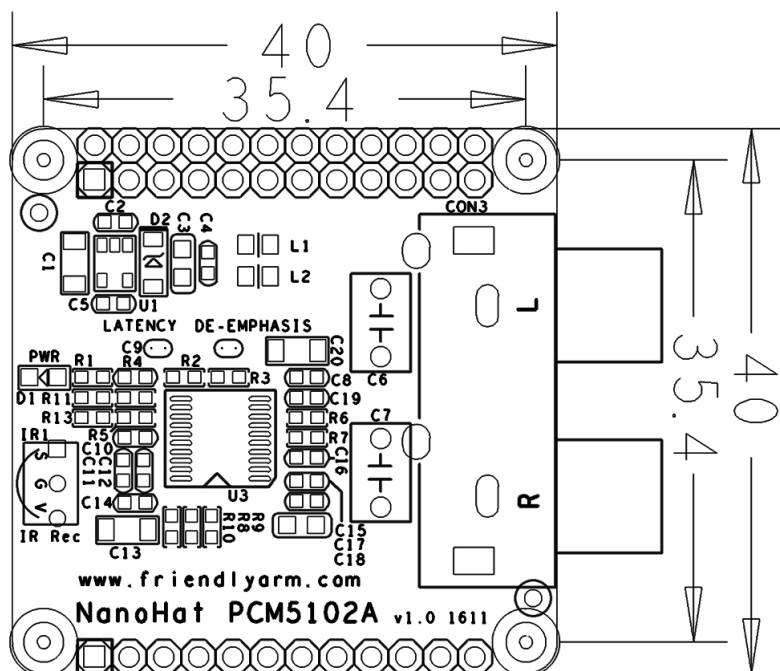
- The Matrix - NanoHat PCM5102A module uses TI's DAC audio chip PCM5102A and NS' low-noise, ultra-low dropout LP2992 regulator. PCM5102A's sample rates up to 384kHz and its resolution is 32-bit.
- Its dynamic range is 112dB. Its THD+N at -1 dBFS is -93db. Its full-scale single-ended output is 2.1V. The SNR is 120dB.
- Its onboard VS1838B infrared receiver allows it to be remote-controlled.
- This module has exactly the same dimension as the NanoPi NEO/Air and can be stacked on an NanoPi NEO/Air.



NanoHat PCM5102A

## Hardware Spec

- Ultra-low out-of-band noise
- Audio data bit length: 16-bit, 24-bit and 32-bit
- Audio format selection: I2S (Low) / Left-justified
- Sampling frequency: 384KHz, resolution: 32-bit
- Onboard infrared receiver



#### ■ Pin Description:

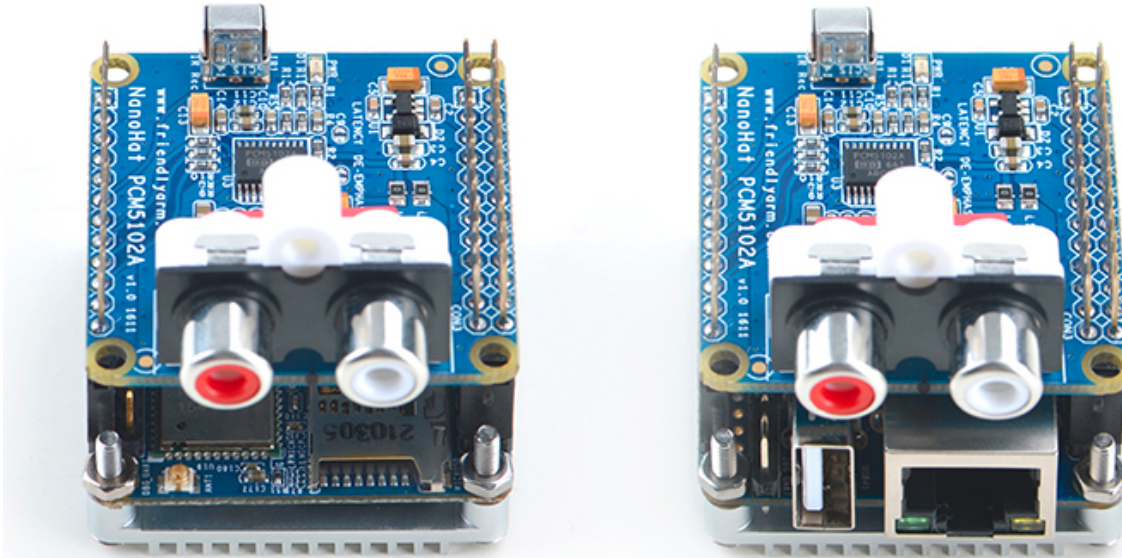
NanoPi NEO/Air 24 Pin header is not listed here. Refer to NanoPi NEO/Air's wiki site for more details  
 NanoPi NEO ([http://wiki.friendlyarm.com/wiki/index.php/NanoPi\\_NEO/zh](http://wiki.friendlyarm.com/wiki/index.php/NanoPi_NEO/zh)) NanoPi NEO Air  
 ([http://wiki.friendlyarm.com/wiki/index.php/NanoPi\\_NEO\\_Air/zh](http://wiki.friendlyarm.com/wiki/index.php/NanoPi_NEO_Air/zh))

12Pin header pin description:

Pin	Name	Description
1	VDD_5V	5V Power In
2	NC	Not Connected
3	NC	Not Connected
4	NC	Not Connected
5	NC	Not Connected
6	IR Receiver	IR Receiver
7	NC	Not Connected
8	LRCK	I2S/PCM Sample Rate Clock/Sync
9	BCK	I2S/PCM Sample Rate Clock
10	DIN	I2S/PCM Serial Data Input
11	NC	Not Connected
12	GND	GND

## Applications

The NanoHat PCM5102A can be stacked on the NanoPi NEO/Air. Here is a hardware setup:



## How to Play

After you mount your PCM5102A to a NanoPi NEO/Air connect your PCM5102A to speakers with a RCA to 3.5mm audio jack cable and power on your NanoPi NEO/Air

Run the following commands to play an audio file (in our example we played kewang.mp3)

```
madplay kewang.mp3
```

Here is what you expect to observe:

```
root@FriendlyARM:/home# ls
fa kewang.mp3
root@FriendlyARM:/home# madplay kewang.mp3
MPEG Audio Decoder 0.15.2 (beta) - Copyright (C) 2000-2004 Robert Leslie et al.
Title:
Artist:
Album:
```

## Resources

- [Schematic](Schematic - NanoHat PCM5102A.pdf ([http://wiki.friendlyarm.com/wiki/images/d/d3/SCHEMATIC\\_NanoHat\\_PCM5102A.pdf](http://wiki.friendlyarm.com/wiki/images/d/d3/SCHEMATIC_NanoHat_PCM5102A.pdf)))
- [Datasheet](PCM5102A (<http://www.ti.com.cn/cn/lit/ds/symlink/pcm5102a.pdf>))

## Update Log

### Jan-20-2017

- Released English version

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- This page was last modified on 20 January 2017, at 08:11.