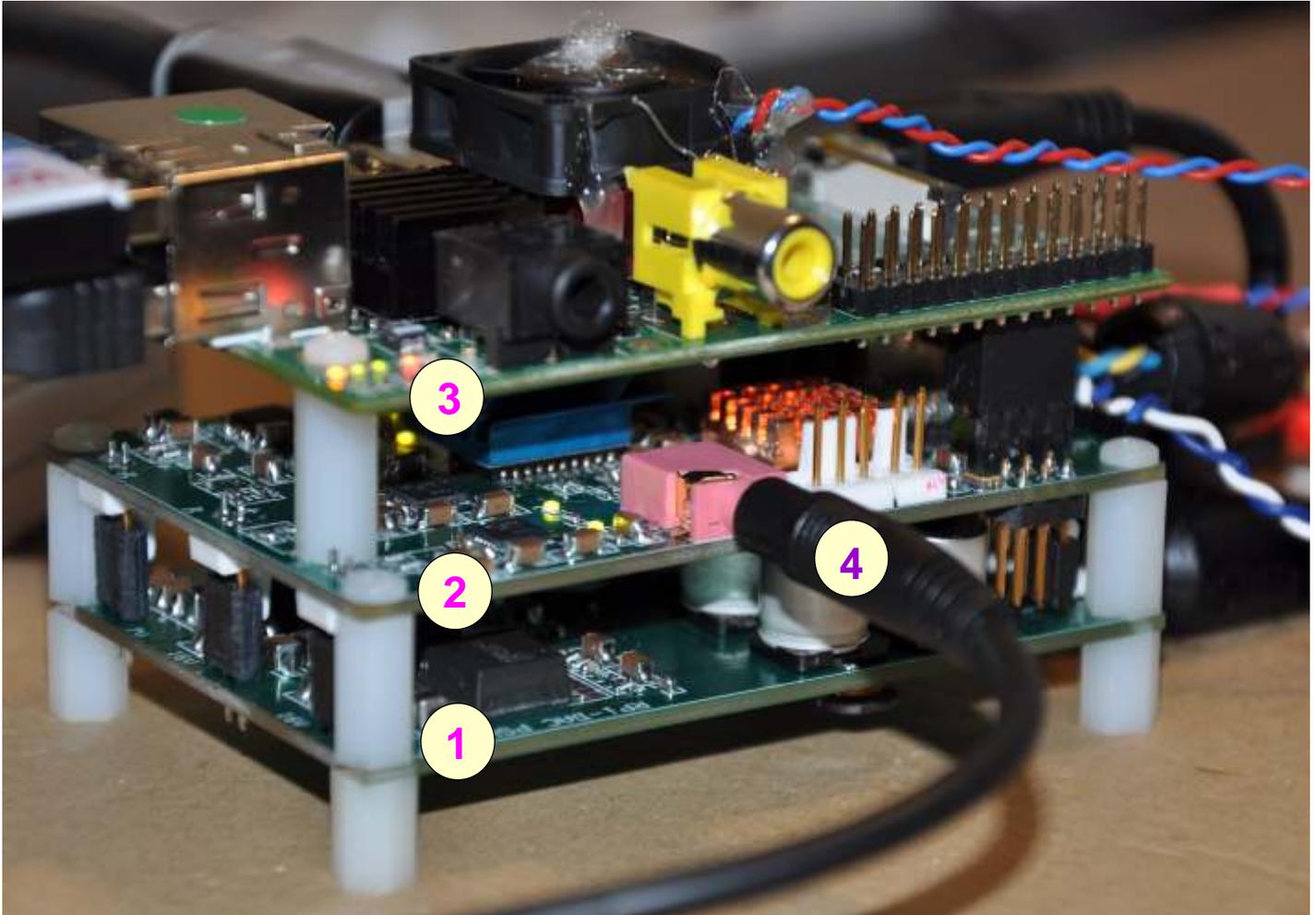


# How to operate the RPi-DAC (rev.3)

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Oct. 2013  
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## Hardware:

- 1** Switched Power Supply (**SPS**)  
2x 16V, 2A  
1x 7V, 2A  
1x 5V, 2A (powering the Rpi via USB)
- 2** **RPi-DAC**  
PCM1794A  
7x LDO TPS7A4700 (1A each)  
TPA6120A2 headphone amp  
4x OpAmp LME49990
- 3** **Raspberry Pi**  
with heat sinks and fan  
P2 I2S male connector

## Not included:

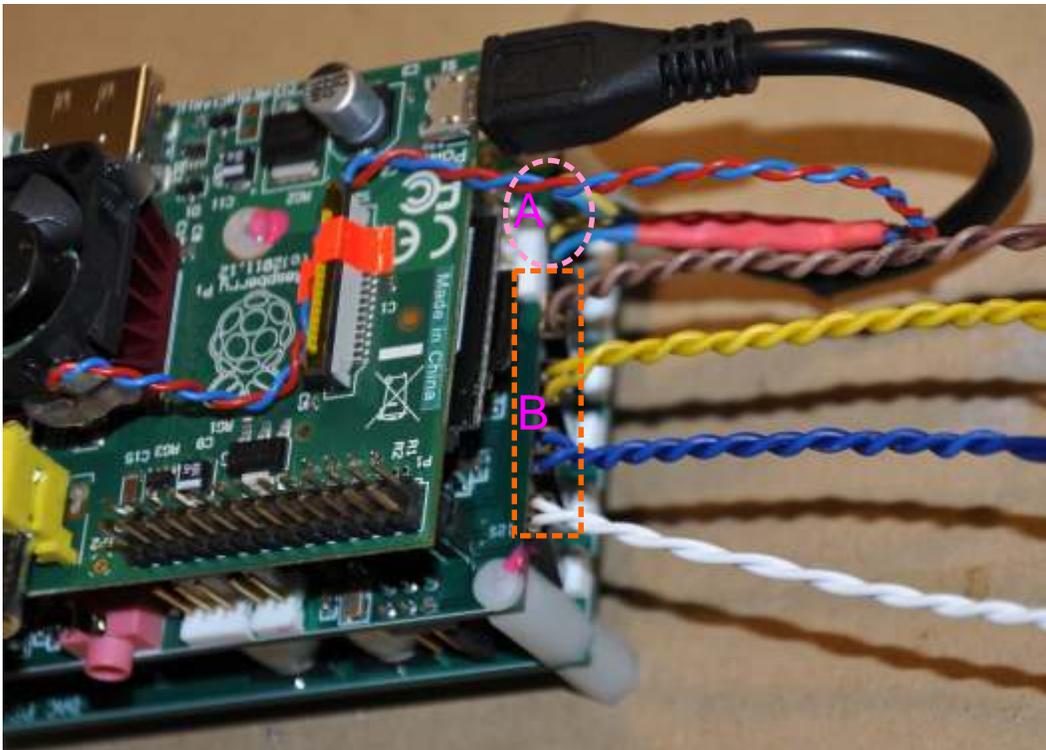
- 4** Headphone, with 3.5mm connector  
300 - 600 Ohm
- AC transformer 110/240V -> 4x AC:  
2x 15V AC, 1A each  
2x 9V AC, 1A each
- Enclosure
- Power input module, with EMI filter  
recommended,  
with fuse and voltage selector

## Before you power on the RPi-DAC:

- 1) Check the board for **damages during shipment**:
  - check for heat sink felt apart (not sitting anymore on ICs)
  - check for broken cables
  - check for lost or damages parts on PCB
- 2) Make an **image copy of the SD card**:
  - read the image from SD card and store as img backup file on PC using "win32diskimager"
- 3) Have the right **AC transformer** with 110/240 power input module ready (for your power line voltage):
  - suggestion: use this AC transformer:  
<http://diyhifishop.com/115v230v-50w-high-quality-audio-r-core-transformer-p-61.html>  
50VA, 2x 15V/1A, 2x 9V/1.12A
- 4) Solder the AC transformer to the AC power feeds (wires or jumper connectors) (see details)
- 5) Plug in the USB adapter coming from 5V SPS into **RPi USB micro USB**

## Solder the AC power wires:

Connect the provided AC wires to AC transformer output



**A** pre-wired **DC Out** for:

+ (yellow)  
- 5V Rpi USB

+ (yellow)  
- 5V Fan

**B** **AC In** from transformer:

Ac1 (brown)  
Ac1 9V

Ac2 (yellow)  
Ac2 9V

Ac3 (blue)  
Ac3 15V

Ac4 (white)  
Ac4 15V

## Power on the RPi-DAC:

- 1) Power on the AC transformer  
make sure all rails are properly connected,  
**Never provide just one 15V rail !**
- 2) Check if all **six LEDs** (green) on RPi-DAC board lit
- 3) Check if RPi LEDs are on, **RPi is booting**  
check boot log screen, especially for file system  
errors and fixes (SD card content damaged?)

## Check the audio output (listen to music):

- 1) have a headphone plugged in on RPi-DAC (3.5mm stereo)
- 2)  
On **Raspberry Pi command line** after login: ( "pi", "raspberrypi")

```
cd sound  
aplay -D hw:1,0 M48_16.wav
```

Remark: maybe you have to repeat the command few times. It takes a bit until the driver is ready and the command accepted.  
You should hear the classical music (with full loudness).  
You can use the ALSA tools on command line. But you can play just 16bit/48KHz WAV files.

On **Raspberry Pi Window** system:

```
startx
```

There is VLC icon (the cone):

```
start VLC with double click  
open File, Directory - select the /home/pi/sound directory  
VLC will play all files in the directory
```

Remark: VLC is able to play also different formats. If you have 24bit or 192KHz WAV files, VLC will downsample for the supported audio format (16bit/48KHz/stereo)

**Enjoy high quality audio on Raspberry Pi with RPi-DAC.**