

How to build a Pirate Radio?

Introduction

Hacking is fun. Hardware and software tinkering in common even more! That's what the **Pirate Radio** is about. Combining a some parts with a few lines of codes and off you go to be your own radio station.

Basically the Pirate Radio is not too much of magic as it may seem at a first glance. A Raspberry Pi, a few common electronic tinker parts and a software called PiFM, enable you to air whatever content you would like to over radio waves. Low in budget, short time in realization, wast effect(s).

May be [Video Killed The Radio Star](#), however the Pirate Radio is a hackers' answer, on how to reanimate the Radio culture!



Please note, some frequencies are reserved for specific services **only**. Do not overmodule these services with the help of the Pirate Radio. Consider [4].

Parts / Tools List

Parts

Item	Quantity
Raspberry Pi (Model A or B)	1
Micro USB cable or adapter (5V 1200 mA)	1
(Micro) SD Card (8GB recommended)	1
Female Jumper Wire Connector (2.54mm)	1
Heat Shrink Wire Cable	1

Tools

Item	Quantity
Soldering Iron Station	1
AWG 12 Cooper Wire	1

Flash the SD card

Flashing the card with your favourite operating system is crucial for the radio to work, as you've probably imagined already. We recommend to install [Arch Linux](#) though. Why? Because, it's (1) light weighted, (2) well structured, (3) it has a very resourceful [wiki](#) and (4) is simply awesome.

Find the image file and installation instructions [here](#).

PiFM

Log on to your system and download the [PiFM](#) software you need to transmit your sound!

```
<sxh bash> [user@hostname ~]$ mkdir pifm; cd pifm [user@hostname ~]$ wget -no-check-certificate https://download.c3l.lu/dlbase/scripts/Pifm.tar.gz </sxh>
```

Extract the content from its archive and enter the directory.

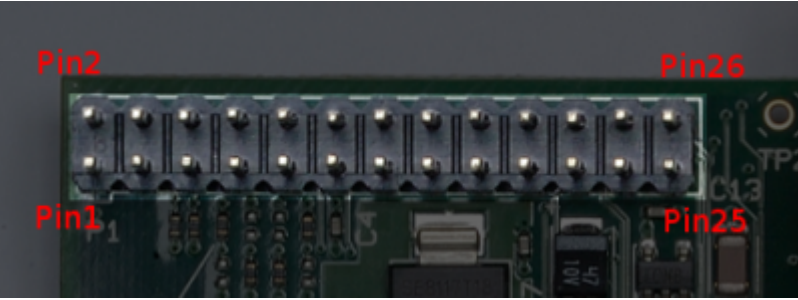
```
<sxh bash> [user@hostname ~]$ tar xfv Pifm.tar.gz </sxh>
```

Let's kick-off some waves!

```
<sxh bash; title:Playing a wav file> [user@hostname ~]$ sudo ./pifm sound.wav 103.3 22050 stereo </sxh>
```

```
<sxh bash; title:Playing a mp3 file> [user@hostname ~]$ ffmpeg -i sound.mp3 -f s16le -ar 22.05k -ac 1 - | sudo ./pifm - </sxh>
```

Increase the range



R-Pi GPIO		left	
		bottom P1-01	top P1-02
3V3 Power			
			5V Power
R1: GPIO 0 (SDA)			
R2: GPIO 2 (SDA)			5V Power
R1: GPIO 1 (SCL)			
R2: GPIO 3 (SCL)			Ground
GPIO 4 (GPCLK0)			
			GPIO 14 (TXD)
Ground			
			GPIO 15 (RXD)
GPIO 17			
			GPIO 18 (PCM_CLK)
R1: GPIO 21			
R2: GPIO 27			Ground
GPIO 22			
			GPIO 23
3V3 Power			
			GPIO 24
GPIO 10 (MOSI)			
			Ground
GPIO 9 (MISO)			
			GPIO 25
GPIO 11 (SCLK)			
			GPIO 8 (CE0)
Ground			
			GPIO 7 (CE1)
		P1-25 bottom	P1-26 top
		right	
R1: Revision 1			
R2: Revision 2			

Tuning in!

References

[0] <http://www.raspberrypi.org/>

[1] <http://makezine.com/projects/make-38-cameras-and-av/raspberry-pirate-radio/>

[2] <http://myhowtosandprojects.blogspot.com/2014/04/raspberry-pi-make-your-own-pirate-radio.html>

[3]

[4] Frequency distribution and attribution plan of Luxembourg provided by Institut Luxembourgeois de Régulation (ILR)

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Last update: **2015/07/15 21:54**

