Build Your Own Dead Streamer

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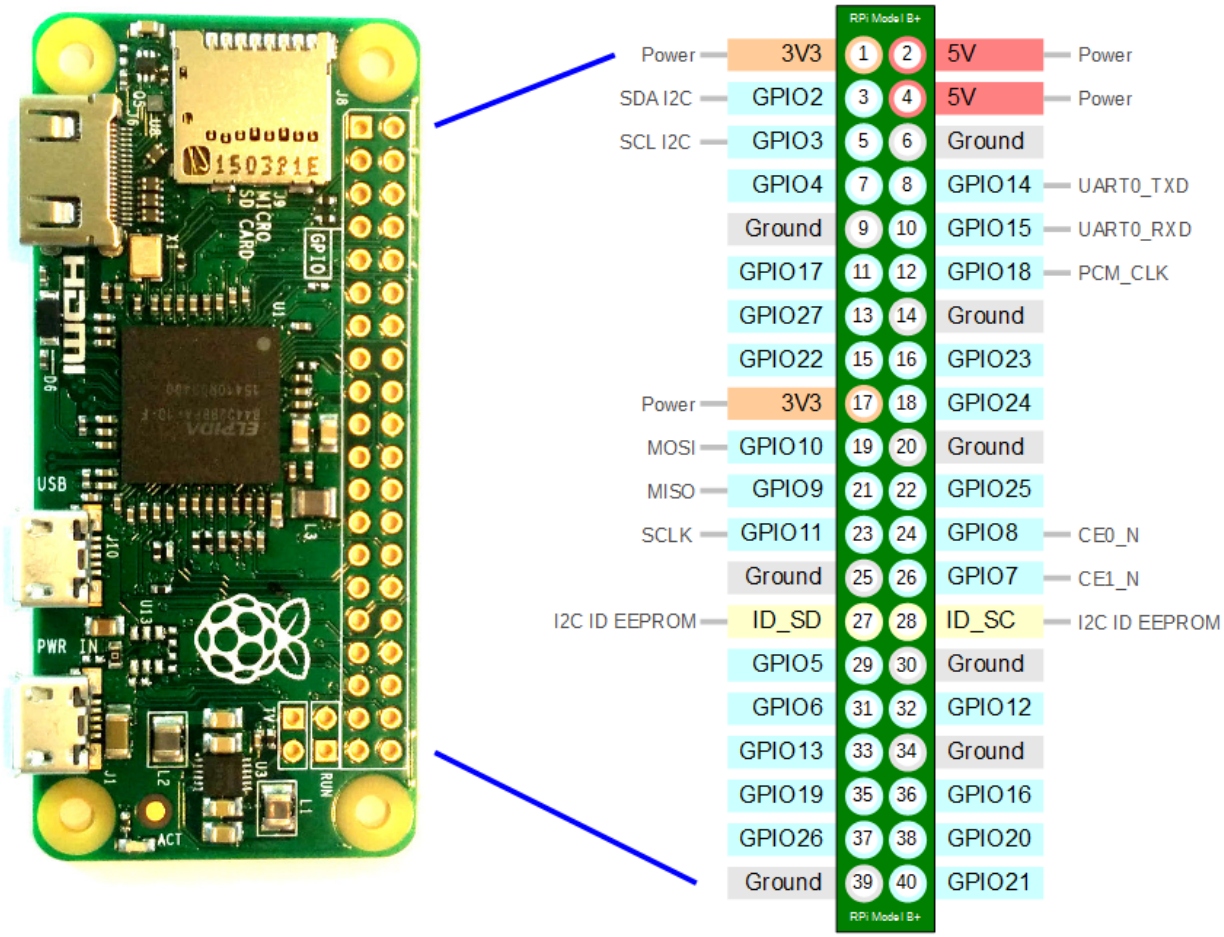
Parts List

Raspberry Pi

I used a Raspberry Pi Zero W from Amazon for $27. It is a bit sluggish, and you may want to try something more powerful, but I'm not sure if it will work.



Sound Card

[Audio DAC HAT Sound Card (Audio+) for Raspberry Pi Zero/A+ / B+ / Pi 3 : Pi 4 / Better Quality Than USB]

Cost $14.99

Knobs

WayinTop 5pcs 360 Degree Rotary Encoder Module KY-040 Brick Sensor Development Board with Push Button for Arduino. These cost about $10 for 5 knobs. You only need 3.

Second time I bought these Taiss brand knobs because they are cheaper. I haven't tested them yet.

Display

The display is tiny, 128 x 160 pixels, but that's what the software currently uses. The first display i bought was broken, but I returned it and the replacement worked.

1.8" SPI TFT LCD Display Module 3.3V 5.5V 128×160 SPI TFT LCD Serial Port Display Module ST7735 51/AVR/STM32/ARM 8/16 bit. Cost: $13.39

Screws

The screw size for the raspberry pi and the accessories is M 2.5

I bought a set of nylon screws, nuts, and standoffs on Amazon

Cables

Initially, I bought these 4 inch wires, and made everything work with them.
Antrader Breadboard Jumper Wires 40 Pin 10CM Female to Female for Raspberry Pi

Later, I got some longer cables which I will use next time around, so that I have more flexibility in placing components in the box.

Pinouts

sound card pinout

The sound card passes the RPi pins through the board. The power and ground are clearly labelled, but these are the mappings that I beeped out for the other pins.

Audio Label	Audio pin	RPi pin	GPIO
SDA	1	3	2 (SDAI2C)
SCL	2	5	3 (SCLI2C)
TX	3	8	14 (UART TX)
RX	4	10	15 (UART RX)
4	5	7	4
17	6	11	17
18	7	10	15 ??
27	8	13	27
22	9	15	22
23	10	16	23
23	11	18	24 (screen A0)
25	12	22	25 (screen reset)
MOS	13	19	10 (MOSI) (screen SDA)
MIS	14	21	9 (MISO)
CLK	15	23	11 (SCLK) (screen SCK)
CE0	16	24	8 (CE0_N) (screen CS)
CE1	17	26	7 (CE1_N)
5	18	29	5
6	19	31	6

Audio Label	Audio pin	RPi pin	GPIO
12	20	32	12
13	21	33	13
16	22	36	16
19	23	37	26
20	24	38	20
21	25	40	21 (Used by Audio Card!!!)

Pinout for screen

For device pinouts through extra boards:
https://pinout.xyz/pinout/pin24_gpio8# -- this is completely misleading, but I'll leave the link here. I just beeped out the pins using a multimeter.

device	Device Pin	GPIO pin	RPi Pin	audio pin
screen	LED	3.3V	1	3V3
screen	SCK	GPIO 11	23	15
screen	SDA	GPIO 10	19	13
screen	A0	GPIO 24	18	11
screen	RESET	GPIO 25	22	12
screen	CS	GPIO 8	24	16
screen	GND	GND	20	gnd
screen	VCC	5V	2	5V

Installing the Screen

Visiting https://learn.adafruit.com/circuitpython-on-raspberrypi-linux/installing-circuitpython-on-raspberry-pi

Next, download the raspi-blinka

```
wget https://raw.githubusercontent.com/adafruit/Raspberry-Pi-Installer-Scripts/master/raspi-blinka.py
```

Next I run raspi-blinka.py, which takes some time.

```
sudo raspi-config
```

choose Interface options and Enable SPI.

install the adafruit library

```
steve@deadstream:~/projects/deadstream $ sudo  pip install adafruit-circuitpython-rgb-display

steve@deadstream:~/projects/deadstream $ sudo apt-get install python3-pil
```

Also, download the font that we will use for the screen, which Toni uploaded to his site http://pametime.com in the 4steve link:

I saved it to font, and will put in the deadstream/

Filename is **FreeMono.ttf**

Pinouts for Knobs

My current pinout for the knobs is shown below.

These are configured in the **config.py** file in the deadstream repo.

device	device pin	GPIO pin	RPi Pin	Soundcard Pin
year	cl	GPIO 16	36	22
year	dt	GPIO 22	15	9
year	sw	GPIO 23	16	10
year	+	3V3	17	
year	gnd	gnd	39	
month	cl	GPIO 12	32	20
month	dt	GPIO 5	29	18
month	sw	GPIO 6	31	19
month	+	3V3	17	
month	gnd	gnd	39	
day	cl	GPIO 13	33	21
day	dt	GPIO 17	11	6
day	sw	GPIO 27	13	8
day	+	3V3	17	

device	device pin	GPIO pin	RPi Pin	Soundcard Pin
day	gnd	gnd	39	