

# Music Player Moode

## Hardware

Raspberry Pi Zero W	
Pimoroni Pirate Audio (Headphone)	<a href="https://shop.pimoroni.com/products/pirate-audio-headphone-amp">https://shop.pimoroni.com/products/pirate-audio-headphone-amp</a>
Pimoroni Pirate Audio Case w/ Buttons	<a href="https://www.thingiverse.com/thing:5245754">https://www.thingiverse.com/thing:5245754</a>
Pimoroni Pirate Audio Case orig w/o Buttons	<a href="https://www.printables.com/en/model/85009-pimoroni-pirate-audio-case">https://www.printables.com/en/model/85009-pimoroni-pirate-audio-case</a>
Pimoroni Pirate Audio Case angled base	<a href="https://www.thingiverse.com/thing:5248110">https://www.thingiverse.com/thing:5248110</a>
Pimoroni Pirate Audio Case open angled base	<a href="https://www.thingiverse.com/thing:4420857">https://www.thingiverse.com/thing:4420857</a>
Alternative case ideas	<a href="https://www.yeggi.com/q/pimoroni+pirate+audio/">https://www.yeggi.com/q/pimoroni+pirate+audio/</a>
External passive speakers with 3.5mm plug	
3.5mm Headphone Volume Control	<a href="https://smile.amazon.co.uk/gp/product/B00Y1MYSYW/">https://smile.amazon.co.uk/gp/product/B00Y1MYSYW/</a>

[pirateaudio\\_with\\_buttons\\_base\\_-\\_no\\_holes.stl](#) [pirateaudio\\_with\\_buttons\\_top\\_-\\_no\\_holes.stl](#)  
[pirateaudiobutton.stl](#)

## System installation 8.3.0

Download Moode ISO <https://moodeaudio.org/>

```
https://github.com/moode-player/moode/releases/download/r830prod/image_2023-03-14-moode-r830-arm64-lite.zip
```

Main install instructions with reference to auto-install:

<https://github.com/moode-player/moode/blob/master/www/setup.txt>

Then flash using Balena Etcher or similar, for Belana, unzipping is not required!

<https://www.balena.io/etcher/>

```
sudo apt-get install balena-etcher-electron
```

```
sudo apt-get install debian-keyring debian-archive-keyring apt-transport-https ca-certificates gnupg
curl -1sLf
"https://dl.cloudsmith.io/public/balena/etcher/gpg.70528471AFF9A051.key" |
sudo apt-key add
cat <<EOF | sudo tee /etc/apt/sources.list.d/balena-etcher.list
# Source: Cloudsmith (support@cloudsmith.io)
# Repository: balena / etcher
```

```
# Description: Flash OS images to SD cards & USB drives, safely and easily.
deb https://dl.cloudsmith.io/public/balena/etcher/deb/ubuntu focal main
deb-src https://dl.cloudsmith.io/public/balena/etcher/deb/ubuntu focal main
EOF
sudo apt-get update
sudo apt-get install balana-etcher-electron
```

Mount the SDCard which will make the boot partition accessible Copy the file /boot/moodecfg.ini.default to your PC, Mac or Linux client Rename it to moodecfg.ini Edit the settings as needed (wlan, country, volume steps, etc) Copy moodecfg.ini to /boot/

SSH Server enabled by default: username: pi password: moodeaudio

moodecfg adjustments for UK and personal preferences:

### [moodecfg.ini](#)

```
timezone = "Europe/London"
keyboard = "gb"

p3bt = "0"

replaygain = "track"

volume_normalization = "yes"

volume_step_limit = "2"

wlanssid = "xxx"
wlanpwd = "xxx"
wlancountry = "GB"

first_use_help = "No"
```

Config.txt adjustments for Pirate Audio on PiZeroW

### [/boot/config.txt](#)

```
[pi0]
# Disable the ACT LED on the Pi 1 and Zero
dtparam=act_led_trigger=none
dtparam=act_led_activelow=on

[cm4]
otg_mode=1

[pi4]
hdmi_force_hotplug:0=1
hdmi_force_hotplug:1=1
```

```
[all]
#Disable boot splash screen
disable_splash=1
disable_overscan=1
hdmi_drive=2
#Disable HDMI on boot
hdmi_blanking=2
hdmi_force_edid_audio=1
hdmi_force_hotplug=1
hdmi_group=1
# Uncomment some or all of these to enable the optional hardware
interfaces
dtparam=i2c_arm=on
dtparam=i2s=on
#Switch off onboard audio
dtparam=audio=off
#dtoverlay=disable-wifi
dtoverlay=disable-bt

#Configure Pimoroni Pirate audio DAC
dtoverlay=i2s-mmap
dtoverlay=hifiberry-dac
gpio=25=op,dh

#Enable SPI for display of Pimoroni Pirate Audio
dtparam=spi=on

#Set GPU memory to lowest value in /boot/config.txt:
gpu_mem=16
```

possible further requirement for HDMI: Disable HDMI port on boot (power saving during headless operation) `/usr/bin/tvservice -o (-p to re-enable)` Add the line to `/etc/rc.local` to disable HDMI on boot.

Now insert the SD-Card into the Pi and power it up. Then connect to web interface via <http://moode/> or IP if known.

Configure Moode: Audio Config: "HiFiBerry DAC" or "Pimoroni pHAT DAC" System: Disable ACT LED, Disable HDMI Enable GPIO button handler and set to: four buttons, active low connected to BCM 5, 6, 16, and 24 (A, B, X, Y respectively). Replace all spaces with commas in the command. See <http://moodeaudio.org/forum/showthread.php?tid=1381&page=2&highlight=gpio>

```
BTN1: 5 mpc,toggle
BTN2: 6 /var/www/vol.sh,-dn,5
BTN3: 16 mpc,next
BTN4: 24 /var/www/vol.sh,-up,5
Debounce 1000ms

#mpc,volume,-5
#mpc,volume,+5
#/var/www/vol.sh,-mute
```

Configure vi via ssh:

```
vi ~/.vimrc
```

```
set tabstop=4  
set shiftwidth=4  
set softtabstop=4  
set expandtab  
set nocompatible
```

Remove Bluetooth config in Moode main menu when not in use:

```
sudo vi /var/www/header.php
```

remove line referencing 'blu-config.php'

## Pirate Audio TFT Cover Art v0.0.6

<https://github.com/rusconi/TFT-MoodeCoverArt> fork: <https://github.com/pachisb/TFT-MoodeCoverArt>

Note: 16-25% CPU usage on RPI-0w !

Enable Metadata file in System → Local Services in moode.

```
#enable spi if not already enabled  
sudo raspi-config  
sudo reboot
```

```
sudo apt-get update  
sudo apt-get install git python3-rpi.gpio python3-spidev python3-pip  
python3-pil python3-numpy libatlas-base-dev  
sudo pip3 install mediafile pyyaml RPI-ST7789  
cd /home/pi  
git clone https://github.com/rusconi/TFT-MoodeCoverArt.git  
cd TFT-MoodeCoverArt/  
vi config.yml  
chmod 777 *.sh  
  
#test  
python3 tft_moode_coverart.py  
#if it works, install service  
./install_service.sh
```

Bugfix: Wrap mf = MediaFile(fp) section in try/except and indent it

[tft\\_moode\\_coverart.py](#)

```
else:
```

```

    if 'file' in metaDict:
        if len(metaDict['file']) > 0:

            fp = '/var/lib/mpd/music/' + metaDict['file']
            try:
                mf = MediaFile(fp)
                if mf.art:
                    cover = Image.open(BytesIO(mf.art))
                    return cover
                else:
                    for it in covers:
                        cp = os.path.dirname(fp) + '/' + it
                        if path.exists(cp):
                            cover = Image.open(cp)
                            return cover

            except:
                pass

    return cover

```

IP Address mod:

```

#add to top
import socket

#add before 'def main():'
def get_ip():
    s = socket.socket(socket.AF_INET, socket.SOCK_DGRAM)
    try:
        # doesn't even have to be reachable
        s.connect(('10.255.255.255', 1))
        IP = s.getsockname()[0]
    except Exception:
        IP = '127.0.0.1'
    finally:
        s.close()
    return IP

# add in def main(): after variable initialisation
#get ip address, add to image and show on display
ip = get_ip()
draw.rectangle((0,0,240,240), fill=(0,0,0))
txt = f"Visit http://{ip} to select content."
mlw, mlh = draw.multiline_textsize(txt, font=font_m, spacing=4)
draw.multiline_text(((WIDTH-mlw)//2, 20), txt, fill=(255,255,255),
font=font_m, spacing=4, align="center")
disp.display(img)

```

Service

## [/lib/systemd/system/tft-moodecoverart.service](#)

```
[Unit]
Description=TFT-MoodeCoverArt Display
Requires=mpd.socket mpd.service
After=mpd.socket mpd.service

[Service]
Type=simple
ExecStart=/home/pi/TFT-MoodeCoverArt/tft-moodecoverart.py &
ExecStartPre=/bin/sleep 15
#ExecStop=/home/pi/TFT-MoodeCoverArt/tft-moodecoverart.sh -q
ExecStop=/home/pi/TFT-MoodeCoverArt/shutdown.py &
Restart=on-abort
StandardOutput=syslog
StandardError=syslog

[Install]
WantedBy=multi-user.target
```

## Boot logo on PirateAudio

### [/home/pi/TFT-MoodeCoverArt/boot.py](#)

```
#!/usr/bin/env python3

import time
from PIL import ImageFont, Image, ImageDraw
import os
import ST7789
import sys

# get the path of the script
script_path = os.path.dirname(os.path.abspath(__file__))
# set script path as current directory
os.chdir(script_path)

# Create ST7789 LCD display class.
disp = ST7789.ST7789(
    rotation=90, # Needed to display the right way up on Pirate Audio
    port=0,      # SPI port
    cs=1,        # SPI port Chip-select channel
    dc=9,        # BCM pin used for data/command
    backlight=13,
    spi_speed_hz=80 * 1000 * 1000
)
```

```
# Initialize display.
disp.begin()

WIDTH = 240
HEIGHT = 240
font_s = ImageFont.truetype(script_path + '/fonts/Roboto-Medium.ttf',
20)
font_m = ImageFont.truetype(script_path + '/fonts/Roboto-Medium.ttf',
24)
font_l = ImageFont.truetype(script_path + '/fonts/Roboto-Medium.ttf',
30)

def bootmessage():
    print('bootmessage called')
    disp.set_backlight(True)
    img = Image.new('RGBA', (240, 240), color=(0, 0, 0, 25))
    img = Image.open('images/default-cover-v6.jpg')
    draw = ImageDraw.Draw(img, 'RGBA')
    message = 'booting ...'
    draw.text((10, 200), message, font=font_m, fill=(255, 255, 255))
    disp.display(img)
    sys.exit()

try:
    bootmessage()
except SystemExit:
    print('Systemexit called')
    pass
```

```
chmod 755 /home/pi/TFT-MoodeCoverArt/boot.py
```

[/lib/systemd/system/tft-boot.service](#)

```
[Unit]
Description=TFT Boot Message
Before=basic.target
After=local-fs.target sysinit.target
DefaultDependencies=no

[Service]
Type=oneshot
ExecStart=/home/pi/TFT-MoodeCoverArt/boot.py

[Install]
WantedBy=basic.target
```

```
systemctl enable tft-boot
```

## Pirate Audio Cover related links

<https://github.com/pimoroni/pidi/blob/master/pidi/client.py>  
[https://github.com/pimoroni/pidi-plugins/blob/master/pidi-display-pil/pidi\\_display\\_pil/\\_\\_init\\_\\_.py](https://github.com/pimoroni/pidi-plugins/blob/master/pidi-display-pil/pidi_display_pil/__init__.py)  
[https://github.com/pimoroni/pidi-plugins/blob/master/pidi-display-pil/pidi\\_display\\_pil/\\_\\_init\\_\\_.py](https://github.com/pimoroni/pidi-plugins/blob/master/pidi-display-pil/pidi_display_pil/__init__.py)  
<https://github.com/pimoroni/st7789-python> <https://github.com/pimoroni/pidi-spotify>  
<https://github.com/pimoroni/pirate-audio/issues/17>  
[https://github.com/pimoroni/mopidy-pidi/blob/master/mopidy\\_pidi/frontend.py](https://github.com/pimoroni/mopidy-pidi/blob/master/mopidy_pidi/frontend.py)  
<https://github.com/pimoroni/pirate-audio/blob/master/examples/backlight-pwm.py>  
<https://github.com/AnonTester/TFT-MoodeCoverArt>  
<http://moodeaudio.org/forum/showthread.php?tid=2210>

<https://ideatrash.net/2020/06/simple-smart-playlists-for-mpd-that-work.html>  
<https://bbs.archlinux.org/viewtopic.php?id=76385>

<https://github.com/Ax-LED/volumio-pirate-audio>

## Long Button Press MOD

Adjust gpio-buttons.py script as per following example for first configured button:

[/var/www/daemon/gpio\\_buttons.py](/var/www/daemon/gpio_buttons.py)

```
if str(row['id']) == '1' and row['enabled'] == '1':
    sw_1_pin = int(row['pin'])
    sw_1_cmd = row['command'].split(',')
    sw_1_cmd = [x.strip() for x in sw_1_cmd]
    sw_1_cmd_2 = ["/var/www/command/sleeptimer.php","1800"]
    sw_1_cmd_3 = ["/var/www/command/sleeptimer.php","3600"]
    GPIO.setup(sw_1_pin, GPIO.IN, pull_up_down=GPIO.PUD_UP)

def sw_1_event(channel):
    start_time = time.time()
    time.sleep(0.005) # edge debounce of 5 ms
    # only deal with valid edges
    while GPIO.input(channel) == 0: # wait for button up
        pass
    buttonTime = time.time() - start_time #calc button press
    print('time ' + str(buttonTime))
    #if GPIO.input(channel) == 1:
    if buttonTime < 2:
        print('short press')
        subprocess.call(sw_1_cmd)
    elif 2 <= buttonTime < 4: # long press
        print('long press')
```

```

        subprocess.call(sw_1_cmd_2)
    elif buttonTime > 4: # very long press
        print('very long press')
        subprocess.call(sw_1_cmd_3)

    GPIO.add_event_detect(sw_1_pin, GPIO.FALLING,
callback=sw_1_event, bouncetime=bounce_time)
    print(str(datetime.datetime.now())[:19] + ' sw_1: pin=' +
          str(sw_1_pin) + ', enabled=' + row['enabled'] +
          ', bounce_time=' + str(bounce_time) + ', cmd=' +
row['command'])

```

</var/www/command/sleeptimer.php>

```

#!/usr/bin/php
<?php
# Config values
$fadlength=5; #the duration of the fade out in seconds
$steptime=0.5; #the amount in seconds of each step

if($argc<2 || !isset($argv[1])) {
    echo "This script is a sleep timer to stop playback after a
while.\n";
    echo "You need to pass the amount of seconds to sleep to this
script!\n";
    echo "To stop playback after an hour use:\n".$argv[0]." 3600\n";
    exit;
}

sleep($argv[1]);

$currentvolume=filter_var(exec('/usr/bin/mpc volume'),
FILTER_SANITIZE_NUMBER_INT);
echo "Current volume: $currentvolume\n";
$stepamount = $fadlength/$steptime;
$stepadjust = floor($currentvolume/$stepamount);

for ( $i=1; $i<=$stepamount; $i++ ) {
    $vol = exec('/usr/bin/mpc volume -'.$stepadjust);
    echo "Volume adjusted to ".$vol."\n";
    usleep ($steptime*1000000);
}

echo "Stopping playback\n";
exec('/usr/bin/mpc stop');

sleep(1);
# Resetting volume
exec('/usr/bin/mpc volume '.$currentvolume);

```

```
echo "Resetting volume to $currentvolume\n";
```

```
sudo chmod 755 /var/www/command/sleeptimer.php  
sudo killall -9 gpio_buttons.py  
sudo /var/www/daemon/gpio_buttons.py &
```

Other notes:

```
#  
https://learn.pimoroni.com/tutorial/sandyj/getting-started-with-pirate-audio  
  
#This will install python3 pip,wheel and pirate audio modules  
#Then add mopidy apt sources and install mopidy including mopidy-spotify  
#Then install mopidy-iris web interface and Pirate Audio plugins  
#And create system service to autostart mopidy  
  
SMB mount the manual way (/etc/rc.local or /etc/fstab):  
#Note experiment with rsize=61440 option and/or use nounix mount option  
//192.168.1.6/music /media/music cifs  
username=media,password=media,iocharset=utf8,noperm,file_mode=0644,dir_mode=  
0755,users,rsize=61440,nounix 0 0  
  
sudo mkdir /media/music
```

## Moode tips

<http://moodeaudio.org/forum/showthread.php?tid=803> MPD settings /etc/mpd.conf that control whether to automatically update the database when files are changed. Refer to this link <https://github.com/MusicPlayerDaemon/MPD/blob/master/doc/mpd.conf.5> for information.

auto\_update [yes or no] This specifies the whether to support automatic update of music database when files are changed in music\_directory. The default is to disable autoupdate of database.

auto\_update\_depth [N] Limit the depth of the directories being watched, 0 means only watch the music directory itself. There is no limit by default.

in mean time you can ssh to moode and use this to add n last days

.bash\_profile

```
function add-recents {  
    find /media -type f -mtime -$1 | sed 's/\/media/USB/g' | mpc add  
}
```

then 'add-recents 60' adds last 60 days off music

Library update: <http://moode/command/?cmd=libupd-submit.php> or

```
php /var/www/libupd-submit.php
```

instead of mpc commands, it should update MPD and covers.

You also can clear the library cache after the update:

```
mpc -w update  
truncate /var/local/www/libcache.json --size 0
```

## Add/Remove Radio Stations

GUI interface to add radio stations via + icon in radio interface.

Radio stations are stored as .pls files in /var/lib/mpd/music/RADIO

Station logos are stored with same name as pls file in:

```
/var/local/www/imagesw/radio-logos/Absolute Classic Rock.jpg  
/var/local/www/imagesw/radio-logos/thumbs/Absolute Classic Rock_sm.jpg  
/var/local/www/imagesw/radio-logos/thumbs/Absolute Classic Rock.jpg
```

```
file "/var/local/www/imagesw/radio-logos/Absolute Classic Rock.jpg"  
/var/local/www/imagesw/radio-logos/Absolute Classic Rock.jpg: JPEG image  
data, JFIF standard 1.01, aspect ratio, density 1x1, segment length 16,  
baseline, precision 8, 225x225, components 3
```

```
file "/var/local/www/imagesw/radio-logos/thumbs/Absolute Classic  
Rock_sm.jpg"  
/var/local/www/imagesw/radio-logos/thumbs/Absolute Classic Rock_sm.jpg: JPEG  
image data, JFIF standard 1.01, resolution (DPI), density 96x96, segment  
length 16, comment: "CREATOR: gd-jpeg v1.0 (using IJG JPEG v62), quality =  
75", baseline, precision 8, 80x80, components 3
```

```
file "/var/local/www/imagesw/radio-logos/thumbs/Absolute Classic Rock.jpg"  
/var/local/www/imagesw/radio-logos/thumbs/Absolute Classic Rock.jpg: JPEG  
image data, JFIF standard 1.01, resolution (DPI), density 96x96, segment  
length 16, comment: "CREATOR: gd-jpeg v1.0 (using IJG JPEG v62), quality =  
75", baseline, precision 8, 200x200, components 3
```

Example pls file:

[/var/lib/mpd/music/RADIO/Absolute Classic Rock.pls](#)

```
[playlist]  
File1=https://stream-ar.planetradio.co.uk/absoluteclassicrock.mp3?direc  
t=true  
Title1=Absolute Classic Rock  
Length1=-1  
NumberOfEntries=1
```

Version=2

## MPD Playlist Folder

/var/lib/mpd/playlists/

Generate playlists of recent music

[~/newm3u.sh](#)

```
#!/bin/bash
base_dir=/mnt/
music_dir=NAS/music/other/deemix\ Music/
playlistweek=/var/lib/mpd/playlists/New\ last\ week.m3u
playlistmonth=/var/lib/mpd/playlists/New\ last\ month.m3u
playlist2month=/var/lib/mpd/playlists/New\ last\ 2\ months.m3u

if [ "$base_dir$music_dir" -nt "$playlist" ] || [ ! -f "$playlist" ];
then
    cd $base_dir
    find "$music_dir" -type f -mtime -7 -iname "*.mp3" -o -iname "*.ogg"
> "$playlistweek"
fi

if [ "$base_dir$music_dir" -nt "$playlist" ] || [ ! -f "$playlist" ];
then
    cd $base_dir
    find "$music_dir" -type f -mtime -31 -iname "*.mp3" -o -iname "*.ogg"
> "$playlistmonth"
fi

if [ "$base_dir$music_dir" -nt "$playlist" ] || [ ! -f "$playlist" ];
then
    cd $base_dir
    find "$music_dir" -type f -mtime -61 -iname "*.mp3" -o -iname "*.ogg"
> "$playlist2month"
fi
```

```
chmod 755 ~/newm3u.sh
```

## Github projects

<https://github.com/TestDotCom/pirateplayer>

<https://github.com/Bit-River/Home-Assistant-Gadget-using-Pirate-Audio>

<https://github.com/kenhayward/PirateAudio> <https://github.com/duracell80/PirateAudio-MPD>

<https://github.com/hakutai/PirateAudioVolumio>  
<https://github.com/createcodeandgo/audiobookplayer/tree/main/player>  
<https://github.com/placebo83/pirate-audio/blob/master/test.py>  
<https://raw.githubusercontent.com/jbenc/kodi-pirate-audio/master/script.service.pirate-audio/resources/lib/main.py> [https://github.com/mtbkapp/kids\\_pirate\\_audio](https://github.com/mtbkapp/kids_pirate_audio)  
[https://github.com/Zurga/pimoroni\\_pirate\\_audio](https://github.com/Zurga/pimoroni_pirate_audio) <https://github.com/traveltrousers/pirate-audio-buttons>  
<https://github.com/tiradoe/pirate-audio-display>  
<https://github.com/DrewBatchelor/Pirate-Audio-Volumio-box>  
<https://github.com/promethee/pimoroni.pirate-audio.dual-mic>  
  
<https://www.bluetin.io/displays/simulate-oled-lcd-display-pc-pil-opencv/>

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<http://wuff.dyndns.org/> - **Wulf's Various Things**

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