3D Print Ratcatcher 2 Controller Device

Created by Ruiz Brothers

https://learn.adafruit.com/3d-print-ratcatcher-2-controller-device-wand

Last updated on 2021-11-15 08:27:23 PM EST
# Table of Contents

## Overview
- CircuitPython Powered 3
- Rechargeable 4
- Parts 4
- 3D Printed 4

## CircuitPython
- Install or update CircuitPython! 7
- Further Information 8

## Code
- Coding Circuit Playground Express 9
- Upload the Code and Libraries to the Circuit Playground Express 9

## 3D Printing
- Parts List 10
- Slicing Parts 11
- Supports 11

## Assemble
- Handle Screws 12
- Pommel 12
- Collet wires 13
- Attach CPX mount 13
- Domes 14
- Frames 14
- Battery 15
Overview

In this project we’re making Rat Catchers Communicator from The Suicide Squad.

The Rat Communicator is a device used by Ratcatcher to control and manipulate swarms of rats.

We were inspired by The Suicide Squad to 3D print the device and light it up with an Adafruit Circuit Playground Express.

CircuitPython is great for beginners who are looking to use NeoPixels color LED lights in their cosplay projects!

CircuitPython Powered

With the LED animation library, you can experiment with different effects using demo code.

With CircuitPython you can quickly make changes and see your projects update in real time on just about any computer.

The parts are 3d printed using different colors of filament. The various pieces are joined together with some hardware screws.
Rechargeable
Easily power up the wand with an Adafruit Micro-Lipo Charger!

Simply plug it via USB cable into a USB port and our Cylindrical rechargeable battery into the JST plug on the other end. There are two LEDs - one red and one green. While charging, the red LED is lit. When the battery is fully charged and ready for use, the green LED turns on. Seriously, it could not get more easy!

Parts

Components are housed in the handle and dome. The built-in LEDs on the Circuit Playground illuminate the dome and the battery is stored inside the handle.

3D Printed

The parts are 3D Printed with an easy to assemble parts.

Circuit Playground Express
Circuit Playground Express is the next step towards a perfect introduction to electronics and programming. We've taken the original Circuit Playground Classic and...
https://www.adafruit.com/product/3333
Lithium Ion Cylindrical Battery - 3.7v 2200mAh
Need a big battery for your project? This lithium-ion battery contains a 2200mAh and a protection circuit that provides over-voltage, under-voltage, and over-current protection. Yet,...
https://www.adafruit.com/product/1781

JST-PH Battery Extension Cable - 500mm
By popular demand, we now have a handy extension cord for all of our JST-terminated battery packs (such as our Lilon/LiPoly and 3xAAA holders). One end has a JST-PH socket, and the...
https://www.adafruit.com/product/1131

Adafruit Micro-Lipo Charger for LiPo/Lilon Batt w/MicroUSB Jack
Oh so handy, this little lipo charger is so small and easy to use you can keep it on your desk or mount it easily into any project! Simply plug it via any MicroUSB cable into a USB...
https://www.adafruit.com/product/1904

Pink and Purple Woven USB A to USB C Cable - 1 meter long
This cable is not only super-fashionable, with a woven pink and purple Blinka-like pattern, it’s also made for USB C for our modernized breakout boards, Feathers, and...
https://www.adafruit.com/product/5153
Adafruit Micro-Lipo Charger for LiPoly Batt with USB Type C Jack
Oh so handy, this little lipo charger is so small and easy to use you can keep it on your desk or mount it easily into any project! Simply plug it via any USB C cable into a USB port...
https://www.adafruit.com/product/4410

Pink and Purple Woven USB A to USB C Cable - 2 meters long
This cable is not only super-fashionable, with a woven pink and purple Blinka-like pattern, it's also made for USB C for our modernized breakout boards, Feathers and more.
https://www.adafruit.com/product/5044

Black Nylon Machine Screw and Stand-off Set – M2.5 Thread
Totaling 380 pieces, this M2.5 Screw Set is a must-have for your workstation. You'll have enough screws, nuts, and hex standoffs to fuel your maker...
https://www.adafruit.com/product/3299

---

CircuitPython

As we continue to develop CircuitPython and create new releases, we will stop supporting older releases. If you are running an older version of CircuitPython, you need to update. Click the button below to download the latest!
Install or update CircuitPython!

Follow this quick step-by-step for super-fast Python power :)

Download the latest version of CircuitPython for this board via CircuitPython.org

https://adafruit.it/cp-cpx

Click the link above and download the latest UF2 file

Download and save it to your Desktop (or wherever is handy)

Plug your Circuit Playground Express into your computer using a known-good USB cable

A lot of people end up using charge-only USB cables and it is very frustrating! So make sure you have a USB cable you know is good for data sync

Double-click the small Reset button in the middle of the CPX, you will see all of the LEDs turn green. If they turn all red, check the USB cable, try another USB port, etc.

(If double-clicking doesn't do it, try a single-click!)
You will see a new disk drive appear called CPLAYBOOT

Drag the adafruit-circuitpython-etc...uf2 file onto it

The CPLAYBOOT drive will disappear and a new disk drive will appear called CIRCUITPY

That's it! You're done :)

Further Information

For more detailed info on installing CircuitPython, check out Installing CircuitPython (https://adafruit.it/Amd).
Code

Coding Circuit Playground Express

Once you've finished setting up your Circuit Playground Express with CircuitPython, you can access the code and necessary libraries by downloading the Project Bundle.

To do this, click on the Download Project Bundle button in the window below. It will download as a zipped folder.

```python
import board
import neopixel
from adafruit_led_animation.animation.pulse import Pulse
from adafruit_led_animation.color import WHITE

# Update to match the pin connected to your NeoPixels
pixel_pin = board.NEOPIXEL
# Update to match the number of NeoPixels you have connected
pixel_num = 10

pixels = neopixel.NeoPixel(pixel_pin, pixel_num, brightness=0.8, auto_write=False)
pulse = Pulse(pixels, speed=0.05, color=WHITE, period=5)

while True:
    pulse.animate()
```

Upload the Code and Libraries to the Circuit Playground Express

After downloading the Project Bundle, plug your Circuit Playground Express into the computer USB port. You should see a new flash drive appear in the computer's File Explorer or Finder (depending on your operating system) called CIRCUITPY. Unzip the folder and copy the following items to the Circuit Playground Express CIRCUITPY drive.

Your Circuit Playground Express CIRCUITPY drive should look like this after copying the lib folder and the code.py file.
3D Printing

Parts List
STL files for 3D printing are oriented to print "as-is" on FDM style machines. Original design source may be downloaded using the links below.

- Rat-Wand-handle
- Rat-Wand-pommel
- Rat-Wand-collet
- Rat-Wand-CPX-mount
- Rat-Wand-button-screw
- Rat-Wand-button-top
- Rat-Wand-box-button
- Rat-Wand-frame-btm
- Rat-Wand-frame-top
- Rat-Wand-sphere-half

Download the STLs
https://adafruit.it/UBx

Edit Design
https://adafruit.it/UBy
Slicing Parts

Supports are required. Slice with setting for PLA material.

The parts were sliced using CURA using the slice settings below.

- PLA filament 220c extruder
- 0.2 layer height
- 10% gyroid infill
- 60mm/s print speed
- 60c heated bed

Supports

- Support Extrusion Width: .2
- Support Density: 4%
- Support Z Height: .21
- Interface: On
- Support Roof: On
- Support Pattern: Zig Zag
- Support Roof Pattern: Zig Zag
Assemble

Handle Screws

Use 2.5x5mm long screws to attach the printed faux "screws" to the sides of the handle.

Fasten the M2.5 screws to the printed faux "screws" and then fasten to the handle as seen in the picture.

The two bottom screw hole are for the attaching the pommel.

Pommel

Attach the pommel to the end of the handle with two M2.5x5mm long screws on each side of the handle.
Collet wires

Thread the JST Extension wire through the two holes around the center of the collet as shown.

Pass the jack end of the JST through the center.

Loop the socket end of the JST wire out of the one of the holes on the collet.

Attach CPX mount

Fasten the Circuit Playground mount to the end of the collet with three M2.5x6mm long screws.

Connect the jack end of the JST extension wire to the Circuit Playground.

Attach the Circuit Playground to the mount with M3x5mm screws.
Domes

Align the screw holes on the handle to the screw holes on each dome and then fasten with M2.5x6mm long screws.

Frames

Insert the two frame parts into the collet and then over each dome.

Use M2.5x5mm long screws to attach both frames together.

The excess JST wires wrap around the base of the frame and hidden around the collet.
Battery

Insert the cylindrical battery into the handle with the wires faces outward.

Pass the battery wire through one of the holes inside the collet.

Fasten the handle to the collet with two M2.5x6mm long screws.

To turn it on, just connect the battery cable to the JST extension and that’s it!

We hope this inspires you to use CircuitPython in your cosplay projects and check out Adafruit’s Circuit Playground Express.