

## STM32F405\_load\_CircuitPython\_Macintosh\_OSX

Hello and welcome to STELLA!

These instructions will guide you to install the CircuitPython system on a Adafruit Feather STM32F405 microcontroller. If you are using a SparkFun Thing Plus RP2040 microcontroller, stop here and switch to the instructions specific for that microcontroller.

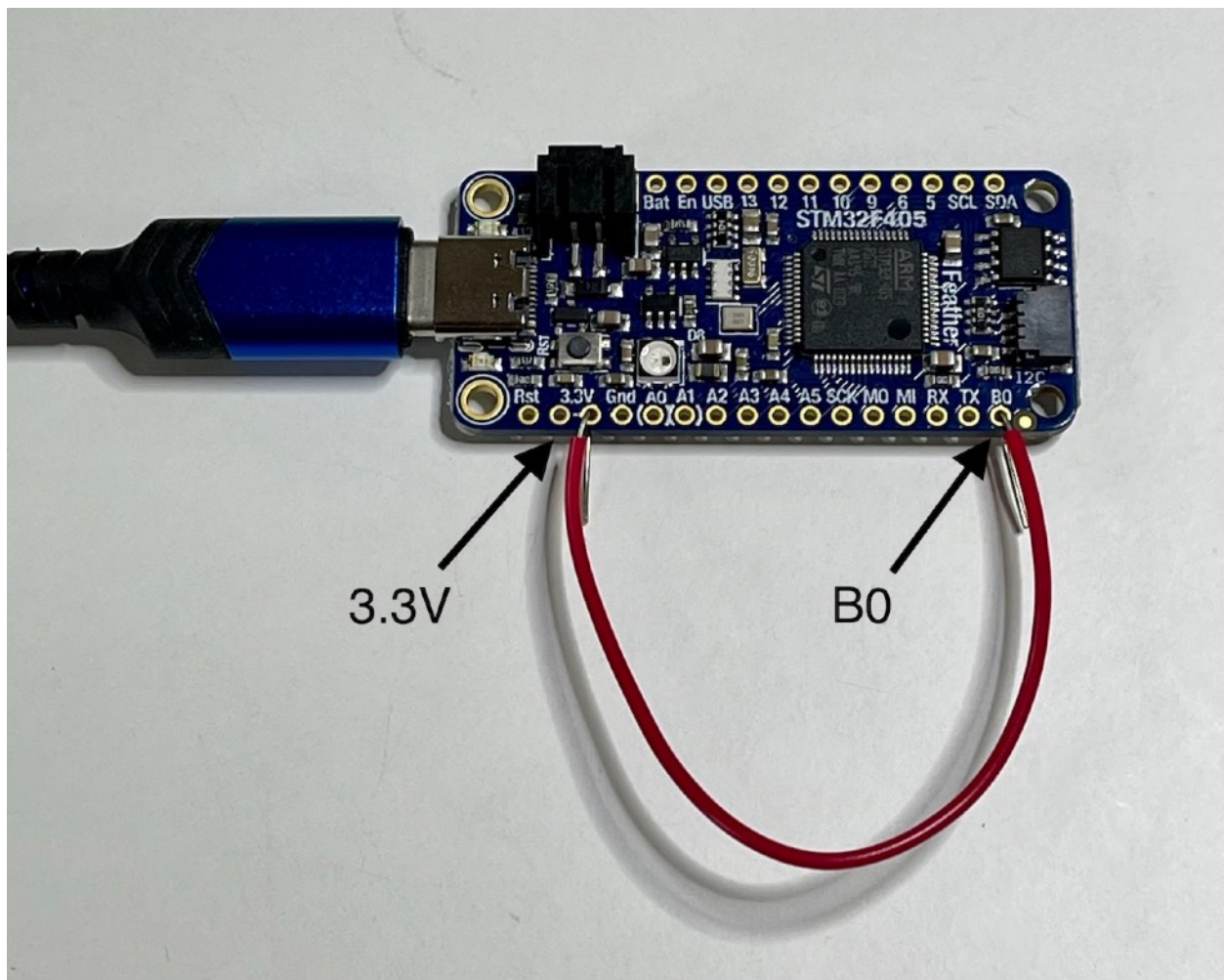
Loading CircuitPython onto this microcontroller requires some attention to detail.

### Loading CircuitPython using Macintosh OSX:

(If you are using a PC computer running Microsoft Windows, do not use these instructions. Follow the instructions in the STM32F405\_load\_CircuitPython\_Microsoft\_Windows file.)

We're following the instructions on this webpage: <https://learn.adafruit.com/adafruit-stm32f405-feather-express/dfu-bootloader-details>

With the microcontroller disconnected from the computer, use a piece of wire to temporarily connect the B0 via to the 3.3V via. When plugged in, the microcontroller powers up into bootloader mode.



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Once it's powered up, check that the bootloader appears in the device listing:

Click on the Apple icon on the upper left of the screen.

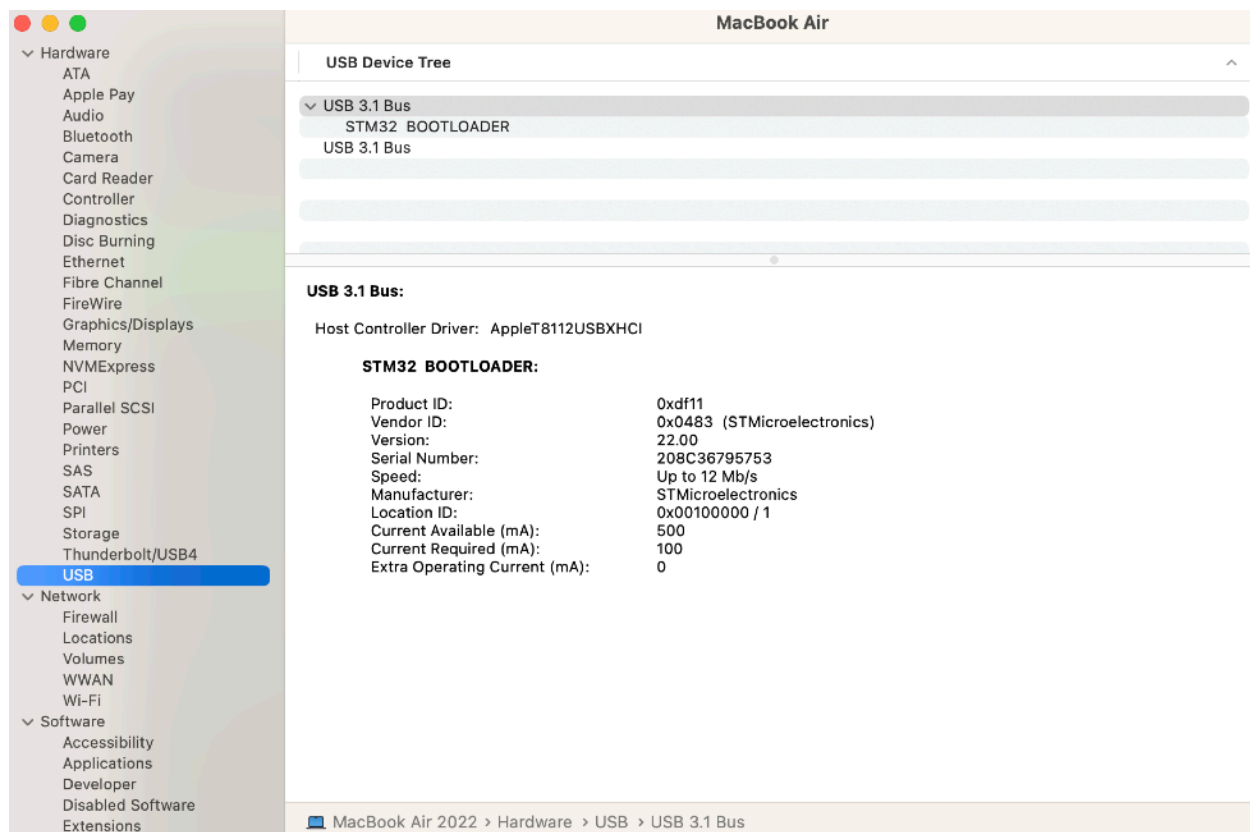
Choose: About this Mac

Choose: More Info

Choose: General, scroll down to choose System Report

Choose: USB

Confirm that the STM32 BOOTLOADER shows in the USB device tree.



Check that you have HomeBrew installed:

Applications, Utilities, Terminal

% brew -v

if you have brew, the response will be something similar to this:

Homebrew 3.6.etc

if you don't, the response will be that no brew is found.

If brew is not found, install it:

To install Homebrew, we will use the command:

% /bin/bash -c "\$(curl -fsSL <https://raw.githubusercontent.com/Homebrew/install/HEAD/install.sh>)"

which we find at the Homebrew source webpage: <https://brew.sh>

The system will ask for your password, since you need Super User access to install Brew. ("sudo")

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==> This script will install:

```
/opt/homebrew/bin/brew
/opt/homebrew/share/doc/homebrew
/opt/homebrew/share/man/man1/brew.1
/opt/homebrew/share/zsh/site-functions/_brew
/opt/homebrew/etc/bash_completion.d/brew
/opt/homebrew
```

Press enter to accept this installation.

We need one more preparatory step before we can install CircuitPython. Install the DFU utility with the following command:

```
% brew install dfu-util
```

Now that we have Brew and DFU installed, we can install the binary file ("BIN") that puts CircuitPython on the microcontroller.

Get the CircuitPython file from this webpage: [https://circuitpython.org/board/feather\\_stm32f405\\_express/](https://circuitpython.org/board/feather_stm32f405_express/)

Download the latest BIN file.

Move that file from Downloads into the directory you are running terminal in.

Run this command in terminal, replacing the "firmware.bin" with the full filename of the CircuitPython file you just downloaded.

```
% dfu-util -a 0 --dfuse-address 0x08000000 -D firmware.bin
```

The command looks like this.

```
% dfu-util -a 0 --dfuse-address 0x08000000 -D adafruit-circuitpython-
feather_stm32f405_express-en_US-etc.bin
```

You'll see this:

```
Downloading element to address = 0x08000000, size = 550496
```

```
Erase [=====] 100%    550496 bytes
```

```
Erase done.
```

```
Download [=====] 100%    550496 bytes
```

```
Download done.
```

```
File downloaded successfully
```

Phew! Now remove the wire from between B0 and 3.3V, and unplug the microcontroller from the computer, and then plug it in again.

The microcontroller will flash a yellow light, and the CIRCUITPY drive for this device will appear in your Finder tree, under Locations. If you don't see it, click on the flippy triangle for Locations, to expand that list, and CIRCUITPY should show up.

You have completed installing CircuitPython on the STM32F405 microcontroller.