



## NeoTrellis M4 Arpeggiator Synth

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Last updated on 2018-12-09 10:31:01 PM UTC

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## Overview

Wikipedia [defines arpeggio \(https://adafru.it/D4y\)](https://adafru.it/D4y) as such:

An arpeggio is a type of broken chord, in which the notes that compose a chord are played or sung in a rising or descending order. An arpeggio may also span more than one octave.

We're using the term **arpeggiator** a bit loosely here, basically this project turns your **NeoTrellis M4** into a little lo-fi synth (or MIDI controller) that plays a sequence of notes with each button press. Each note of the sequence is positioned in relation to the original note pressed, and displayed on the NeoTrellis by lightning up its respective button on the grid.

All the available notes on the grid are taken from a particular musical **mode** (similar to a scale), which means pretty much anything you play will sound good. All together, this makes for an unusually fun and visually compelling musical experience - which I affectionately refer to as "Arpy".

You can either have the NeoTrellis M4 generate the audio itself, or have it send out MIDI messages to control another synth over USB MIDI such as on your computer or tablet

Here's what you'll need ...

## Parts Used

Your browser does not support the video tag.

[Adafruit NeoTrellis M4 with Enclosure and Buttons Kit Pack](#)

\$59.95  
OUT OF STOCK

OUT OF STOCK



[USB cable - USB A to Micro-B](#)

\$2.95  
IN STOCK

ADD TO CART



3.5mm Male/Male Stereo Cable

\$2.50  
IN STOCK

ADD TO CART

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If you don't have a pair of powered speakers, these will work well ...

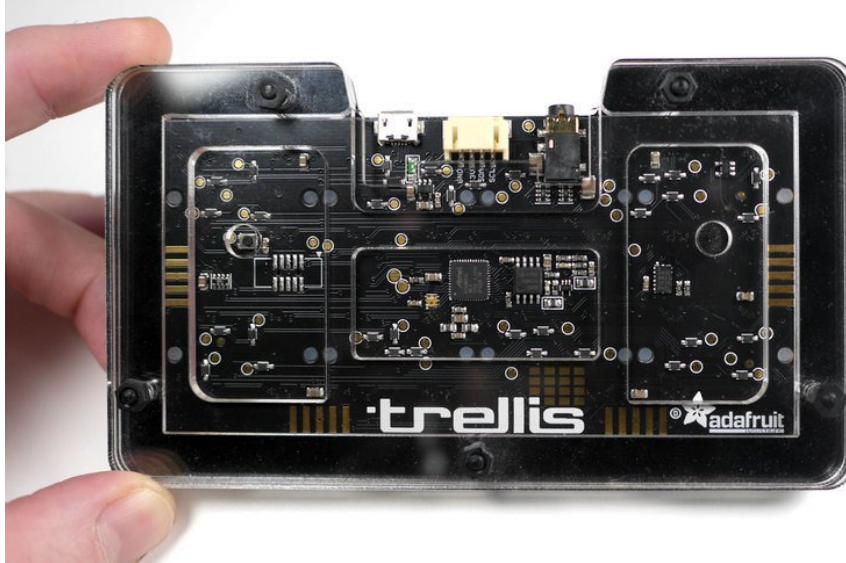


USB Powered Speakers

\$9.95  
IN STOCK

ADD TO CART

## Firmware Upload



In order to make it simple to get up and running **with no programming required**, we've created a drag-and-drop firmware you can use. If you're just getting started with your NeoTrellis M4, there is lots more info [here in the main Learn Guide!](https://adafru.it/C-C) (<https://adafru.it/C-C>)

This program will replace CircuitPython, to get back to your CircuitPython projects, reinstall it by following <https://learn.adafruit.com/adafruit-neotrellis-m4/circuitpython>

## Download

First, download the firmware file linked in the button below and save it to your computer hard drive somewhere you'll be able to find it, such as your **Downloads** folder.

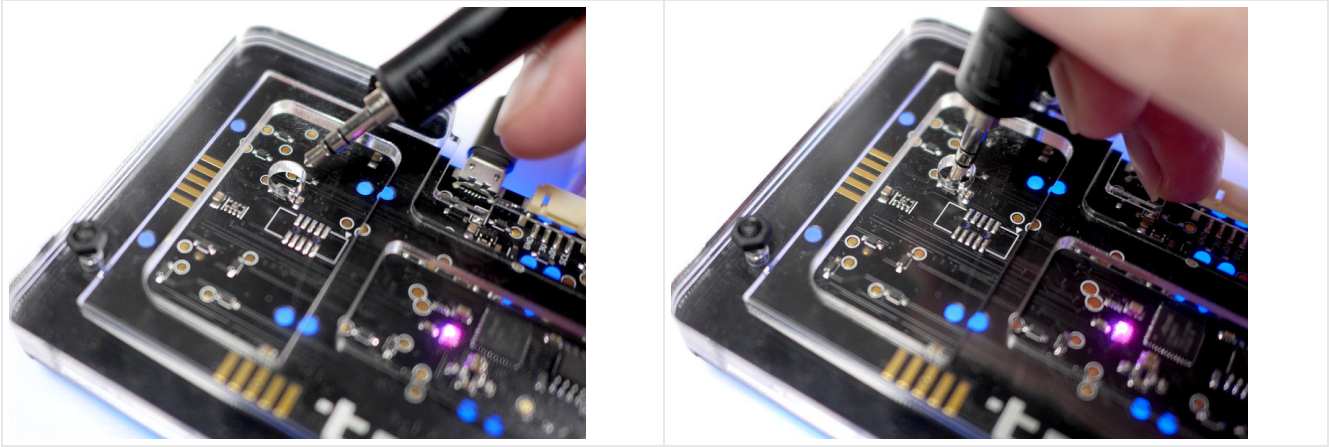
<https://adafru.it/D4D>

<https://adafru.it/D4D>

## Install Firmware

Plug your NeoTrellis M4 into your computer with a good quality, data capable **USB** cable. Your NeoTrellis will start up, and you'll see a purple indicator light on the back side.

Now, we'll put the NeoTrellis into **bootloader** mode. In this mode it will appear as a USB drive on your computer and will be ready to receive a new **.uf2** firmware file. Use a thin, **pointed object** such as a headphone plug to **double-click** the **reset button** on the back side of the board.



Once you have double-clicked the reset button, the indicator LED will turn **green**. You'll notice a new USB drive appear on your computer named **TRELM4BOOT**, this is the bootloader USB storage built right into the NeoTrellis. It is now ready to receive the firmware file.

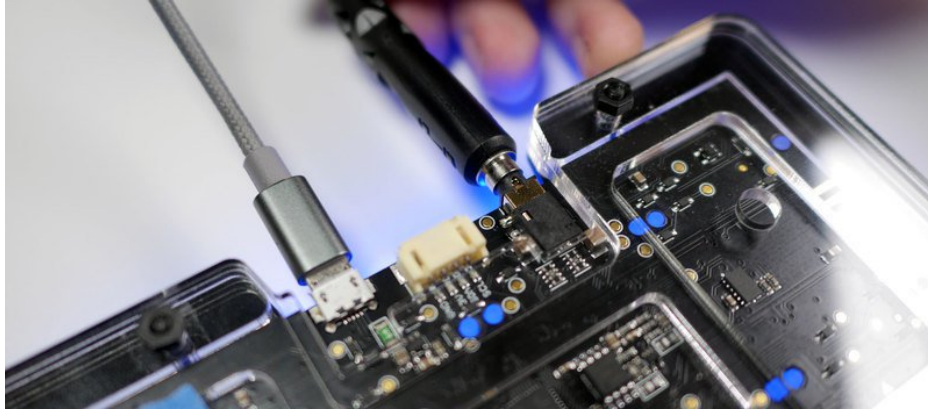
## Drag & Drop

Now, drag the **TM4ARPY.UF2** file onto the **TRELM4BOOT** drive. The file will copy over in a few seconds and then the NeoTrellis will automatically restart itself (you'll see the **TRELM4BOOT** drive disappear, don't worry, this is normal!). The status LED will return to purple, indicating regular operation mode.

If you ever need to manually switch out of bootloader mode, simply press the reset button one time.

Congratulations, you've updated the firmware and you're ready to play!

## Use It



Connect your NeoTrellis to a **powered speaker** using the built in 3.5mm stereo jack and start pressing some buttons. Press multiple buttons at the same time to create interesting combinations. Note that if 3 or more buttons are pressed at the same time, some distortion will occur on the output signal.

## Alternate patterns

For the purposes of expressive experimentation, below are two alternate **.UF2** files which use **different note patterns**. Choose **one** and load it onto the NeoTrellis **just like you did with the previous UF2** (<https://adafru.it/D4E>). Remember to double-click the **reset** button to enter firmware mode!

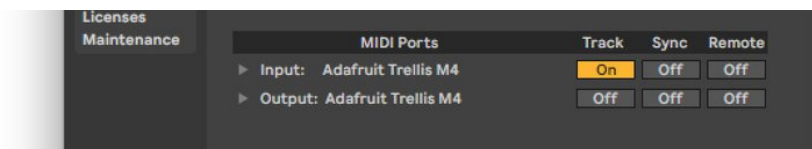
<https://adafru.it/D4F>

<https://adafru.it/D4F>

<https://adafru.it/D4G>

<https://adafru.it/D4G>

## MIDI Output



Arpy can also send **MIDI data over USB**, so you can use **software synthesizers** to generate sound from your computer. To use it, download the MIDI enabled UF2 file below, and upload it to your NeoTrellis just as before.

<https://adafru.it/D4H>

<https://adafru.it/D4H>

Once the NeoTrellis has restarted with the new firmware, connect your NeoTrellis M4 to your computer via USB and open your preferred music software, such as **Garageband**, **Logic**, **Ableton Live**, etc. The NeoTrellis should appear as a MIDI input device, just like a MIDI keyboard.

## Advanced Mode - Customize it in the Arduino IDE

Advanced users can customize the arpeggiator **parameters** by editing the [source code \(https://adafru.it/D4I\)](https://adafru.it/D4I) in **Arduino IDE**. To do so, you'll need the [Arduino IDE installed on your computer, \(https://adafru.it/D09\)](https://adafru.it/D09) along with the libraries specified [here in the NeoTrellis M4 guide \(https://adafru.it/D0a\)](https://adafru.it/D0a). Project code is available [here on GitHub \(https://adafru.it/D4I\)](https://adafru.it/D4I), with the most common customizable parameters located in the `settings.h` file.