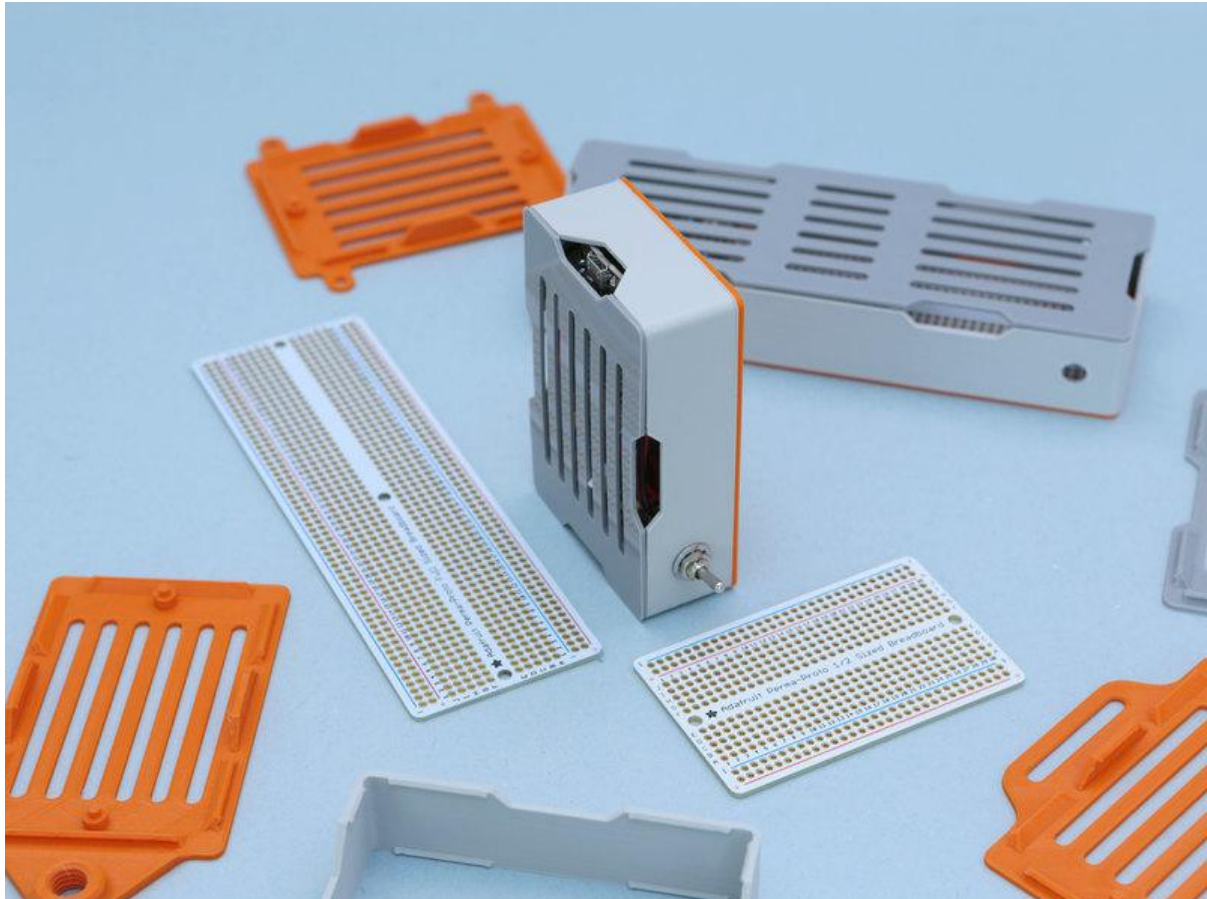




# PermaProto Feather Case

Created by Ruiz Brothers



<https://learn.adafruit.com/permaproto-feather-case>

Last updated on 2023-08-29 04:29:39 PM EDT

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# Overview



## Project Enclosures

3D print a snap fit case for an Adafruit Perma-Proto board. Perfect for using with an Adafruit Feather. Secures a full or half-size PermaProto PCB without any screws. Easy to make with free-support 3D printing.

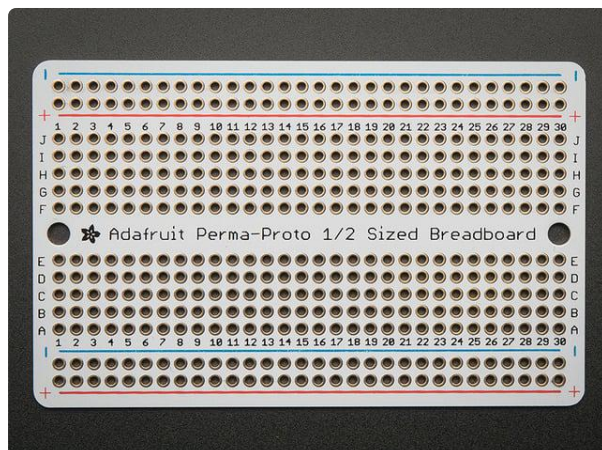


## Mounting Plates

The snap fit covers feature M4 sized slots for attaching to surfaces and mounting additional components.

## Project Enclosure

3D print a snap fit case for an Adafruit Perma-Proto board. Perfect for using with an Adafruit Feather. Secures a full or half-size PermaProto PCB without any screws. Easy to make with free-support 3D printing.



## Adafruit Perma-Proto Half-sized Breadboard PCB - Single

Customers have asked us to carry basic perf-board, but we never liked the look of most basic perf: it's always crummy quality, with pads that flake off and no labeling. Then we...

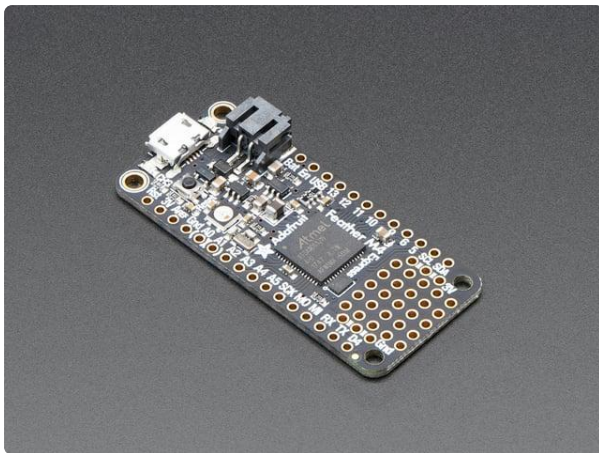
<https://www.adafruit.com/product/1609>



### Adafruit Perma-Proto Full-sized Breadboard PCB - Single

Customers have asked us to carry basic perf-board, but we never liked the look of most basic perf: it's always crummy quality, with pads that flake off and no labeling. Then we...

<https://www.adafruit.com/product/1606>



### Adafruit Feather M4 Express - Featuring ATSAMD51

It's what you've been waiting for, the Feather M4 Express featuring ATSAMD51. This Feather is fast like a swift, smart like an owl, strong like a ox-bird (it's half ox,...

<https://www.adafruit.com/product/3857>



### Mini Panel Mount SPDT Toggle Switch

This or that, one or the other, perhaps or perhaps not! So hard to make decisions these days without feeling like you're just going back and forth constantly. Deciding whether or...

<https://www.adafruit.com/product/3221>



### Panel Mount 2.1mm DC barrel jack

This power jack is designed to easily attach to a panel up to 8mm thick (0.315" or 5/16") and fit 2.1mm power plugs snugly and securely. Perfect for adding a power connector...

<https://www.adafruit.com/product/610>

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**1 x Male Headers**<https://www.adafruit.com/product/4154>

36-pin Rainbow Combo 10 pack

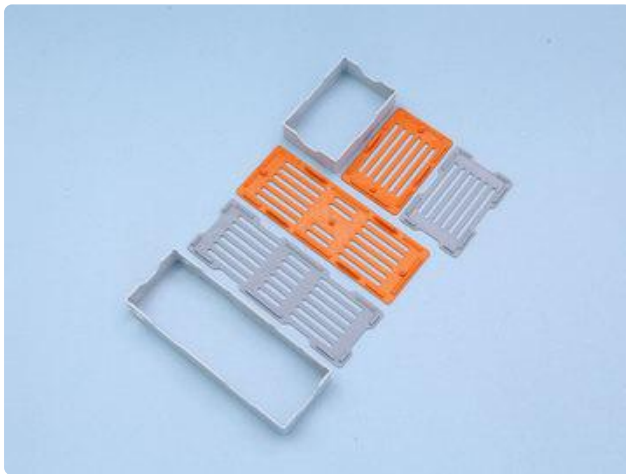
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**1 x 10-Wire Ribbon Cable**<https://www.adafruit.com/product/3890>

silicone cover stranded-core

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## 3D Printing



### Parts List

STL files for 3D printing are oriented to print "as-is" on FDM style machines. Parts are designed to 3D print without any support material. Original design source may be downloaded using the links below.

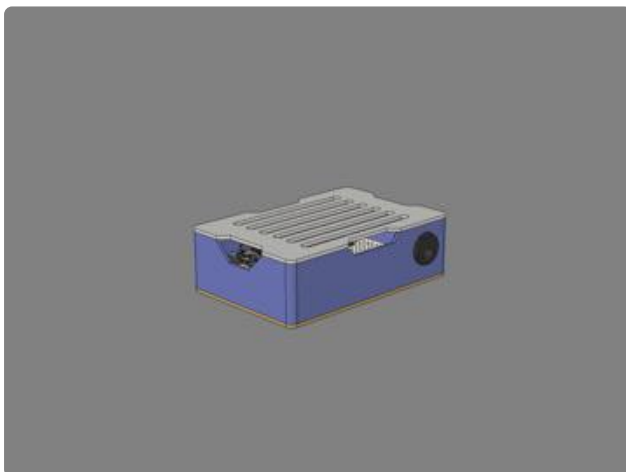
#### Full Size Version

[case-fullsize.stl](#)[bottom-cover-fullsize.stl](#)[top-cover-fullsize.stl](#)

#### Half Size Version

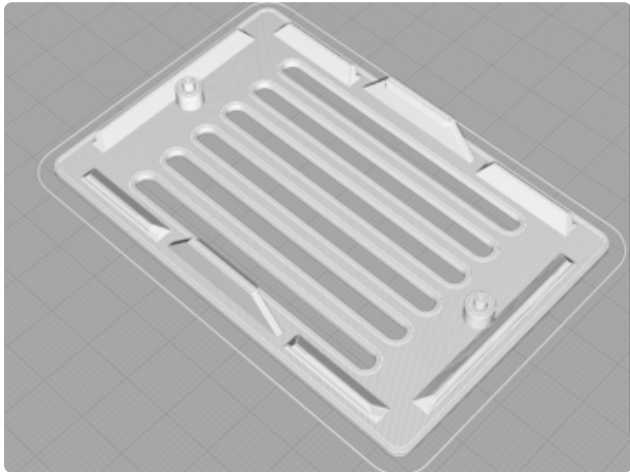
[case-halfsize.stl](#)[bottom-cover-halfsize.stl](#)[top-cover-halfsize.stl](#)

Download CAD files from  
PrusaPrinters



### CAD Assembly

The Perma-Proto PCB is secured to the bottom cover using built-in tabs and standoffs. The case frame fits over the bottom cover. A DC jack and toggle switch is panel mounted to the case frame. The top cover snap fits over the the case frame.

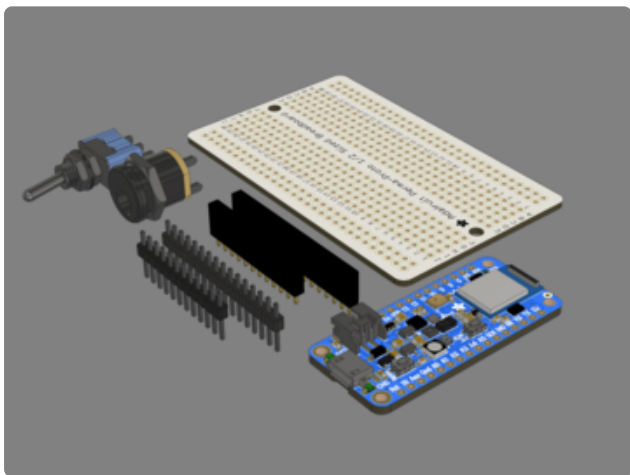


## Slicing Parts

No supports are required. Slice with settings 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

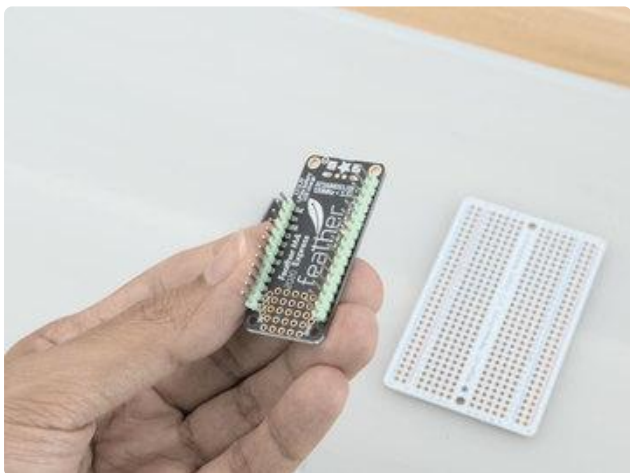


## Design Source Files

The project assembly was designed in Fusion 360. This can be downloaded in different formats like STEP, STL and more. Electronic components like Adafruit's board, displays, connectors and more can be downloaded from the [Adafruit CAD parts GitHub Repo](#) ().

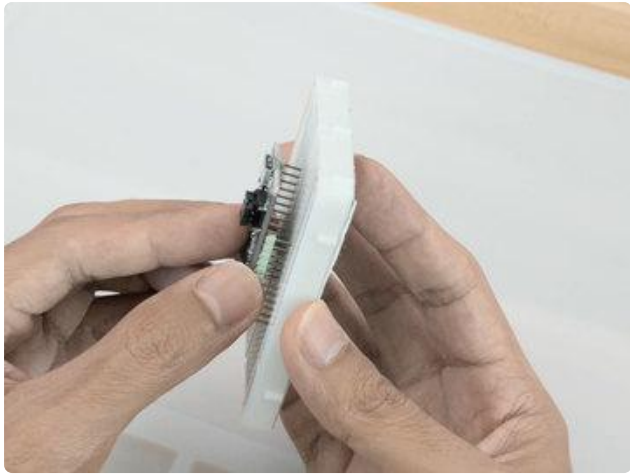
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## Assembly



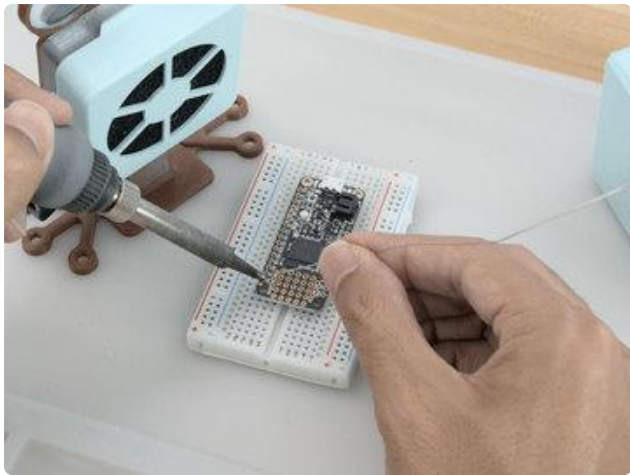
## Install Headers

Insert a 12-pin and 16-pin strip of [male headers](#) () onto the bottom of the Feather. These will need to be soldered to the pins on the Feather.



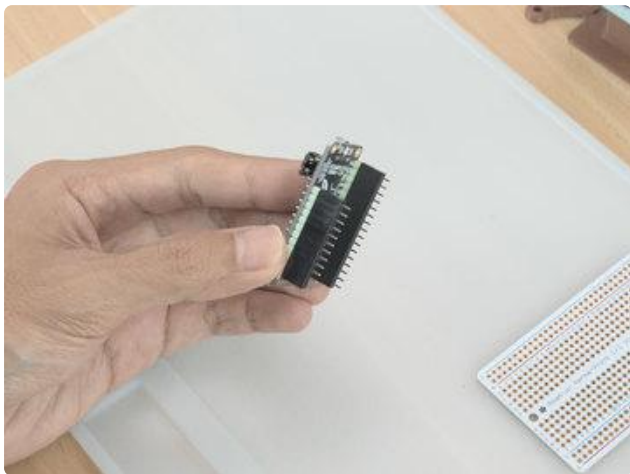
## Breadboard Help

A [breadboard](#) () can be used to help keep the header pins nice and straight while soldering. The header pins are press into the breadboard.



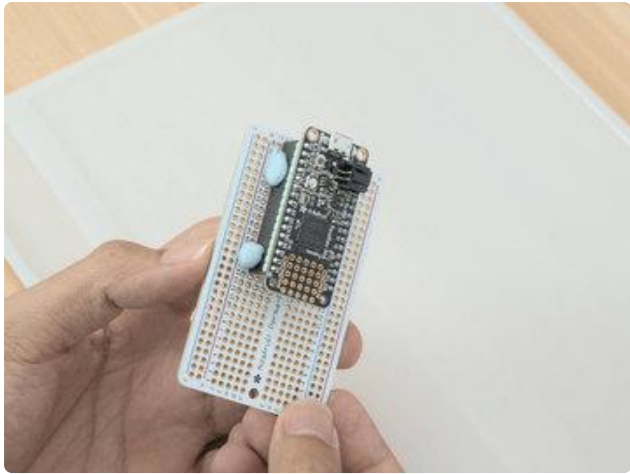
## Solder Pins

Apply solder to all 28 pins on the Feather. A [silicone mat](#) () is also helpful and provides you with a nice grippy surface. A [USB solder fume extractor](#) () is used to keep smelly smoke away from your face and lungs.



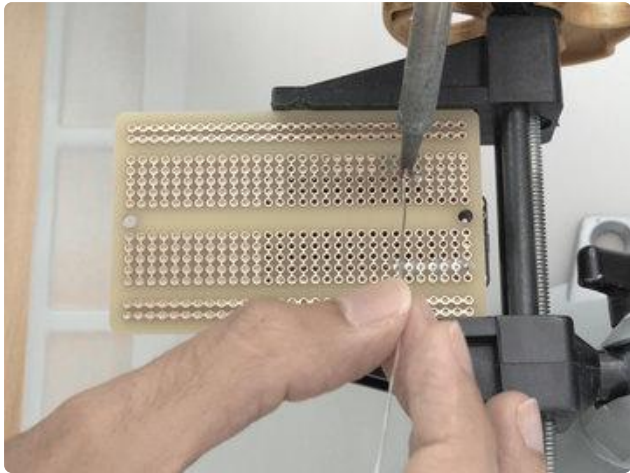
## Install Female Headers

Insert a 12-pin and 16-pin female headers into the male header pins respectively. The female headers will need to be soldered to the Perma-Proto PCB.



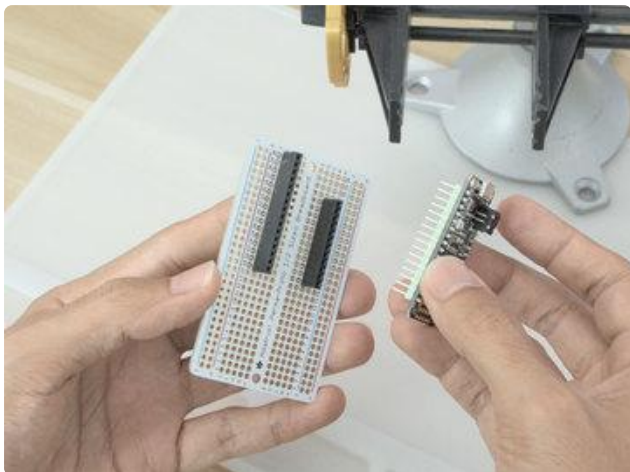
## Install Headers to Perma-Proto

Place the headers onto the perma-proto PCB with the USB port close to the edge. Mounting tack can be used to temporarily secure the headers in place while soldering. Place a couple of pieces along side the headers and perma-proto PCB.



## Solder Headers

Apply solder to the pins on the bottom of the PCB. A [panavise \(\)](#) can help keep the PCB in place while solder. All of the holes are thru-plated and feature a nice gold finish so you won't get any oxidation.



## Remove Feather

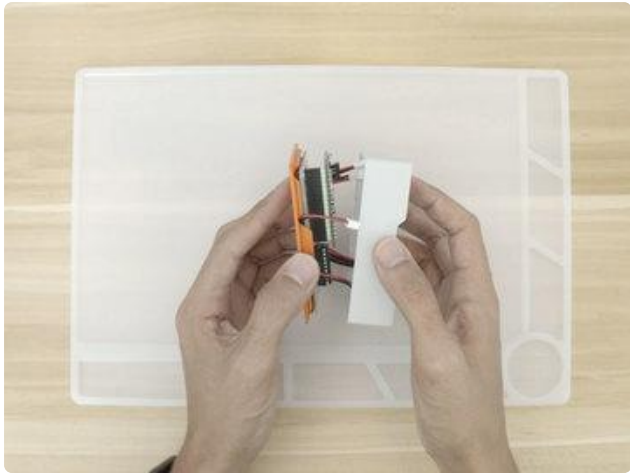
Once all of the pins are soldered up we can remove the mounting tack. Be sure to inspect your solder joints and check to see all of the pins have enough solder.





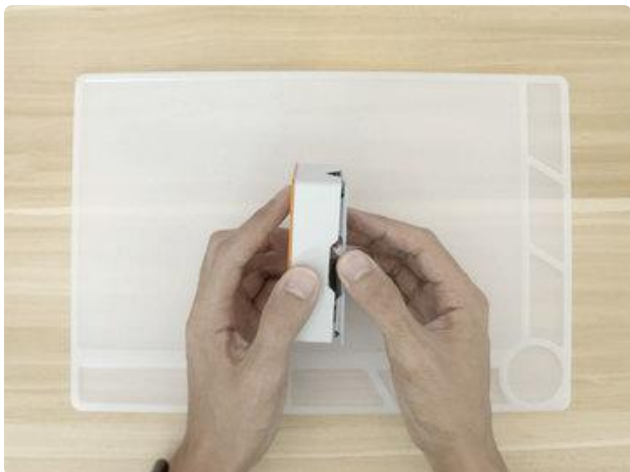
## Install Perma-Proto PCB

Place the PCB over the built-in standoffs. Insert the PCB at an angle to fit under one of the mounting tabs. Press down to snap fit into place. Fit wiring in between the snaps.



## Install Case Frame

Place the case over the bottom cover and snap fit the edges together. The side with the notches are used to pass wires through.



## Install Top Cover

Place the top cover over the case and line up the snaps. Firmly press down to snap fit cover. And there you have it! Your Perma-Proto Feather case is ready for action.