



Wearable miniPOV4

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<https://learn.adafruit.com/wearable-minipov4>

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Overview

Waving the miniPOV4 around with your hand is super fun but you wouldn't want to drop it or let it slip out of your hands potentially hitting someone. In this guide we'll show you how to make a case for the miniPOV and a wearable armband so you can keep your hands free.

Prerequisite Guide

- [Adafruit Guide to Excellent Soldering \(https://adafru.it/drl\)](https://adafru.it/drl)
- [MiniPOV4 - DIY Full-Color Persistence of Vision & Light-Painting Kit \(https://adafru.it/drJ\)](https://adafru.it/drJ)

Parts

- [MiniPOV4 Kit \(https://adafru.it/drK\)](https://adafru.it/drK)
- [500mAh Lithium Polymer Battery \(https://adafru.it/drL\)](https://adafru.it/drL)
- JST 2-pin [Cable \(https://adafru.it/drM\)](https://adafru.it/drM) & [SMT Connector \(http://adafru.it/1769\)](http://adafru.it/1769)
- [Slide Switch \(https://adafru.it/drN\)](https://adafru.it/drN)

Tools & Supplies

- [Soldering Iron \(https://adafru.it/doU\)](https://adafru.it/doU) & [Solder \(http://adafru.it/145\)](http://adafru.it/145)
- [3D Printer \(https://adafru.it/doT\)](https://adafru.it/doT)
- [Hakko Precision Flat Pliers \(https://adafru.it/dil\)](https://adafru.it/dil)
- PLA Filament
- [NinjaFlex Filament \(https://adafru.it/drO\)](https://adafru.it/drO)
- [Heat Shrink Tubing \(https://adafru.it/diK\)](https://adafru.it/diK)



3D Printing

Download STLs

<https://adafru.it/drP>



PLA Filament

armband-holes.stl armband-tabs.stl minpov-bottom-armband.stl minpov-potknob.stl minpov-top.stl	%10 Infill 2 Shells 0.02 Layer Height 90/150 speeds	About 2-3 Hours
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Ninjaflex Filament

armband-holes.stl armband-tabs.stl	Ninjaflex @230 0.2 layer height 45/50 speeds 2 shells 10% infill	About 1 hour
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MiniPOV4 Armband

The armband is a 2 straps that are both strong and very flexible that is optimized to print in Ninjaflex filament. The straps are held in place to the bottom of the box by

pressing the tabs through the loops on the side of the enclosure. The two straps are held together by pressing the two pins through the hole cutouts.



Print armband STLs in Ninjaflex only



Print minipov-top.stl with support material

MiniPOV4 Enclosure

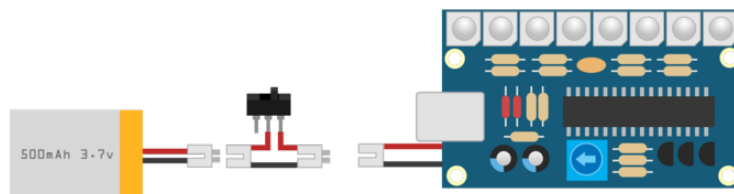
The enclosure is a 2-piece design that is optimized to print in PLA material. You have the option to print the enclosure to include the hoops for the armband or without. `minipov-bottom-armband.stl` includes the hoops, `minipov-bottom.stl` does not.

Removing Support

Carefully use Flat Pliers to remove the support material on the minipov-top.stl part. You will need to remove all of the support in order for all of the components to fit inside the enclosure.

Be careful not to break the enclosure while removing support material!

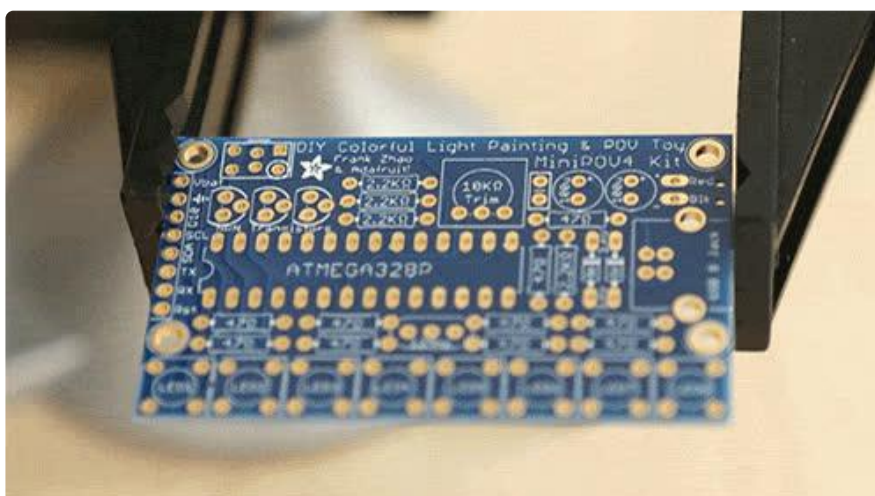
Circuit Diagram



MiniPOV4 Assembly

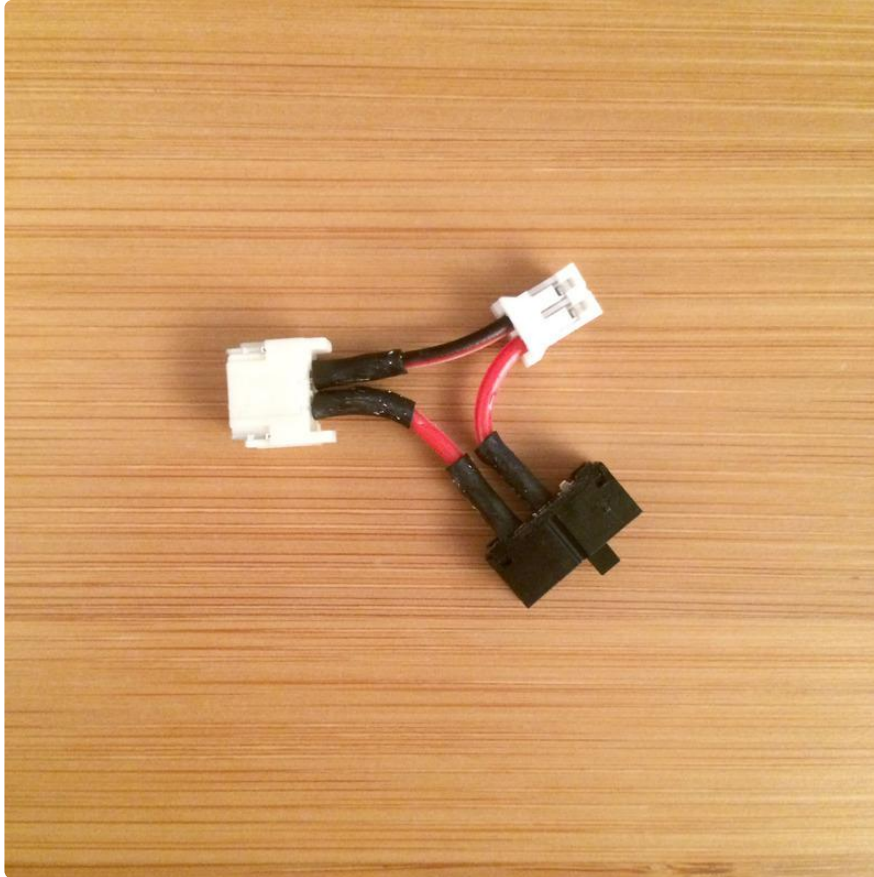
Ensure you follow the instructions for assembling the minPOV4 kit! The only different step you'll need to do is soldering the wires to Power. Don't solder the 3-AAA battery cable to the miniPOV4. Instead we'll be using a JST cable with female connector.

- [MiniPOV4 - DIY Full-Color Persistence of Vision & Light-Painting Kit \(https://adafruit.it/drJ\)](https://adafruit.it/drJ)



On-board JST Cable

Shorten a JST cable with a female JST connector to about 40mm long. Strip the ends of the positive and negative wires and solder them into the RED and BLACK pins of the MiniPOV4.

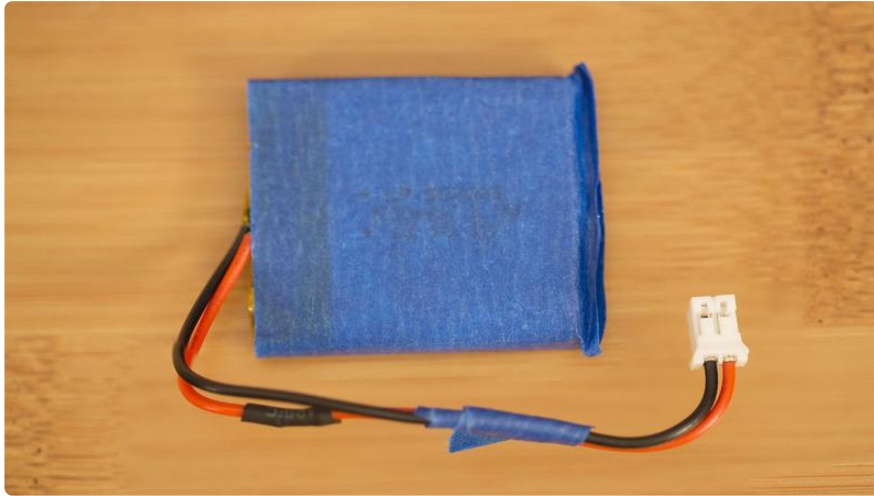


Slide Switch Adapter

Short a JST extension cable to about 10mm long by cutting the positive and negative cables with wire cutters. Use wire strippers to strip the ends of the positive and negative wires. Apply a bit of rosin to the stripped ends and tin the tips of the wires. Add a piece of shrink tubing to the negative wire and solder them together by holding them in place with a third-helping-hand.

Apply rosin to two of the terminals and tin them. Use a third-helping-hand to hold the slide switch. Add a piece of heat shrink tubing to the two terminals. Solder the positive wire to the terminals of the slide switch.

Assembly



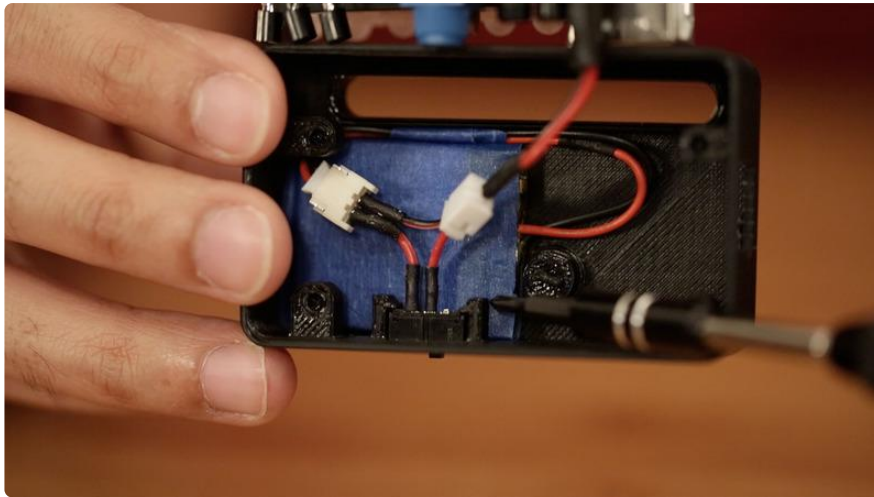
500mAh Lithium Polymer Battery

Wrap it in gaffers tape to protect the surface from being punctured or damaged (they can easily get nicked, be careful!). Carefully insert it into the `minipov-top.stl` part with the power cable facing away from the potentiometer.

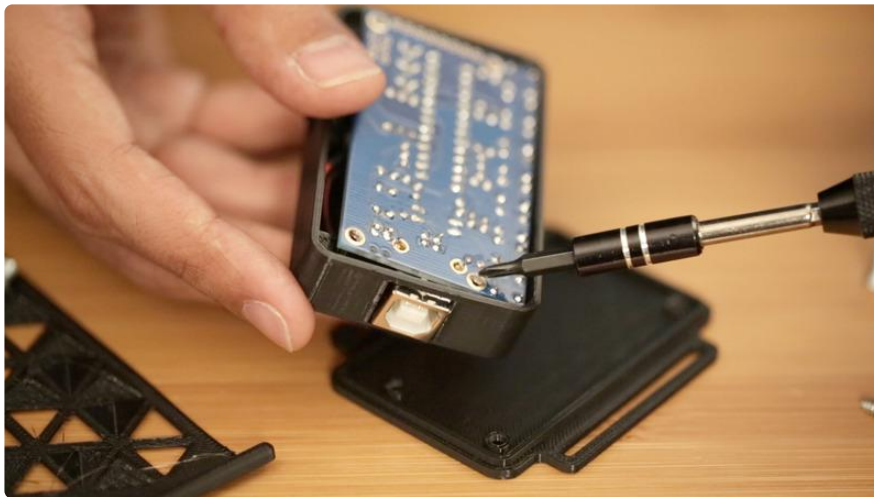


Installing Slide Switch

Insert the slide switch into the enclosure by wedging it through the clips slide-ways. Carefully use an x-acto knife to loosen the tolerances if needed. You can press on the outside of the enclosure to insert slide switch cut through the cutout.

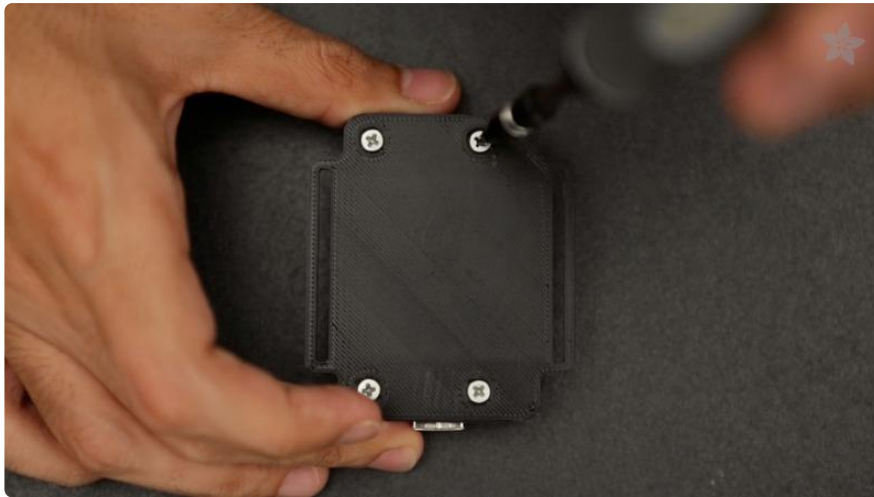


The slide switch is secured in place by the two clips on the inside of the enclosure. These clips prevent the slide switch from being pushed all the way inside the enclosure.

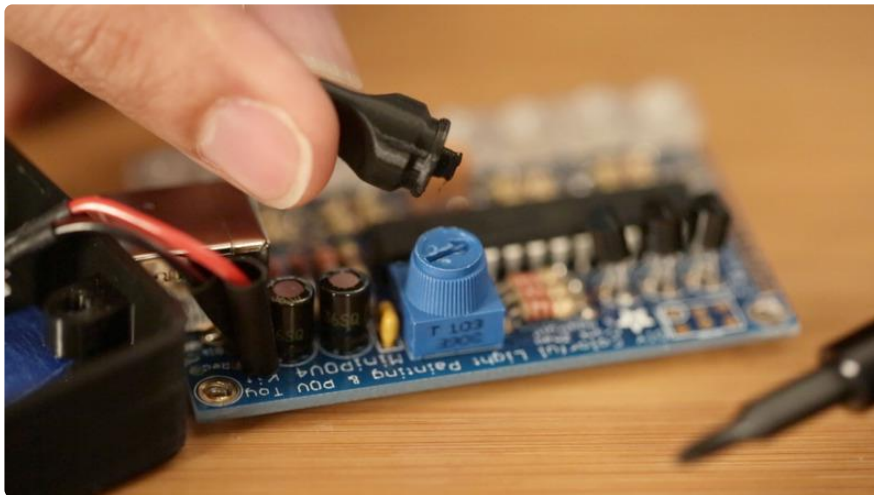


Mounting MiniPOV4

Insert the MiniPOV PCB into the `minipov-top.stl` at an angle with the USB inserted first. Ensure the JST cable isn't in the way of the potentiometer. Position the PCB into the enclosure.

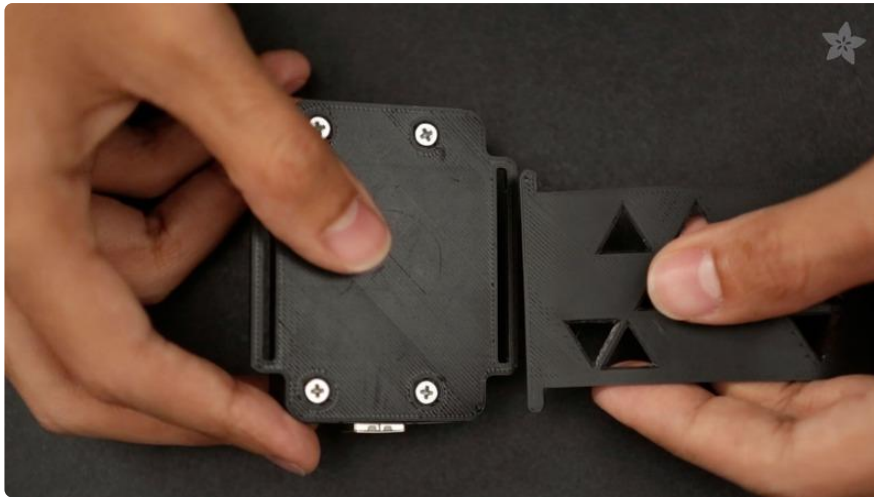


Line up the mounting holes of `minipov-bottom-armband.stl` with the ones on the miniPOV and press it down to snap it shut. Use 4 Phillips screws to mount the miniPOV4 to the enclosure .



Potentiometer Extension

Carefully flatten the tip of the `minipov-potknob.stl` with flat pliers. Line up the tip of the `minipov-potknob.stl` with the blue potentiometer on the miniPOV. Carefully infix the knob into the cutout of the `minipov-top.stl` part.



Adding Armband

Insert the tabs at the ends of `armband-tabs.stl` and `armband-holes.stl` into the hoops of the `minpov-bottom-armband.stl` part by pressing the tabs through the loops on the side of the enclosure.



The tabs are long enough to secure the enclosure around your arm. To remove the straps just tug on the tabs and pull them out.



The two straps are held together by pressing the pins through the hole cutouts. The total length of the arm band(including the enclosure) measures to 300mm(11.8').



Wear It

Power it on and go for a night run! Ride your bike or skateboard and paint the night with light!