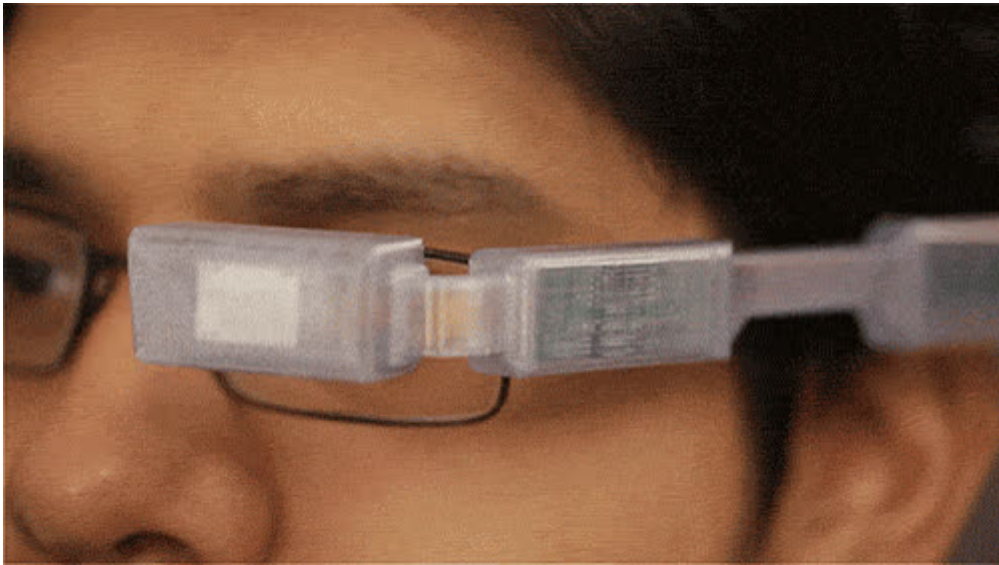




# DIY Wearable Pi with Near-Eye Video Glasses

Created by Ruiz Brothers



<https://learn.adafruit.com/diy-wearable-pi-near-eye-kopin-video-glasses>

Last updated on 2024-06-03 01:29:52 PM EDT

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# Overview

Our 3D Printed design turns a pair of 'private display glasses' into a "google glass"-like form factor. It easily clips to your prescription glasses, and can display any kind of device with Composite Video like a Raspberry Pi.



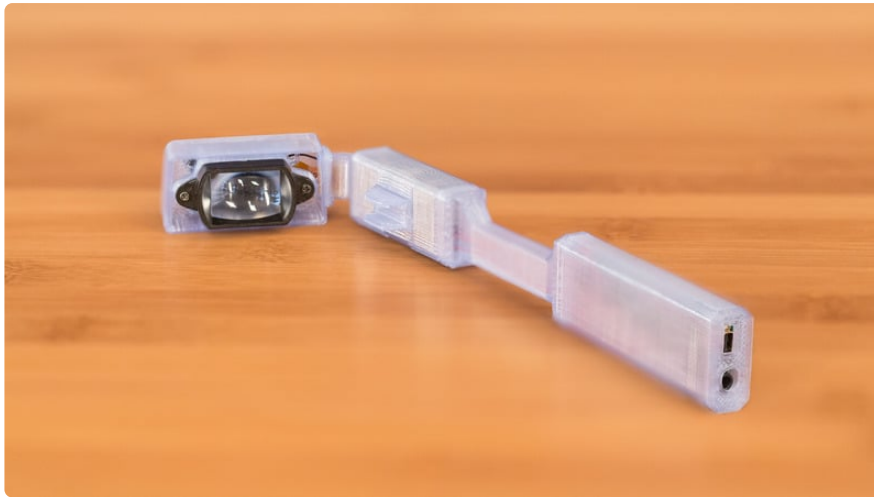
A pair of these wearable video glasses sets you back about 100 bucks, and the 3d printed parts are a free download on thingiverse. This display uses composite video to connect to the Raspberry Pi its very plug and play.

## Parts

- [NTSC/PAL Video Glasses \(http://adafru.it/1452\)](http://adafru.it/1452)
- [Raspberry Pi \(http://adafru.it/998\)](http://adafru.it/998)
- [Miniature Wireless USB Keyboard with Touchpad \(http://adafru.it/922\)](http://adafru.it/922)

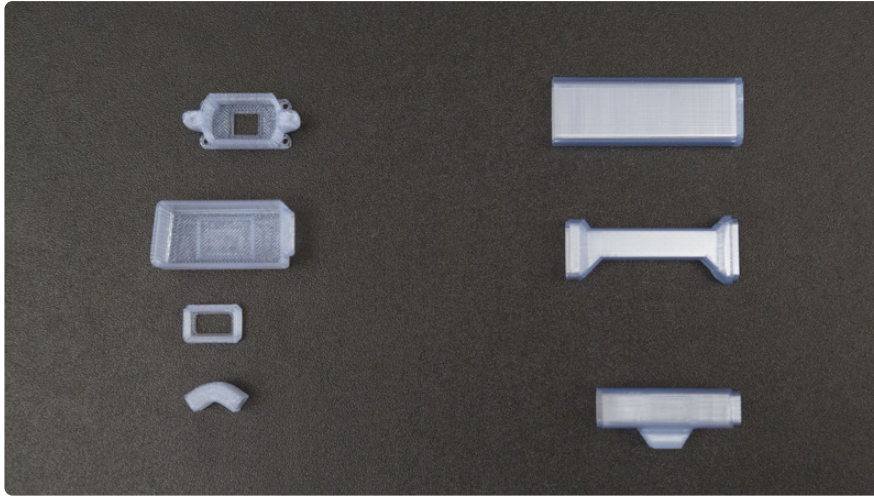
## Tools & Supplies

- [3D Printer \(https://adafru.it/diH\)](https://adafru.it/diH)
- [Flat Pliers \(http://adafru.it/1368\)](http://adafru.it/1368)
- [30AWG Wire Wrap \(http://adafru.it/1446\)](http://adafru.it/1446)
- [Heat Shrink Pack \(http://adafru.it/344\)](http://adafru.it/344)
- [Screwdriver Set \(http://adafru.it/822\)](http://adafru.it/822)
- [Composite Video Cable \(http://adafru.it/863\)](http://adafru.it/863)



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# 3D Printing



Our 8 piece design is snap-fit enclosure that houses the components inside the NTSC/PAL Video Glasses. Each piece is labeled below noted with connections.

- hud-eye.stl > hud-cap.stl
- hud-cap.stl > hud-elbow.stl
- hud-elbow.stl > hud-kopincap.stl
- hud-kopincap.stl > hud-kopin.stl
- hud-kopin.stl > hud-bridge.stl
- hud-bridge.stl > hud-power.stl
- hud-power.stl > hud-cover.stl

MakerWare Settings	No Raft/Support .02 layer height 10% infill 2 shells	about 2 hours
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[Download STLs](#)

<https://adafru.it/diM>

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## Disassembly



Start by removing the nose guard piece from the Video Glasses. Use a small screwdriver to remove the tiny screw.



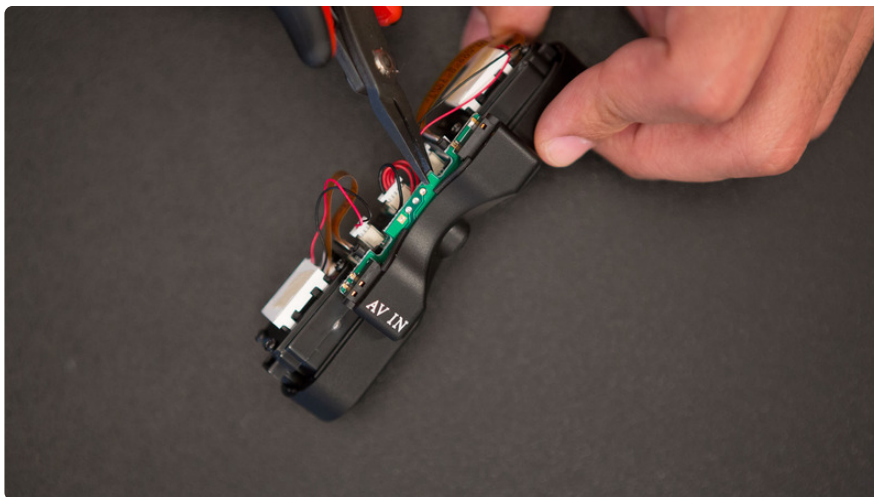
Carefully pop off the shaded lenses from the Video Glasses.



Behind the lens, you'll see tiny screws, remove these. With the screws removed, the frame should be able to come off.

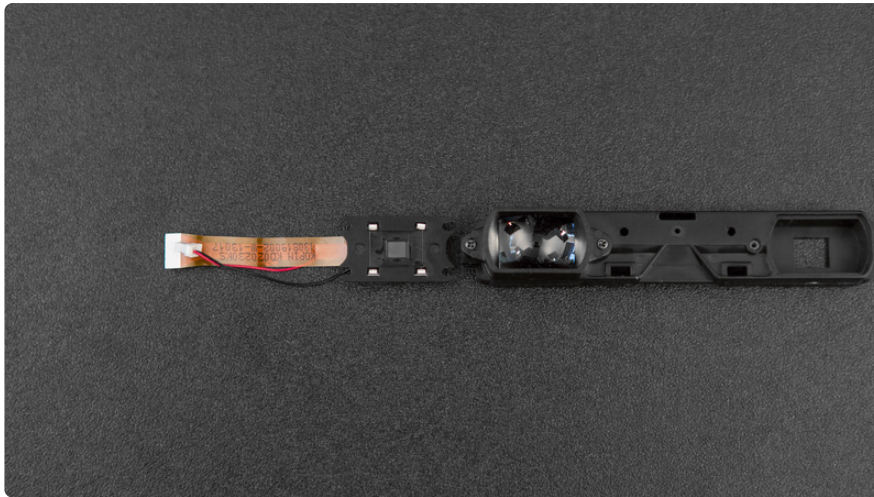


Gently pry open the enclosure and separate the two halves using a flat-head screwdriver.

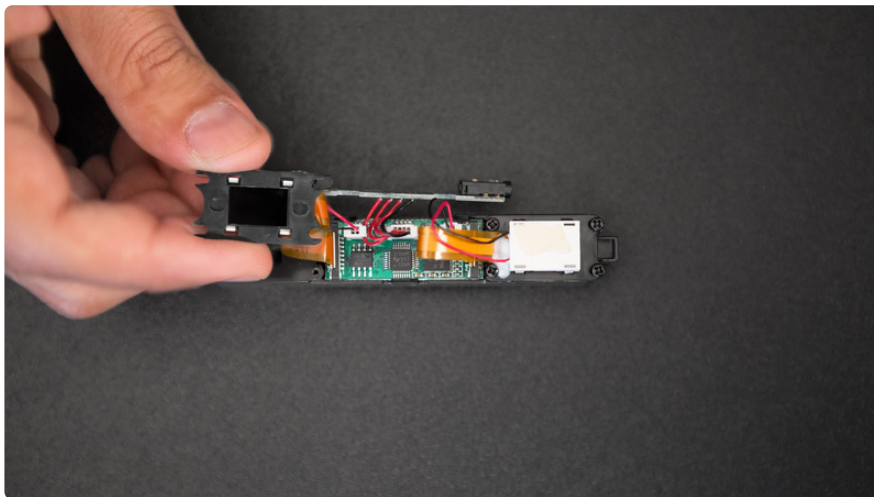


Use a pair of flat pliers to remove the PCB from the enclosure.

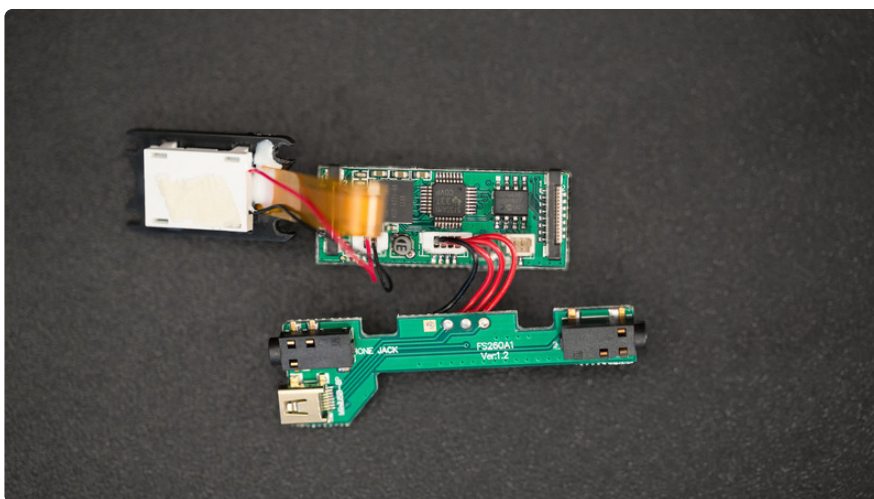
Remove the two video display screens from the enclosure.



Unscrew the two eye pieces with the eye covers held to the magnify lenses.



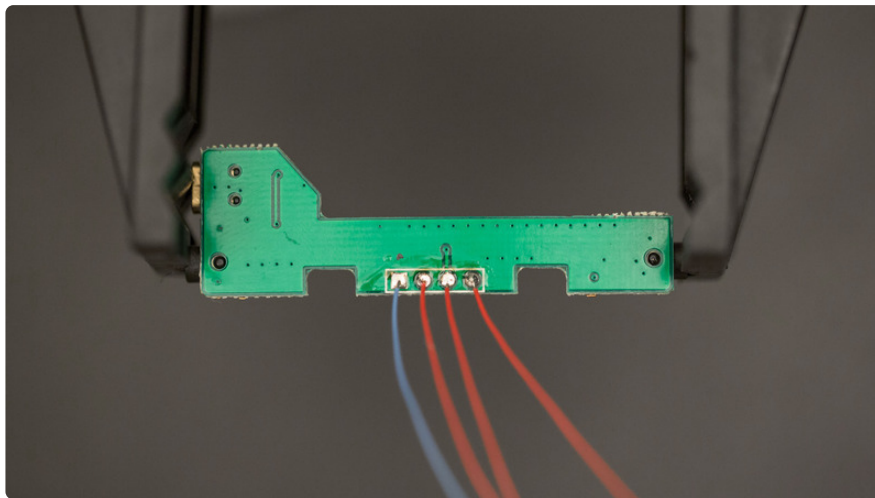
Carefully detach the second display from the PCB and store it away to serve as a back-up in case something happens to the first one!



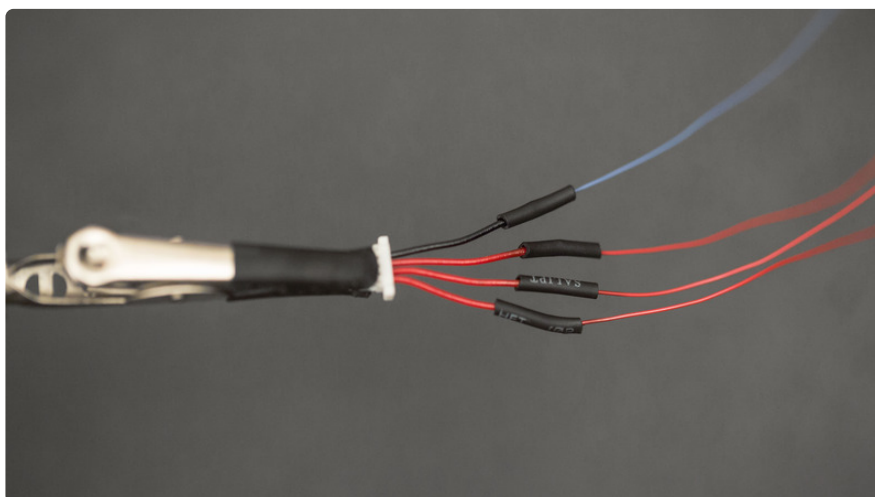
You should have the one video display, the kopin video processing circuit and the power circuit with the USB port and two audio input jacks.

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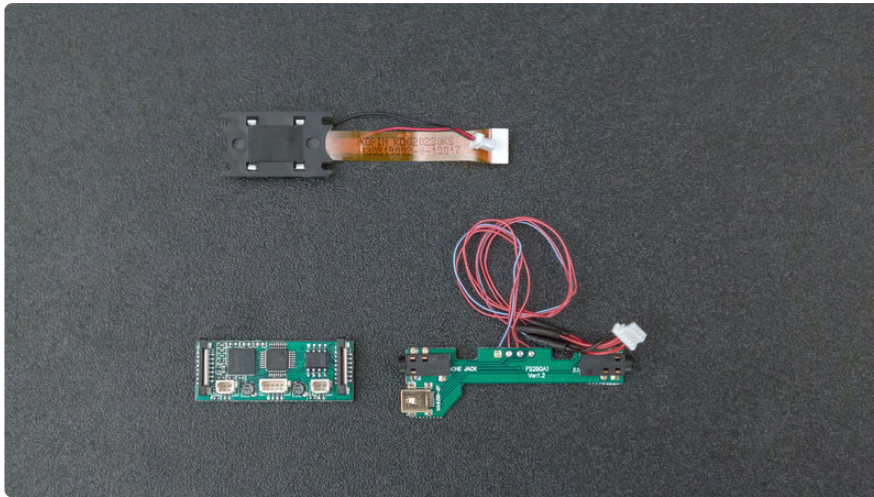
# Assembly



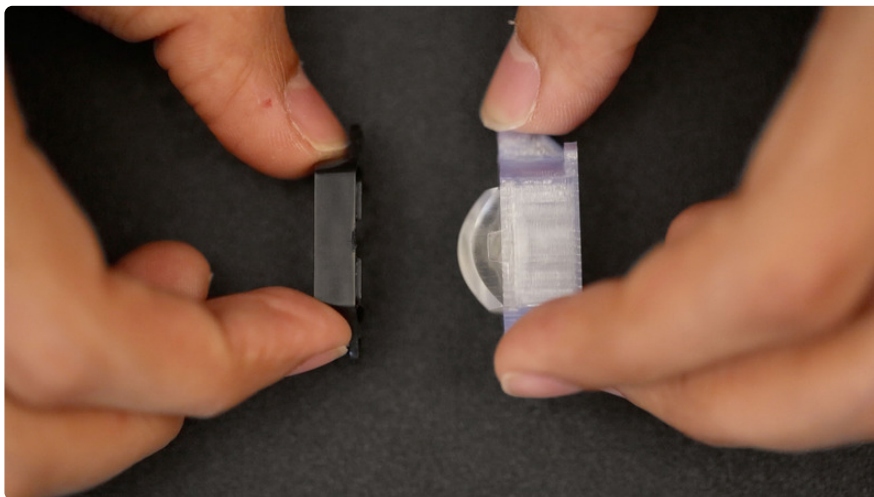
You'll need to unsolder the four connections from the power circuit in order to increase the lengths of the wires.



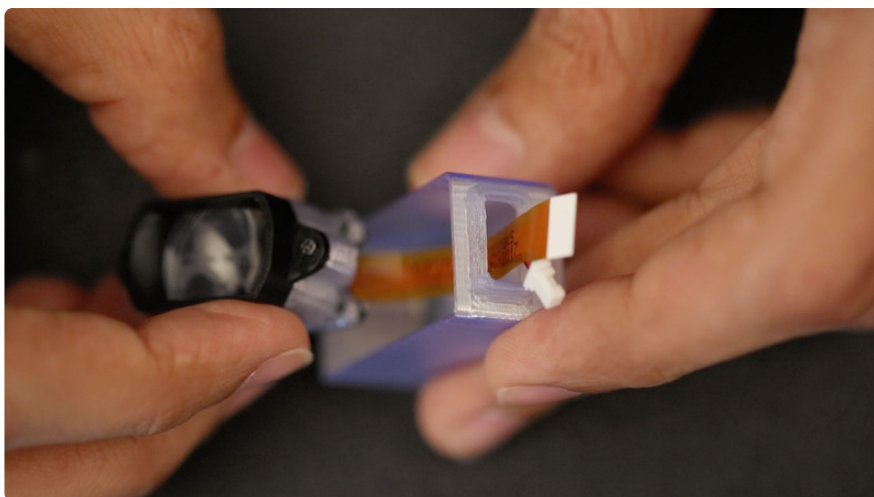
Use a third-hand to hold the wire bundle in place while you tin them. Measure about 135 mm (5.3 inches) of 30AWG wire wrap in length and solder them to the ends of each wire. Use shrink tubing to secure the connections.

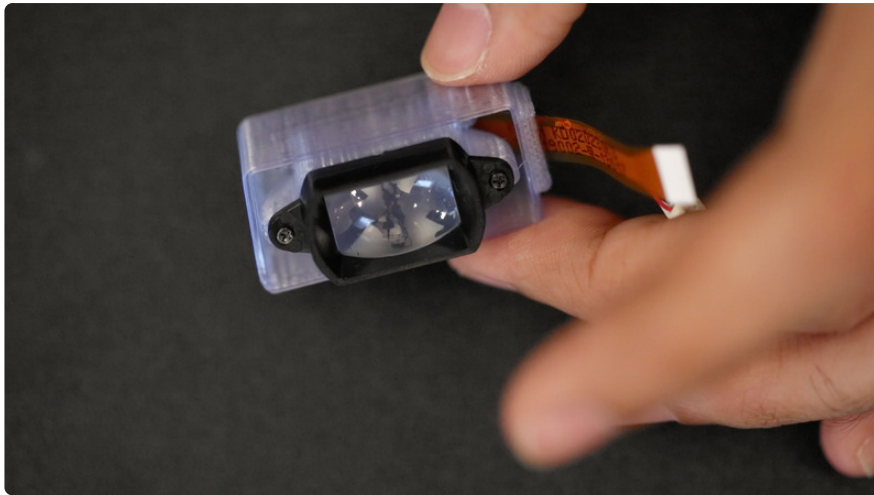


Make sure all the components are disconnected before putting them into the enclosure

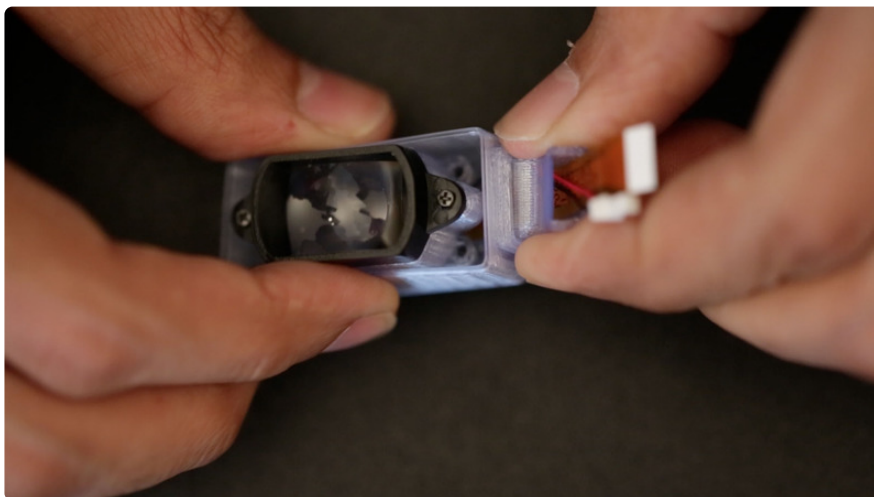


Place the plastic eye piece with the magnifying lens on top of the **hud-eye.stl** part. Reuse the same screws and use a screwdriver to secure the eye piece into the **hud-eye.stl** part.

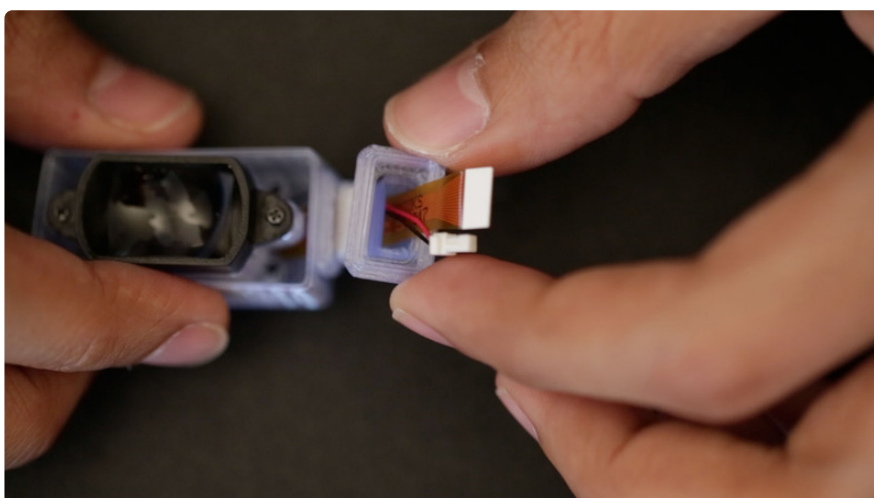




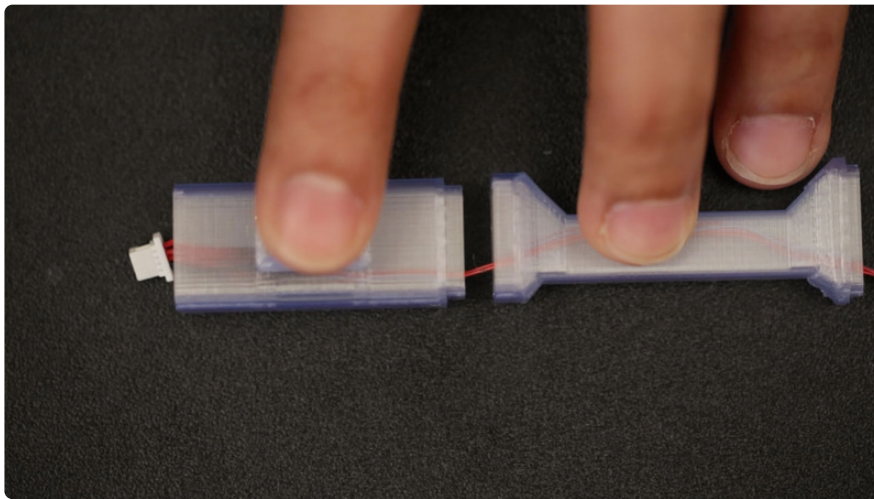
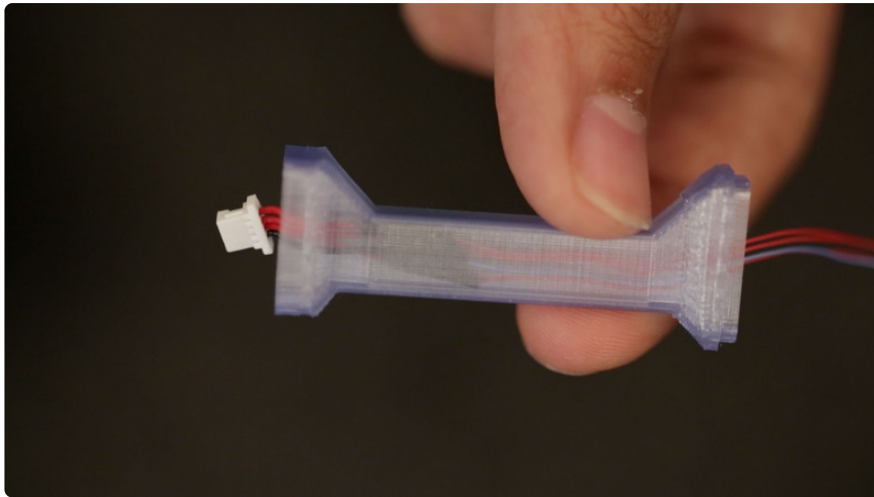
Position the eye piece into the **hud-cap.stl** part with the ridden and cable connections threading through the opening in the side.



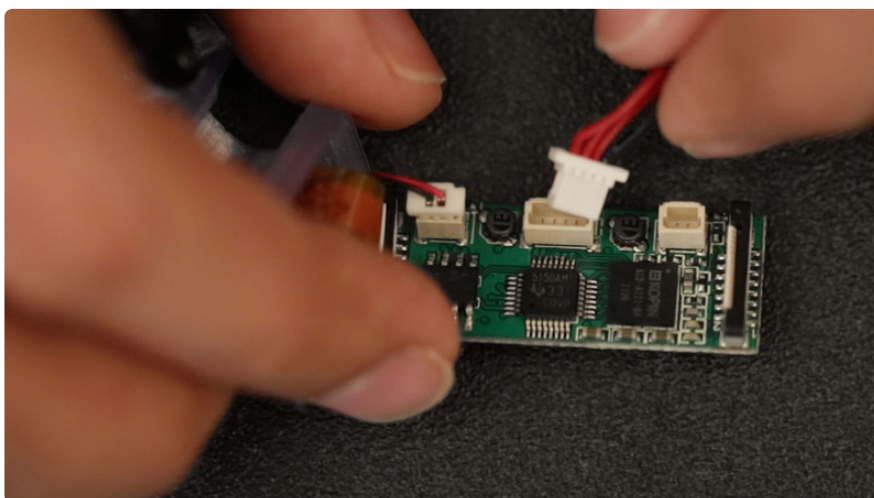
Get the **hud-elbow.stl** part handy and carefully thread the wire connections of the video eye display through the cavity. Snap the **hud-elbow.stl** part into place.



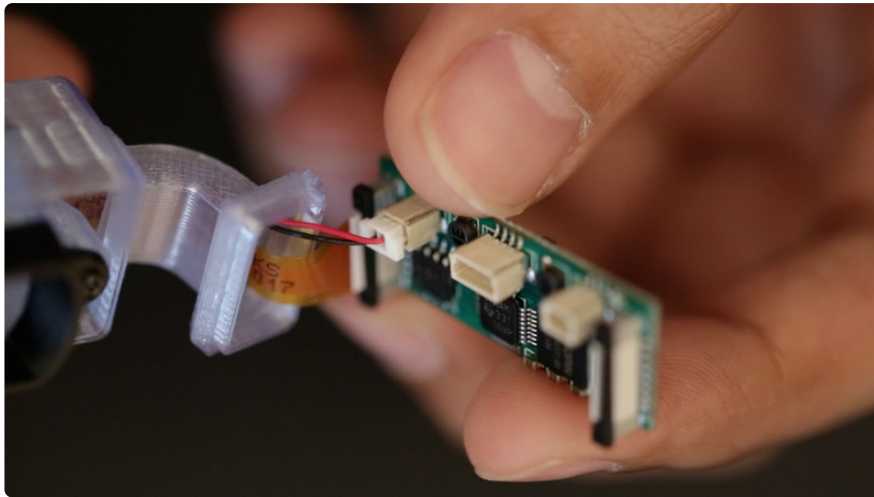
The **hud-kopincap.stl** part needs to be inserted to the **hud-elbow.stl** end with the cavity facing away from the eye piece. Set aside the eye display for now.



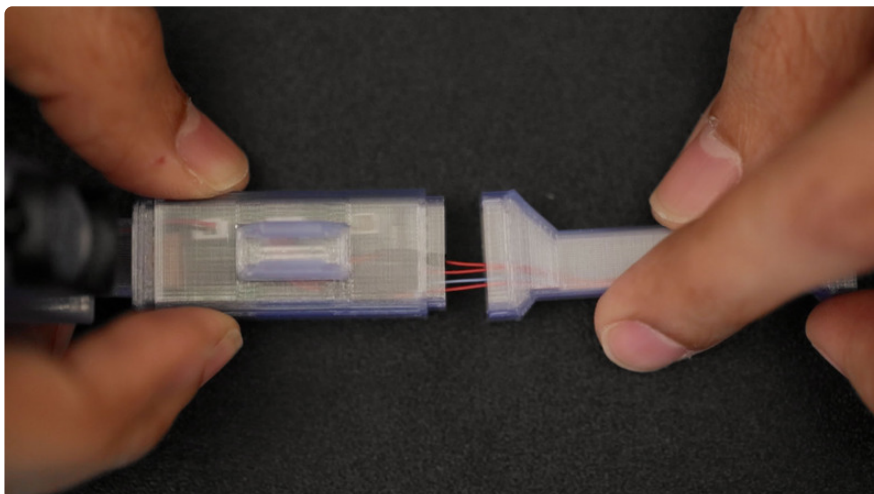
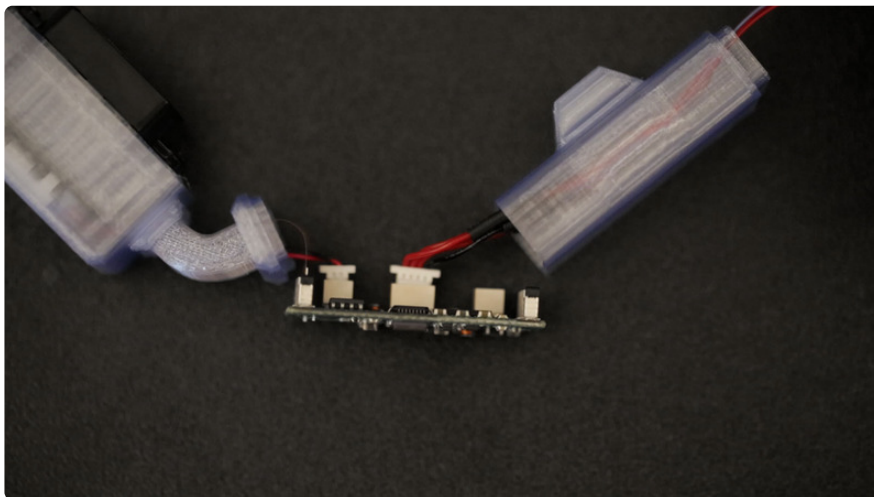
Grab the extended wire bundle of the power circuit and thread it through the **hud-bridge.stl** and the **hud-kopin.stl** parts. Ensure the **hud-bridge.stl** part is threaded first and positioned with the end capable of snapping into the **hud-kopin.stl** part.



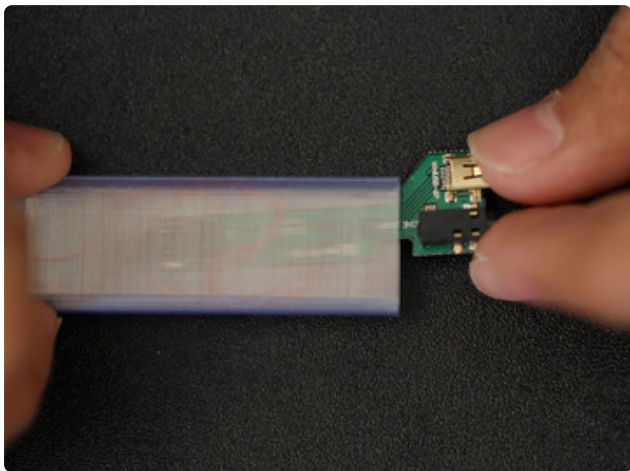
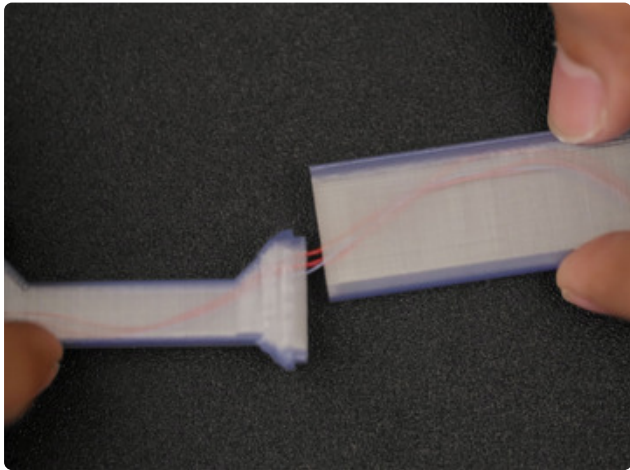
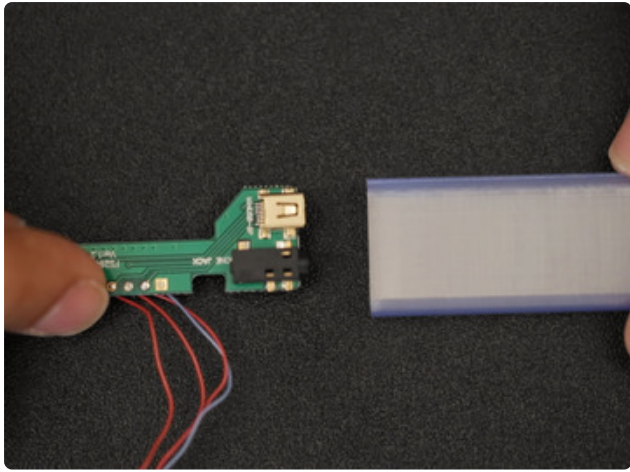
Get the micro Kopin in position and connect the extended wire bundle back to center port. Ensure its oriented properly!



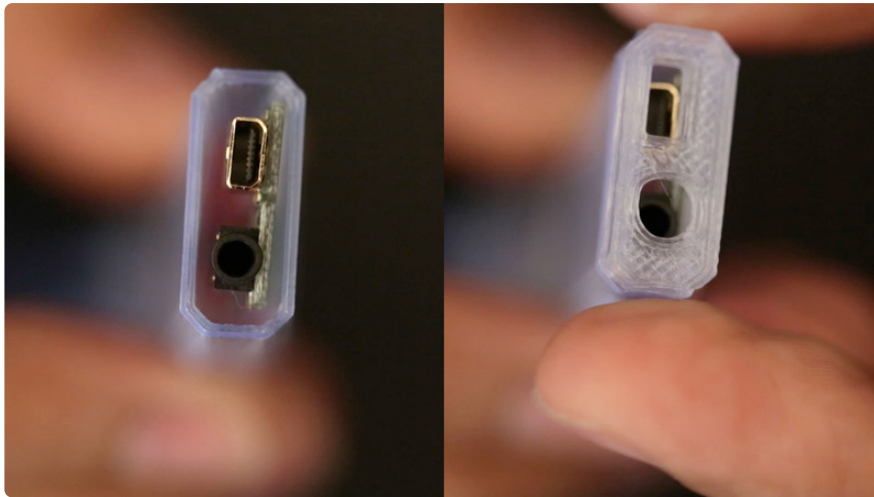
Position the **micro Kopin** towards the eye display piece with the ports facing inwards. Carefully reconnect the ribbon and ported cable to the **micro Kopin**.



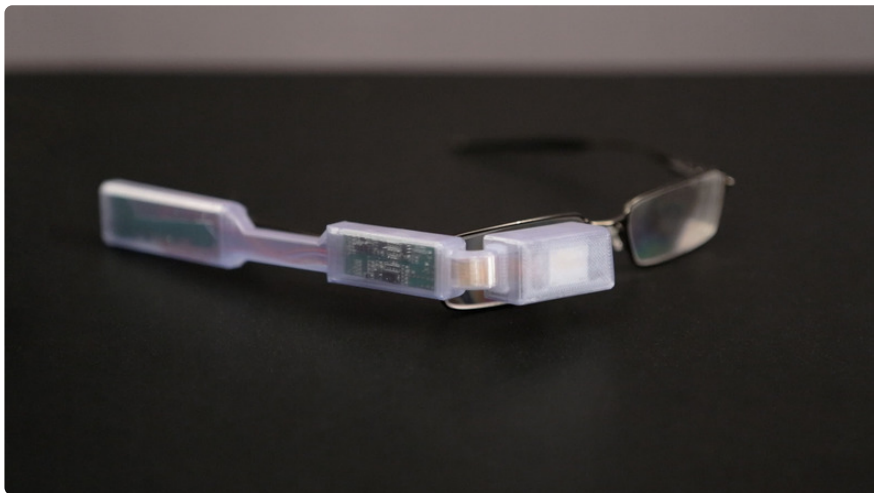
Gently slide the **hud-kopin.stl** part over the **micro Kopin** and tuck the wire bundle through the enclosure. Position **hud-kopin.stl** part close to the **hud-kopincap.stl** part with the clip piece facing inwards and snap it into place with.



Slide the **hud-power.stl** part over the power circuit and snap one of the ends to the **hud-bridge.stl** piece. Neatly tuck the extra wire slack in the **hud-power.stl** part without kinking the wire wrap.



Align up the holes on the **hud-cover.stl** part over the power circuit and snap it into place. You may need to insert the USB cable through the **hud-cover.stl** part, connect it to the power circuit, and then snap it onto the **hud-power.stl** part.



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## Video Configurations

Use a composition audio/video cable to connect the Raspberry Pi to the part of the Video Display with the switch and io ports.



Update your config.txt with the proper modes to allow composite video on you Raspberry Pi by checking this guide: <https://learn.adafruit.com/using-a-mini-pal-ntsc-display-with-a-raspberry-pi/> (<https://adafru.it/diN>)

Adjust the text size by following the guide here: <https://learn.adafruit.com/using-a-mini-pal-ntsc-display-with-a-raspberry-pi/configure-and-test> (<https://adafru.it/diO>)

## Power the Pi

[A USB Battery Pack/Bank \(https://adafru.it/diP\)](https://adafru.it/diP) will power the raspberry pi for hours of on-the-go linuxing!