



CLUE case

Created by Ruiz Brothers



<https://learn.adafruit.com/clue-case>

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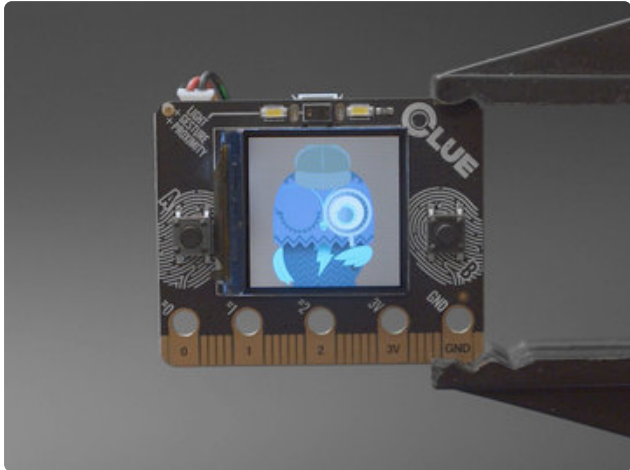
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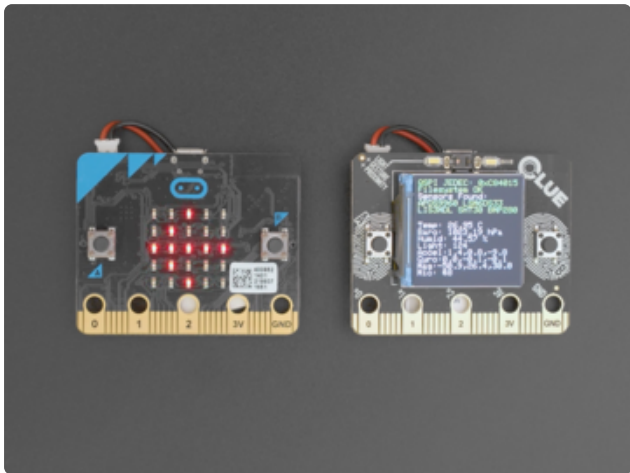
Overview



In this project we're making a wearable case for the Adafruit Clue board!

The CLUE features the same shape and size as the BBC micro:bit so it'll work with existing add-ons.

Adafruit Clue has a 1.3in IPS LCD color display with tons of sensors, so you can make projects with text and graphics!



We designed and 3d printed a case for the CLUE, so you can easily wear it like a badge or watch.

It has enough room for a lipo battery, so you can make your projects portable.

You have access to the edge connector, so you can use the touch pads as controls for your projects.





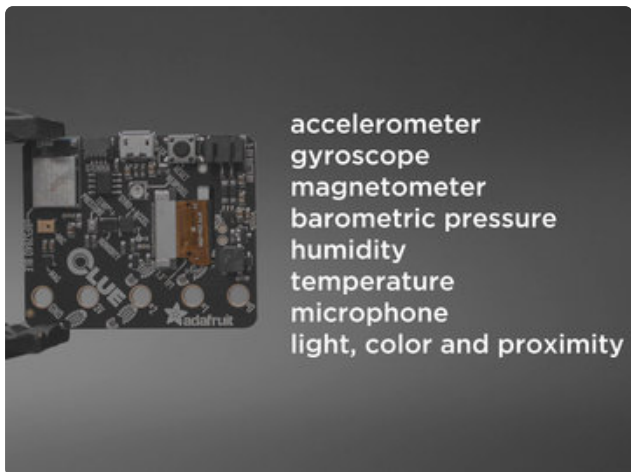
The CLUE is packed with sensors like an accelerometer, gyroscope magnetometer, barometric pressure, humidity, temperature, microphone, light, color, proximity and much more!

CLUE features the nRF52840 cortex M4 processor with 2mb of internal flash memory.

It also has a microphone, speaker, NeoPixel and a STEMMA connector so you can plug and play even more sensors!

With Bluetooth, you can make wireless projects that can control your BLE devices.

So you can control your phone using Apple's Music Service to play, pause and even change the volume!



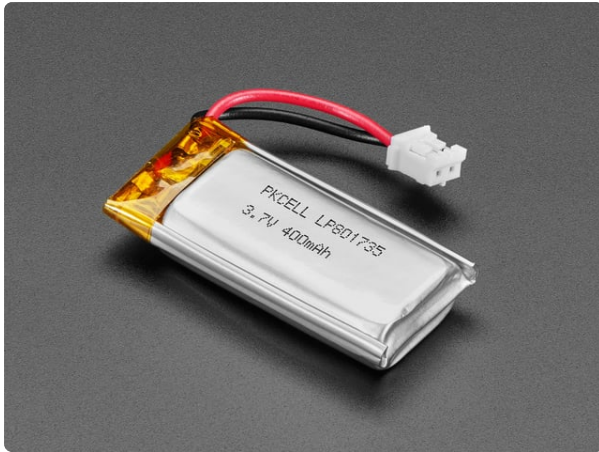
Parts



Adafruit CLUE - nRF52840 Express with Bluetooth LE

Do you feel like you just don't have a CLUE? Well, we can help with that - get a CLUE here at Adafruit by picking up this sensor-packed development board. We wanted to build some...

<https://www.adafruit.com/product/4500>



Lithium Ion Polymer Battery Ideal For Feathers - 3.7V 400mAh

Lithium-ion polymer (also known as 'lipo' or 'lipoly') batteries are thin, light, and powerful. The output ranges from 4.2V when completely charged to 3.7V. This...

<https://www.adafruit.com/product/3898>



Breadboard-friendly SPDT Slide Switch

These nice switches are perfect for use with breadboard and perfboard projects. They have 0.1" spacing and snap in nicely into a solderless breadboard. They're easy to switch...

<https://www.adafruit.com/product/805>



JST-PH Battery Extension Cable - 500mm

By popular demand, we now have a handy extension cord for all of our JST PH-terminated battery packs (such as our Lilon/LiPoly and 3xAAA holders). One end has a JST-PH compatible...

<https://www.adafruit.com/product/1131>

For a Badge - grab a lanyard



Adafruit Circuit Playground Lanyard

We've got our Circuit Playground friends on lunchboxes,

<https://www.adafruit.com/product/3987>

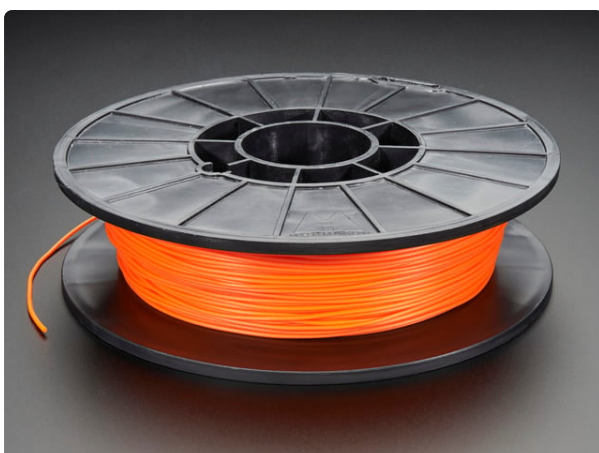


Double-Hook Lanyard in Adafruit Black

What did the lanyard say to the hat? "You go on ahead, I'll hang around." Terribly good puns aside, we've got a Double-Hook Lanyard in...

<https://www.adafruit.com/product/3982>

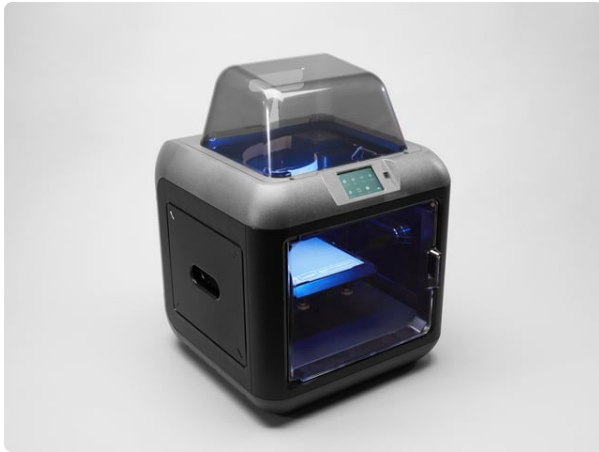
For 3D Printing



NinjaFlex Filament - 1.75mm - Liquid Hot Lava - 0.5 Kg

Looking beyond ABS? Tired of PLA? Open a world of possibilities, limited only by your imagination. NinjaFlex, a cutting-edge filament for 3D printers, is a specially formulated...

<https://www.adafruit.com/product/2443>

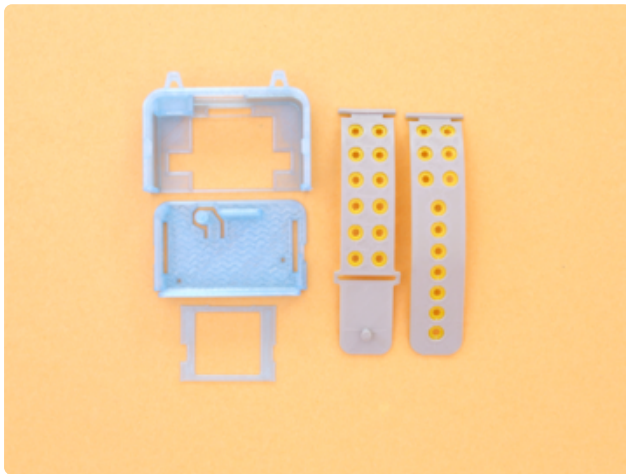


Monoprice Inventor II 3D Printer with Touchscreen and WiFi

The Monoprice Inventor II 3D Printer Touchscreen with WiFi is a perfect entry-level 3D printer with small footprint and reliable performance. It comes equipped with...

<https://www.adafruit.com/product/3897>

3D Printing



3D Printed Parts

STL files for 3D printing are oriented to print "as-is" on FDM style machines. Original design source may be downloaded using the links below.

clue-frame.stl
clue-case.stl
clue-lid.stl
clue-strapA.stl
clue-strapB.stl

Download STLs

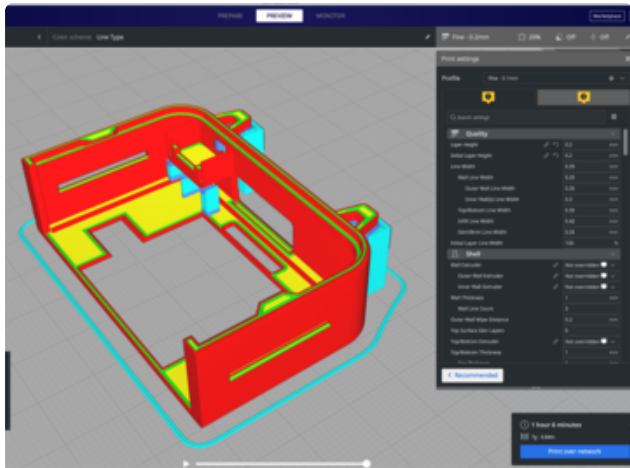
<https://adafru.it/JbG>

Edit CAD files

<https://adafru.it/JbH>

Edit Watch Bands

<https://adafru.it/sCd>



Slicing Parts

Supports recommended around the lanyard ears and slide switch. Slice with setting for PLA material.

The parts were sliced using CURA using the slice settings below.

PLA filament 220c extruder

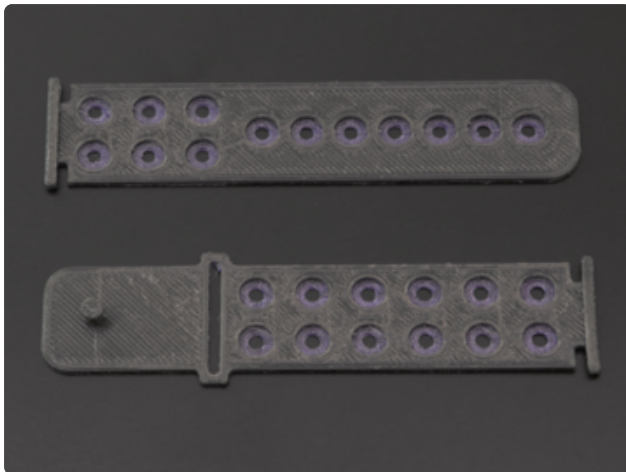
0.2 layer height

10% gyroid infill

60mm/s print speed

60c heated bed

Wrist band parts are optimized for flexible materials, rigid material will not allow the bands to fit.



Flexible bands

This design requires an extruder capable of printing with flexible materials. If you're using standard Ninjabflex material (85A shore hardness), we recommend printing slow, around 20 to 40mm/s with the extruder temperature set to 240c.

You can also use Cheetah Ninjabflex, which has a higher shore hardness (95A). The only difference will be in how flexible and how grippy the texture is.

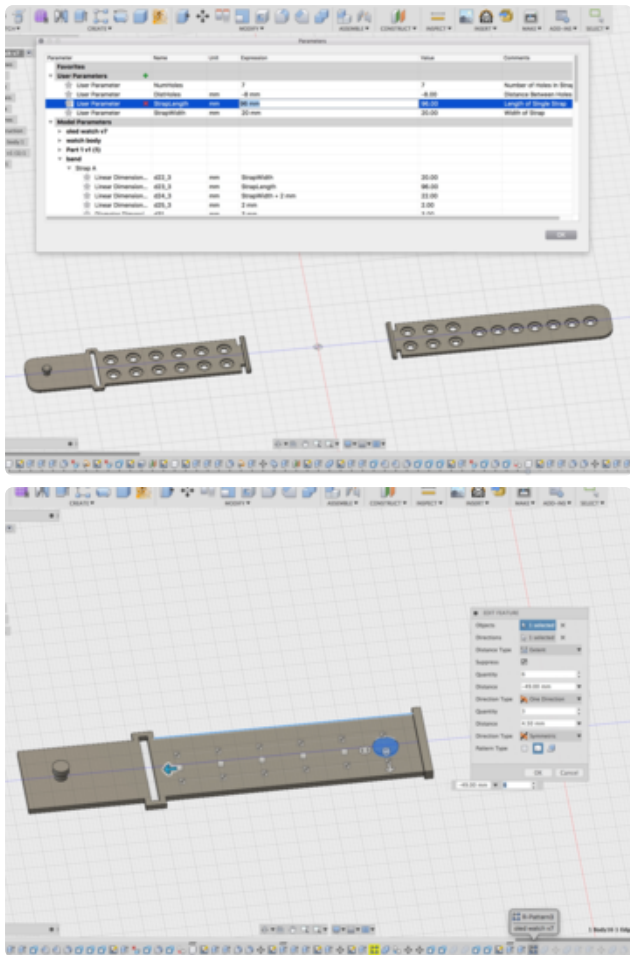
Dual Color Bands

Print from 0mm to 0.8mm to print the first bottom color.

Then print from 0.8mm to 6mm to print the top colors of the band.

Retraction clean up

Flexible materials may need retraction disabled to print successfully, so we'll need to clean any left over material around the slots and grooves on the bands.



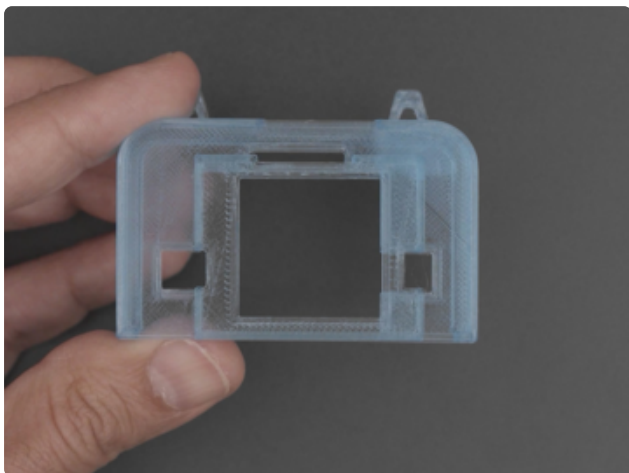
Customize Watch Band

The design of the watch band can be adjusted using Autodesk Fusion 360. Change the parameters to adjust the width, length and number of holes on the band.

Patterns

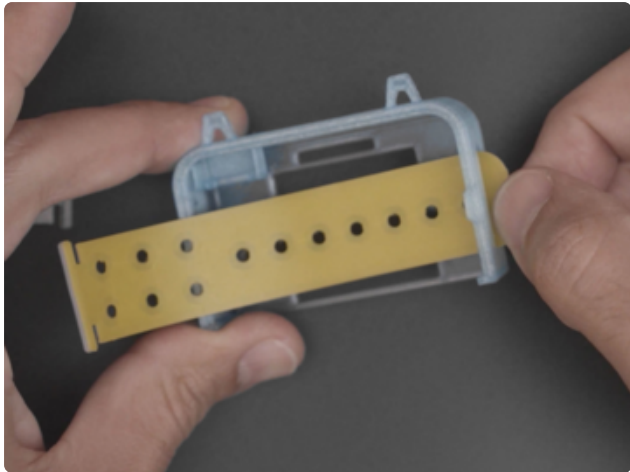
We can change the patterns for each band by editing the features in the timeline.

Assemble

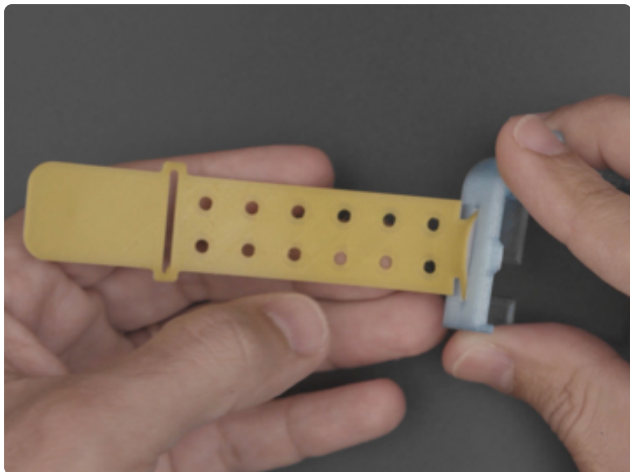


The bezel is attached to the front of the case to keep the display nicely secured.

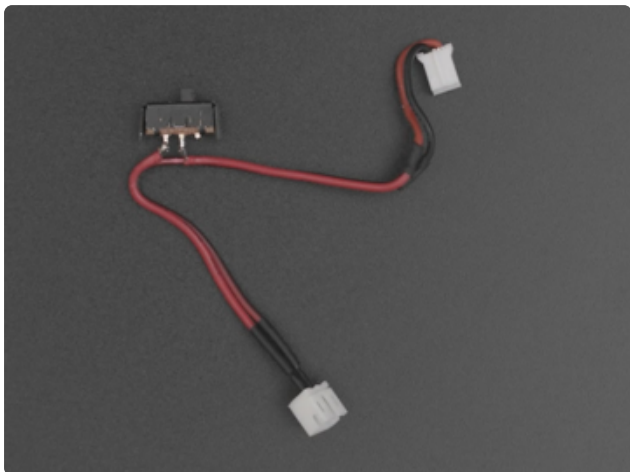
Use a drop of glue on each edge of the corners. Align the bezel to the light sensor (rectangle). A fan is helpful so the the glue doesn't haze the case.



Tabs on the end press fit into the slits on the side of the case.



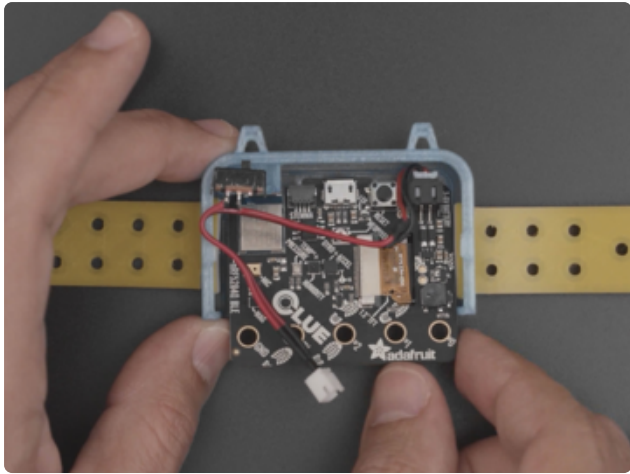
The wristband with the nubs is pressed into the slits with the ends first. Orient the end vertically and press each end. Use pliers to pull the ends through the slits on the case.



Slide switch

Use a slide switch with a JST adapter to turn the Clue on and off.

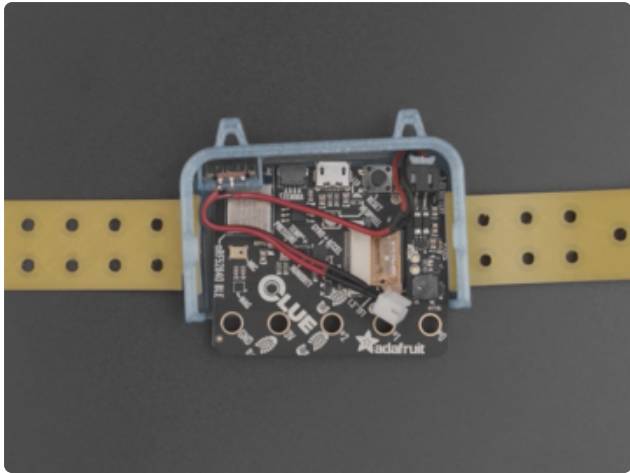
Short the JST extension cable to 120mm long. Split the power (red) wire at 42mm and solder each end to the middle pin the on the slide switch and either the left or right pin.



Mount CLUE

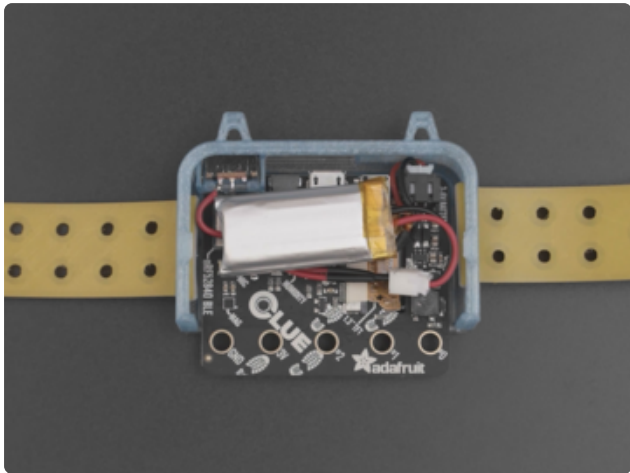
Plug the JST cable into the CLUE. Carefully bend the wires and pass them between the JST port and the reset button.

Align the CLUE buttons to the cutouts on the case and press fit into place.



Insert slide switch

Angle the slide switch between the two walls and carefully press fit into place. You can gently pull the metal tabs on the slide switch to increase the tolerance.



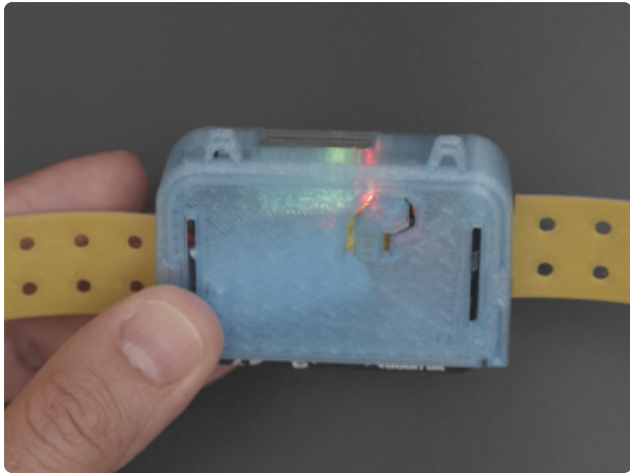
Plug in battery

Plug the lipo battery into the JST extension. Use a small amount of sticky tac to adhere the battery to the CLUE. position the battery so it doesn't overlap the reset button.



Press fit lid

Make sure the battery and wires are away from the walls and reset button. Align the tabs on the case to the divots on the lid and press fit close.



Wear

The nubs on the wrist band press fit into the hole on the opposite band. Use the slit on the end to tuck in the bands and keep it nice and tight.



Badge

The case is also badge compatible! You can attach our lanyard to the cat ears and wear to your next conference!