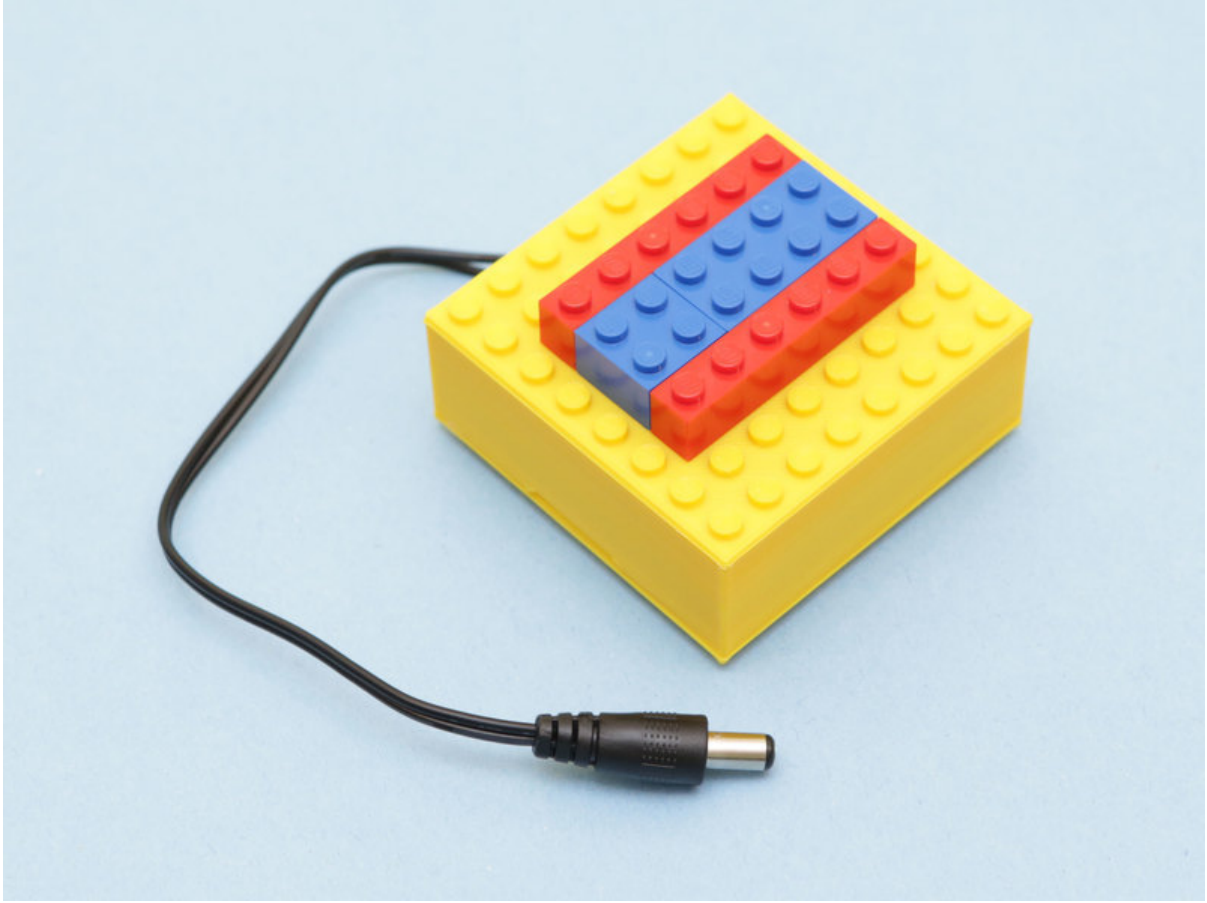
# LEGO® compatible Battery Case

Created by Ruiz Brothers



https://learn.adafruit.com/brick-compatible-battery-case

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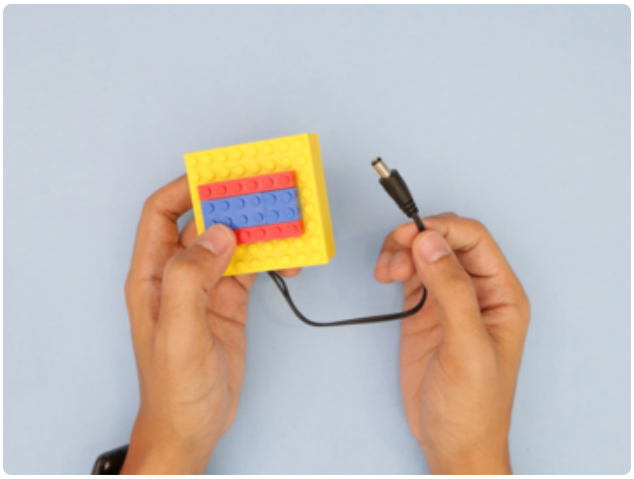
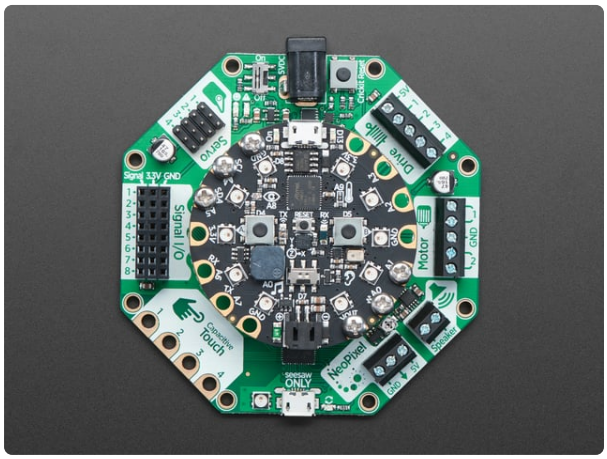
# Overview

Are you looking to power motors and servos with your LEGO® compatible builds? 3D print a battery case for LEGO® compatible robotics projects! This is 3D printed 8x8 LEGO® compatible box that contains a 3xAA battery pack. The box is comprised of four pieces that snap-fit together. It features studs and tubes that can attach to either side of LEGO® compatible bricks. The battery pack features a 2.1mm DC plug.



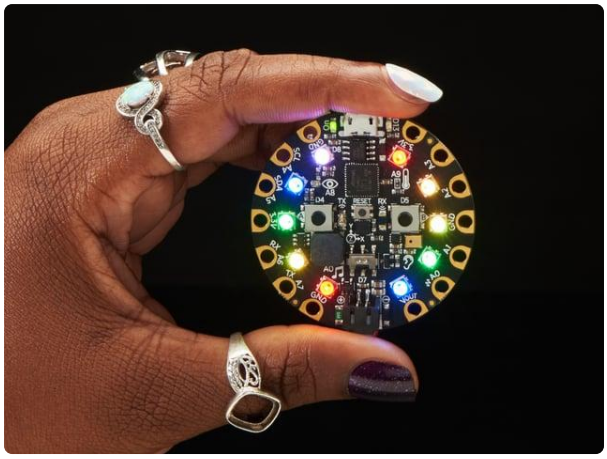
## 3D Printed Battery Case

The battery holder features a 2.1mm barrel jack for connecting devices. This is perfect for powering the Adafruit Crickit for Circuit Playground Express (http://adafru.it/3093) and Adafruit Metro M4 (http://adafru.it/3382). There's also plenty of peripherals that use 2.1mm DC jacks as they are standard. For different connections, cut and solder up a custom plug connector that you need for your project.



### Adafruit CRICKIT for Circuit Playground Express

Sometimes we wonder if robotics engineers ever watch movies. If they did, they'd know that making robots into servants always ends up in a robot rebellion. Why even go down that... https://www.adafruit.com/product/3093



Circuit Playground Express

Circuit Playground Express is the next step towards a perfect introduction to electronics and programming. We've taken the original Circuit Playground Classic and...

https://www.adafruit.com/product/3333

## Battery Parts

You'll need three double A batteries, a 3xAA battery holder, 2x M3 x 5mm flat head screws and the 3D printed mount. The hardware and accessories are linked below.

**2 x** Metric Flat Head Machine Screws

M3 x .5 x 5M – Two short screws with flat head for flush mounting

https://www.albanycountyfasteners.com/3-MM-x-5-Phillips-Flat-Head-Machine-Screw-p/1011-1006.htm

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**1 x** Microtip Super Glue

Starbond Glue with Extra caps and Microtips, 2 oz.

https://www.amazon.com/gp/product/B00C32ME6G/

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3 x AA Battery Holder with 2.1mm Plug

Here's another addition to our growing family of AA battery holders. A holder for three (3) AA batteries!...

https://www.adafruit.com/product/3842

Alkaline AA batteries (LR6) - 3 pack
Battery power for your portable project! These batteries are good quality at a good price, and work fantastic with any of the kits or projects in the shop that use AAs. This is a pack...
https://www.adafruit.com/product/3521

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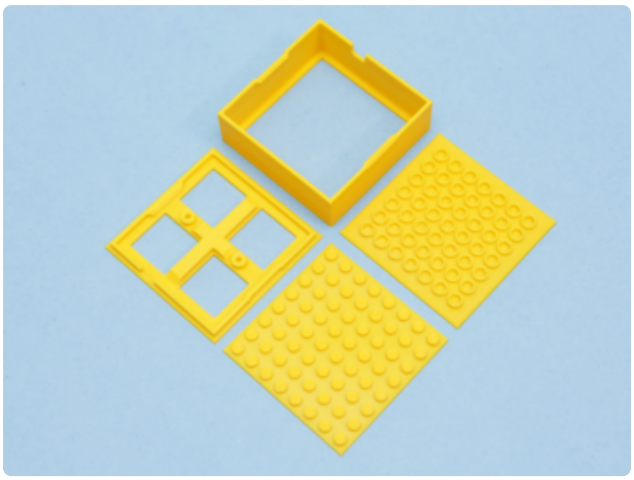
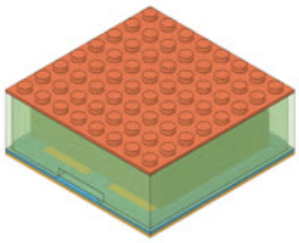
# 3D Printing



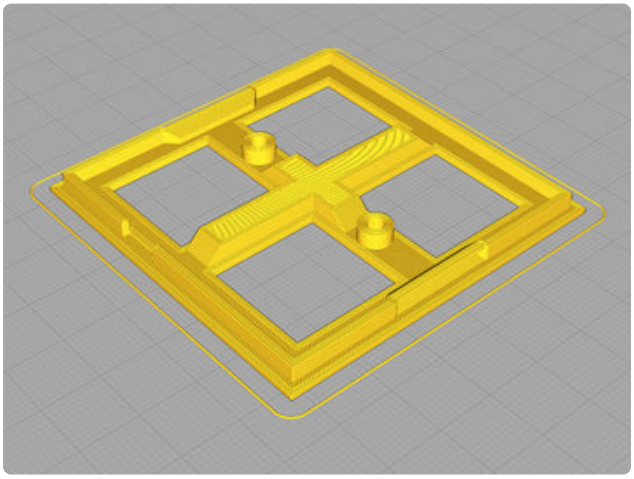
## 3D Printing

The case and battery mount are designed to snap fit together. The assembly is comprised of 4 individual parts that are 3d printed in PLA material. The parts are 3D printed on FDM style machines and does not require any support material. Download the STLs using the links below.



## Parts Assembly

Use the cad assembly animation to visualize how the parts are oriented and fit together. The design source files are available to download. Formats in **STEP**, **STL** and **Fusion 360**. Modify the parts and remix the design. Use the battery model in other projects.



## CURA Slicing

This project was sliced using Ultimaker's CURA (https://adafru.it/C26). Use the slice settings as reference. Settings may need to be adjust for tolerances. Print parts independently for best results. Test fit parts before full assembly. Parts tested with PLA filament using Ultimaker 3.

0.4mm nozzle for standard quality
0.2mm layer height
0.38mm line width / 2 wall line count
60mm/s printing speeds

**Download CAD files**

https://adafru.it/C7S

## What If I Don't Have A 3D Printer?

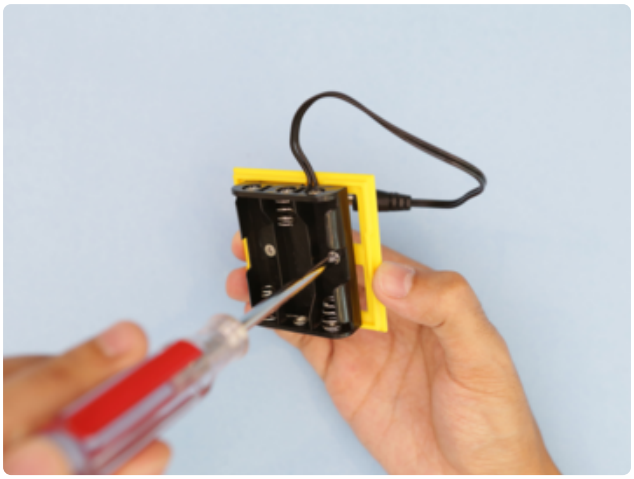
Not to worry! You can use a 3D printing service such as 3DHubs (https://adafru.it/jNb) or MakeXYZ (https://adafru.it/veh) to have a local 3D printer operator 3D print and ship you parts to you. This is a great way to get your parts 3D printed by local makers. You could also try checking out your local Library or search for a Maker Space.

Ultimaker 2+ 3D Printer

The Ultimaker 2+ is one of our favorite 3D printers on the market. It's a well-built open-source compact machine with an excellent UX. Every inch of the...

https://www.adafruit.com/product/2673

# Assembly

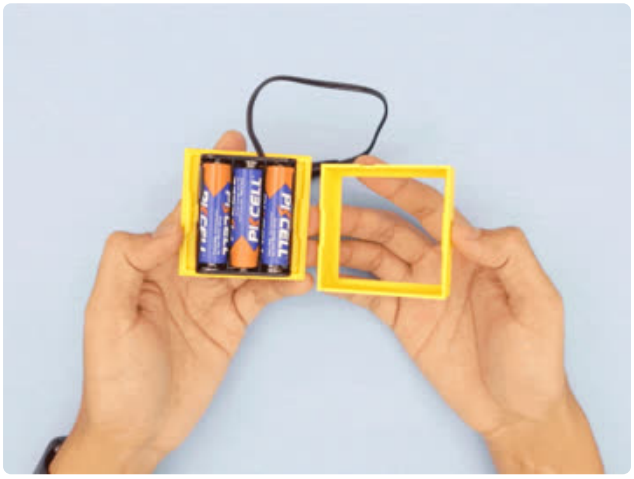


## Secure Battery Pack

Use two M3 x 5mm flat head machine screws to secure the 3xAA battery to the 3D printed battery mount. Orient the battery holder and place over the standoffs. Line up the mounting holes. Insert and fasten two M3 x 5mm flat head machine screws through the built-in standoffs.

## Secured Battery Holder

The machine screws need to flush with the battery holder in order to properly fit the batteries. The power cable passes through a cutaway in the lip.



## Snap Fit Case

The battery mount features a lip with indentations that snap fit and lock onto the case. The case features nubs that are press fitted into the indentations in the battery mount. Using this design method the case can be securely shut but still be reopened. Moderate effort required top reopen, suggest using a finger nail or spudger prying tool (http://adafru.it/3434).

## Covers

You can choose which LEGO® compatible plate to install onto the case. The under side of bricks are the tubes and the top side are the logic studs. The bottom of these parts are both flat and can be glued to the battery mount or case. You can use superglue to permanently bond two surfaces together.

## Secure Covers to Case

Apply glue to either side of the case or battery mount first. The bottom of the case has a border that can be used to apply superglue. The bottom of the battery mount has more surface area to work with. A fine tipped nozzle and squeeze bottle (https://adafru.it/C7T) is nice for making precision glue application.

## Assembled Battery Case

When the batteries get low, you can easily open up the case and swap them out.