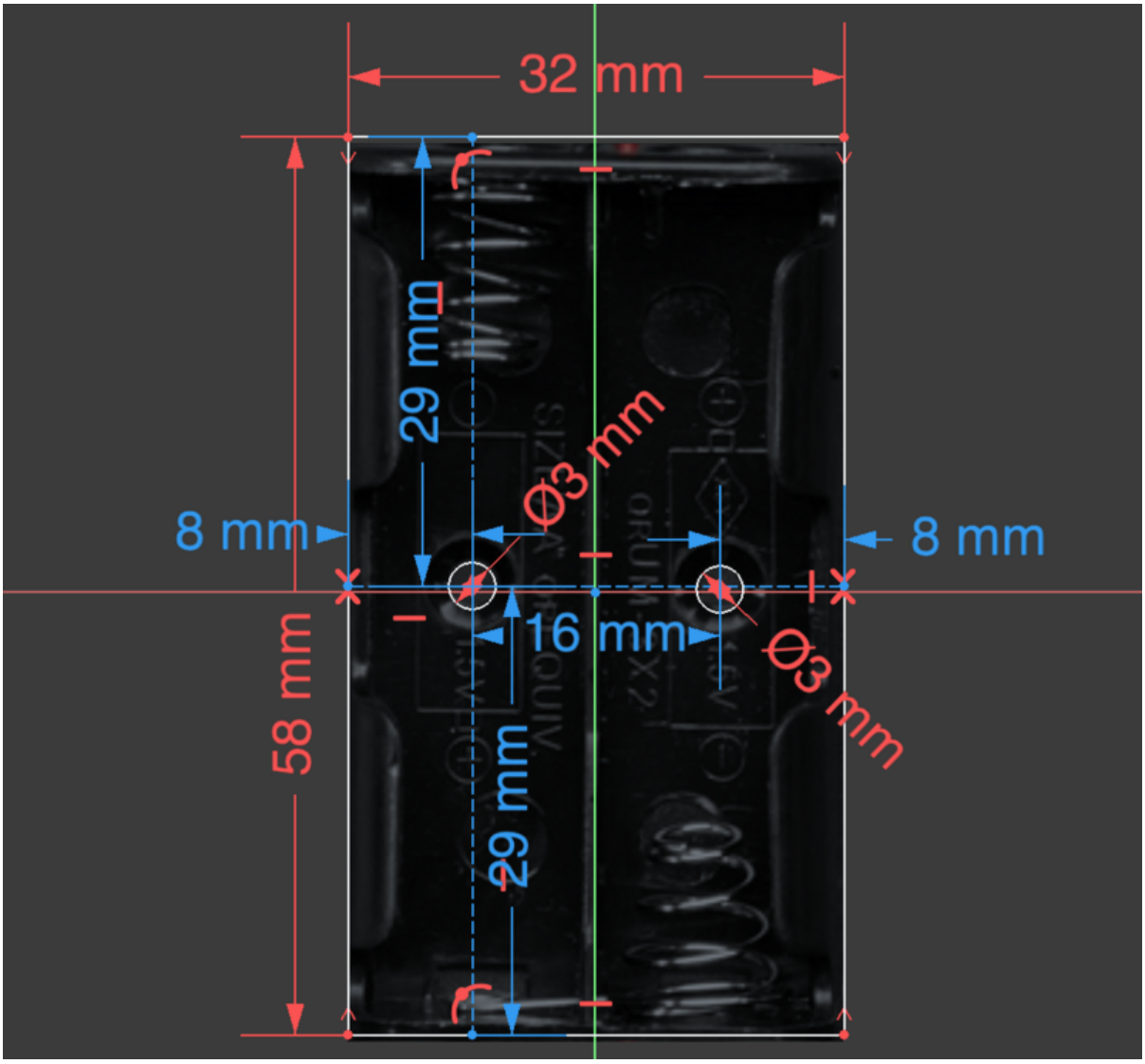
Measuring Parts from Product Photos in FreeCAD

Created by Michael Sklar



https://learn.adafruit.com/measuring-parts-from-product-photos-in-freecad

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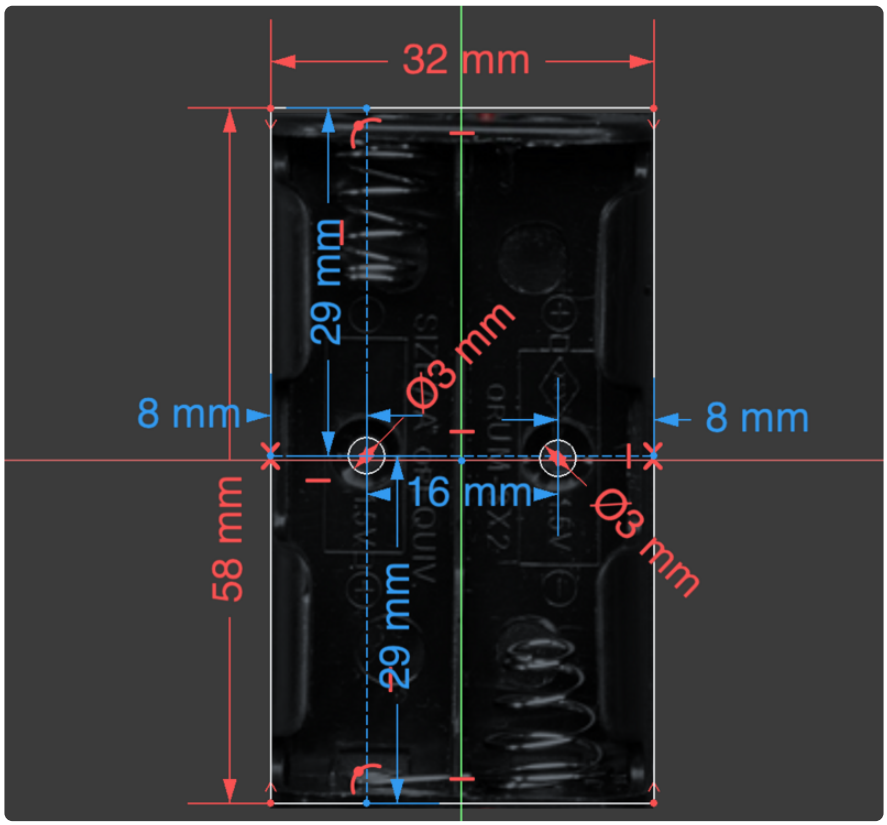


Sometimes you've got the perfect part in mind — a display, sensor, or breakout board — but you don't have it in hand yet. Maybe it's still in the mail, or maybe you just want to test-fit it in a 3D design before you click "Add to Cart."

Good news: you don't need calipers, a datasheet, or even the real part to start modeling.

In this guide, you'll learn how to measure and model Adafruit parts using only their **product photos** and the dimensions listed on the **product page** by bringing those images into **FreeCAD.** You can scale them to real-world size and use them as reference blueprints to sketch accurate outlines, mounting holes, and features.

This technique is perfect for:

- Checking fit and alignment in mechanical assemblies
- Designing 3D-printed enclosures or laser-cut panels
- Mocking up projects before parts arrive

You'll go from a flat photo to a scaled sketch ready for modeling — all in a few quick steps. Once you know the trick, you can do it for any product photo in minutes.

Software & Specs

Download and Install

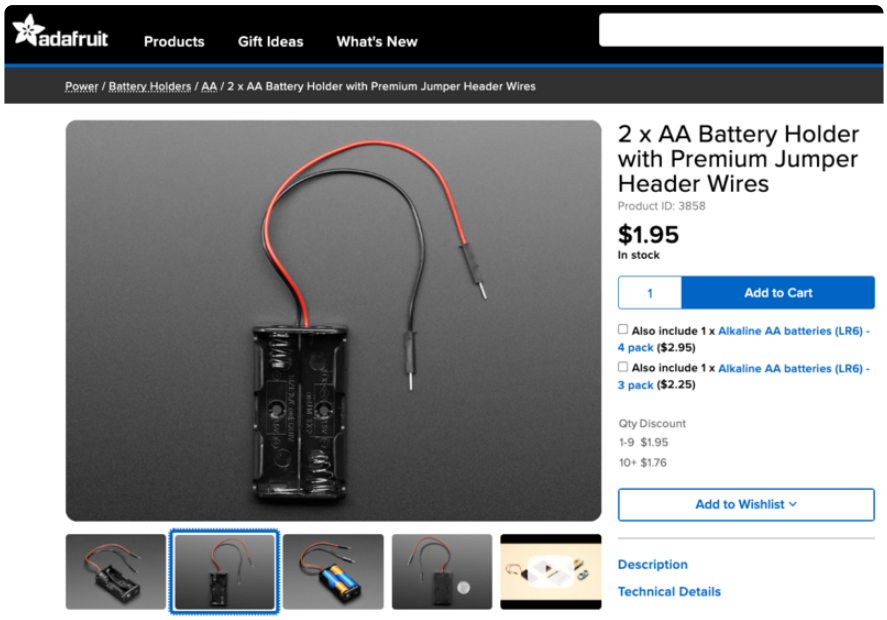
- FreeCAD (https://adafru.it/YGA) (any recent version)
- An image editor (Preview, GIMP (https://adafru.it/Lyd), etc.)
- A product photo from the Adafruit product page
- The product dimensions from the Tech Specs tab

Getting the Image

Go to the Product Page

This example uses a simple 2 x AA battery holder, Adafruit part 3858 (http://adafru.it/3858).

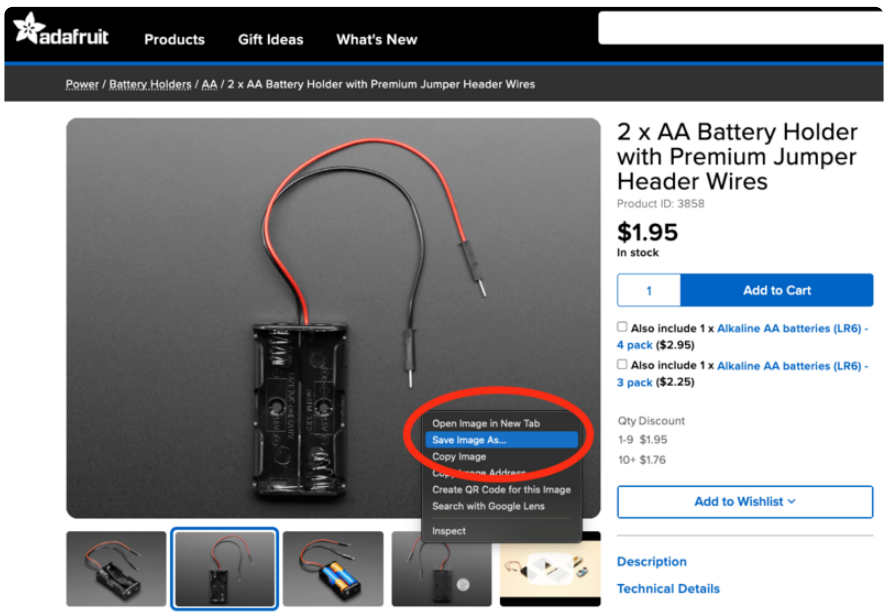
It has two mounting screws that we would like to know the diameter, as well as the distance between and the locations from the edges.



Select and Save

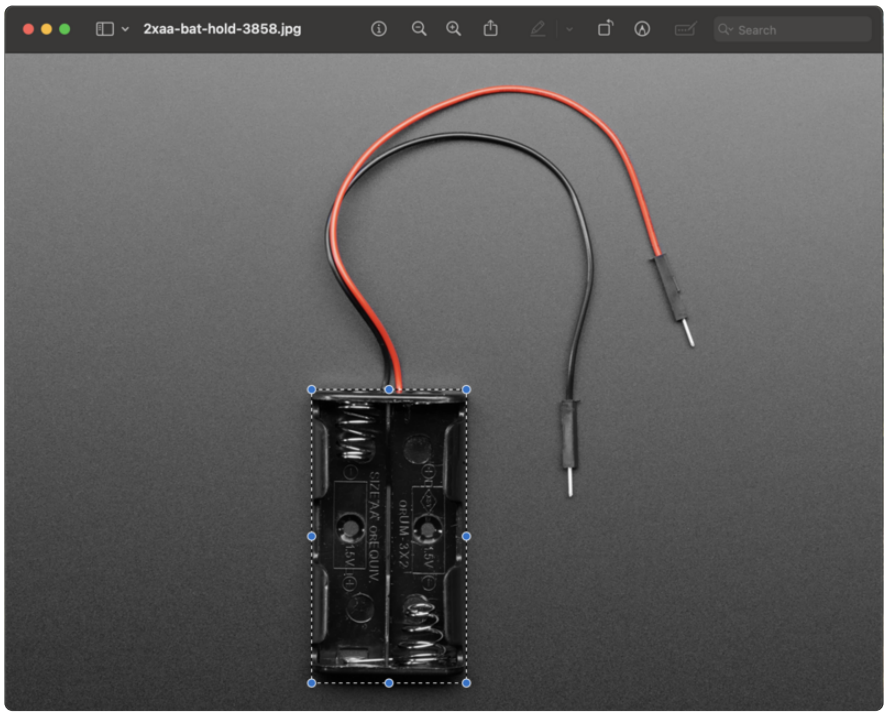
Look for a straight-on photo — a top-down (bird's-eye) or bottom view of the part. Avoid angled shots or images with anything blocking the component, like batteries. In this example, use the second image from the bottom.

Right-click the image and choose "**Save Image As ..**" to save the image to your computer.



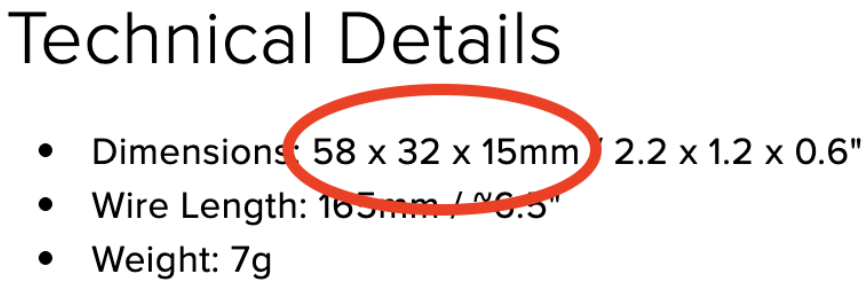
Crop the Image

You will want to isolate the component. I'm using MacOS's built-in Preview App. Make a selection around the edge of the battery case and press the **crop button** (or **CMD + K**).



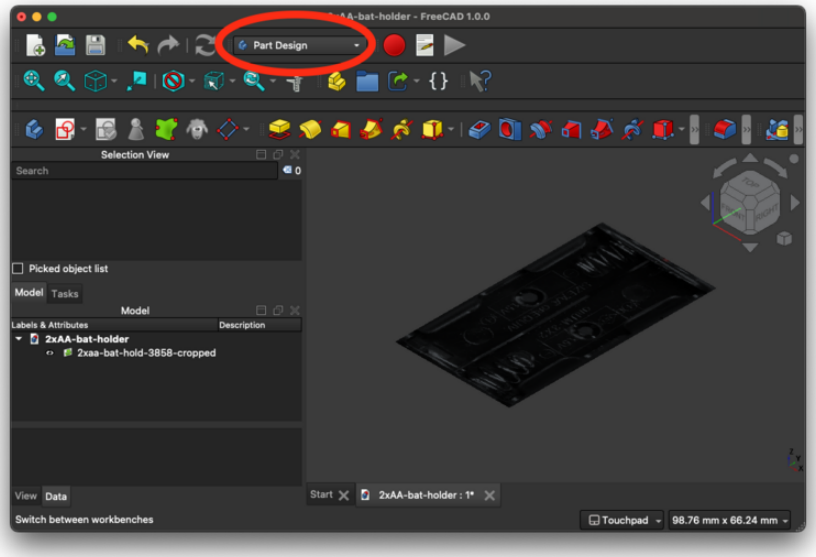
Grab the Dimensions

The **Technical Details** section of the product page has the components dimensions.



Scale and Set Up in FreeCAD

Open Image in FreeCAD



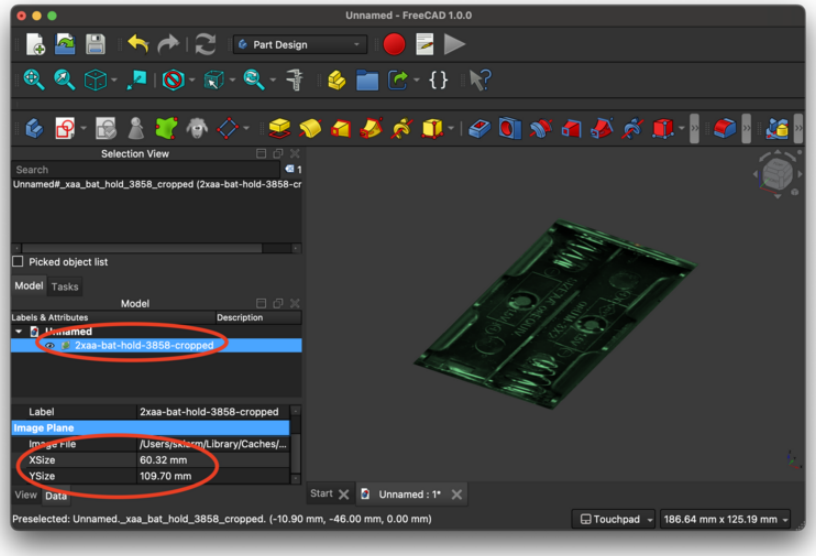
Once FreeCAD is open, you can either drop the image right into the initial screen or use the menu options:

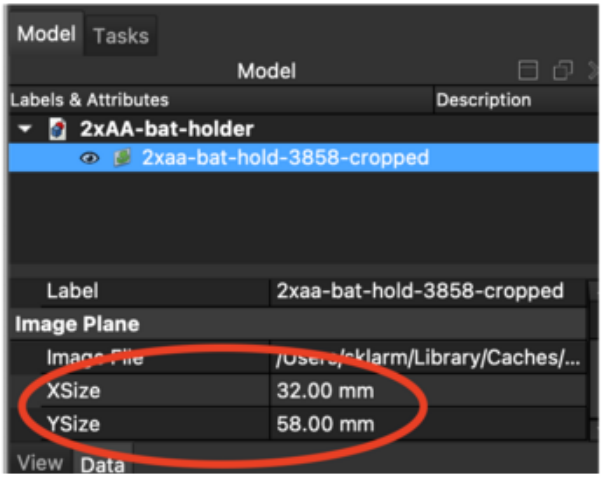
File -> New

File -> Import

Make sure the **Part Design workbench** (drop down menu) is selected. We will only be using that workbench for the duration of the guide.

Scale the Image Size



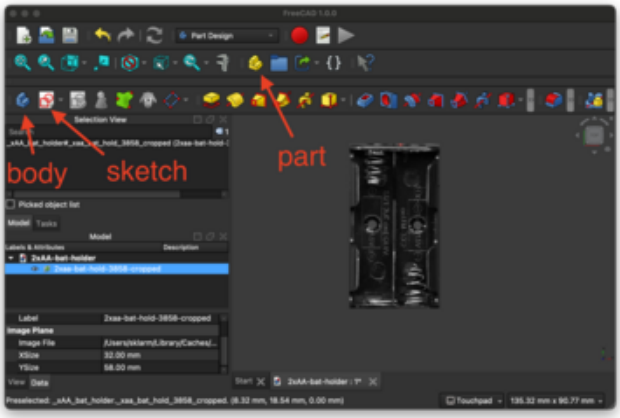


Select the **Image filename** listed in the **Model menu**. Use the known dimension from the product page to scale the image.

In this case, the battery holder width is 32 mm. Set the **XSize field** to 32 mm.

The battery length is listed as 58 mm, adjust the **YSize field** until the width to match 58 mm.

Part / Body / Sketch



This is the least intuitive part of getting started with FreeCAD. It's necessary to create a Part, Body and Sketch to do any design work.

Press the **Part button**.

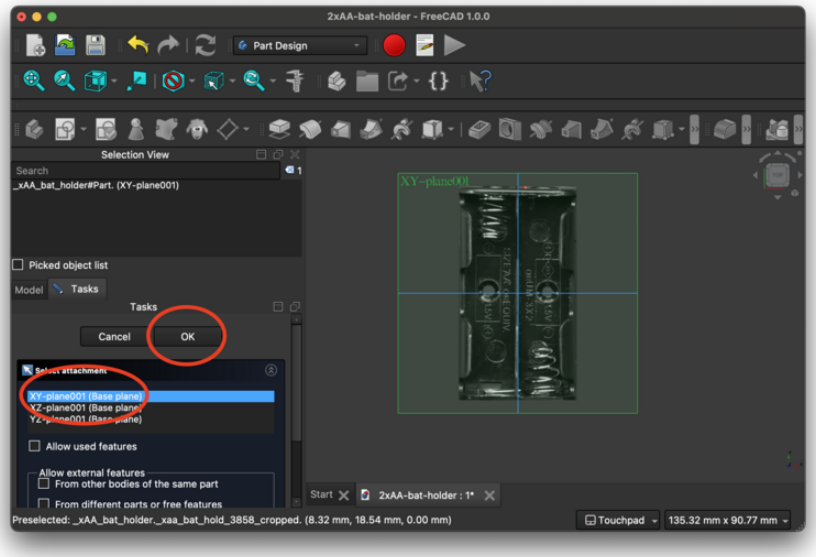
Press the **Body button**.

Press the **Sketch button**.

Select the XY-Plane

We will be working on the flat XY plane.

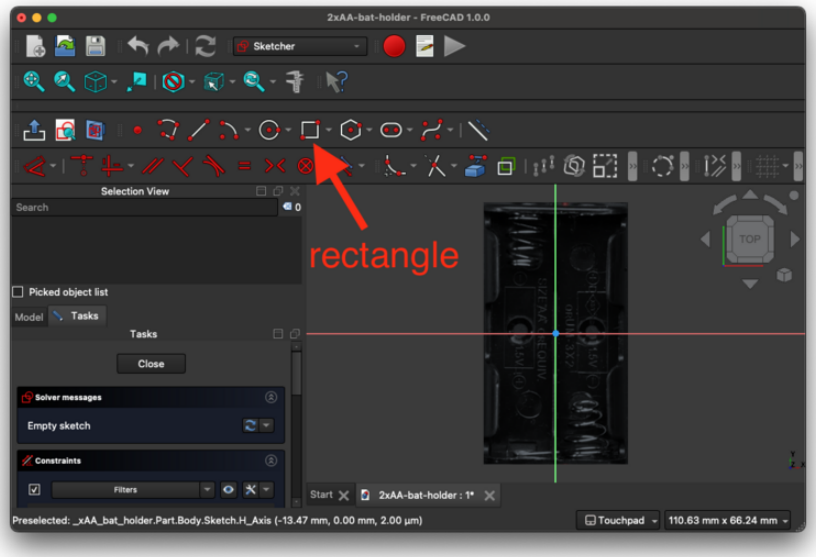
Select the circled **XY-plane001** (Base plane) and click **OK**.

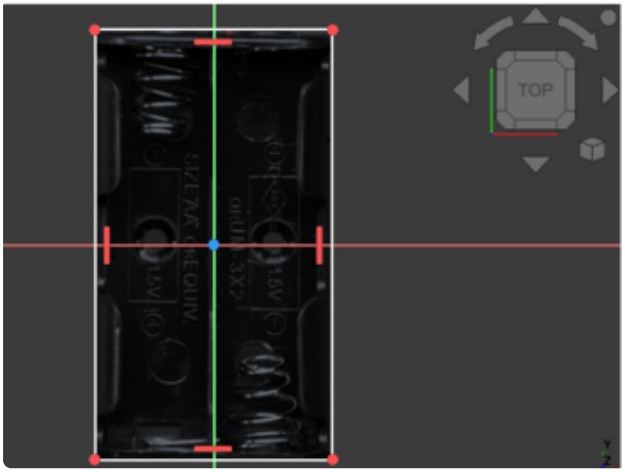


Measure and Sketch Features

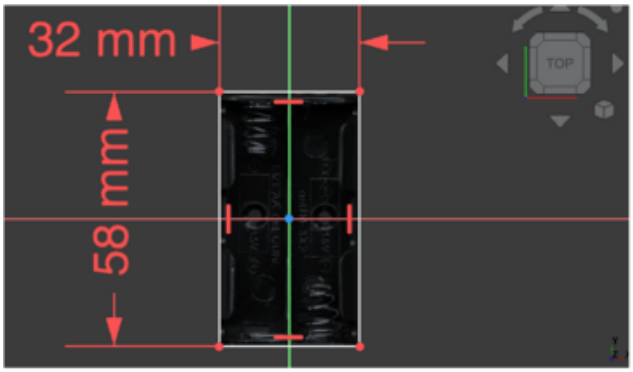
Draw a Rectangle Around the Component

Select the rectangle button or use the key sequence **g r.**





Draw the outline of the part. Use the mouse wheel to zoom in and out of the component. The key sequence **v f** allows for image centering.



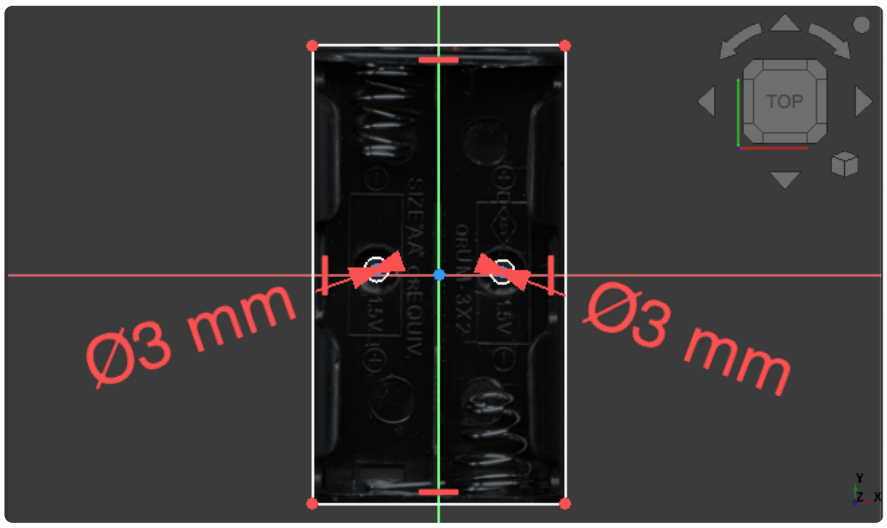
Click on an outer edge and type **d** to add a dimension constraint.

Draw Circles over Mount Holes

Select the **circle button**. Draw circles inside the mounting holes. Click in the empty center of the mounting hole.

Click when the circle is roughly the hole size. Click the outer edge of the circle to manually adjust size. Select the center of the circle to move it around.

Lock in dimensions by typing **d** to assign a dimension constraint. You can also use the right-click menu to see this option.



Determining Distances

Whew! I know it takes a bunch of steps to get a basic jig setup. We already figured out the screw hole size and confirmed that the image matches the product page technical specs.

Now to do the fun stuff, which is:

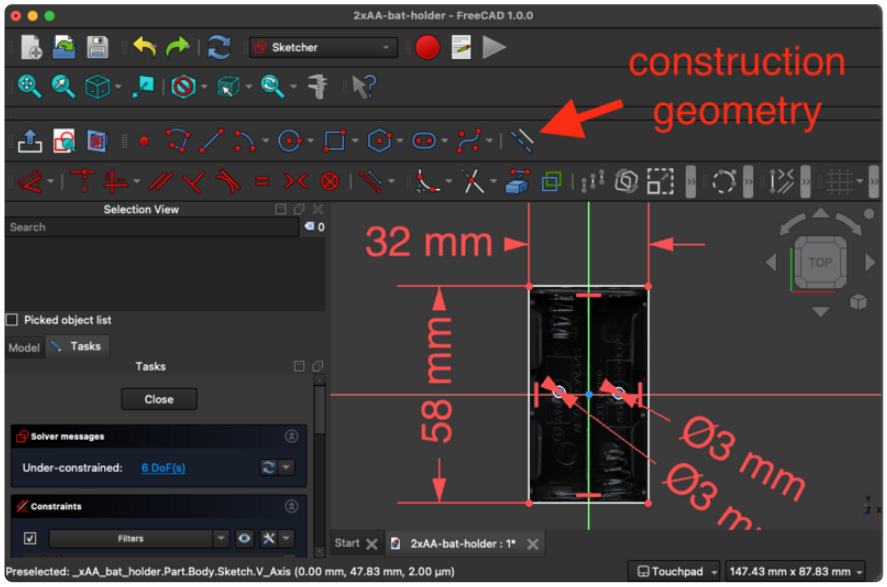
1. Measure the distance on center between the mount holes
2. Measure the distance to each edge from each mount hole

Construction Geometry Lines

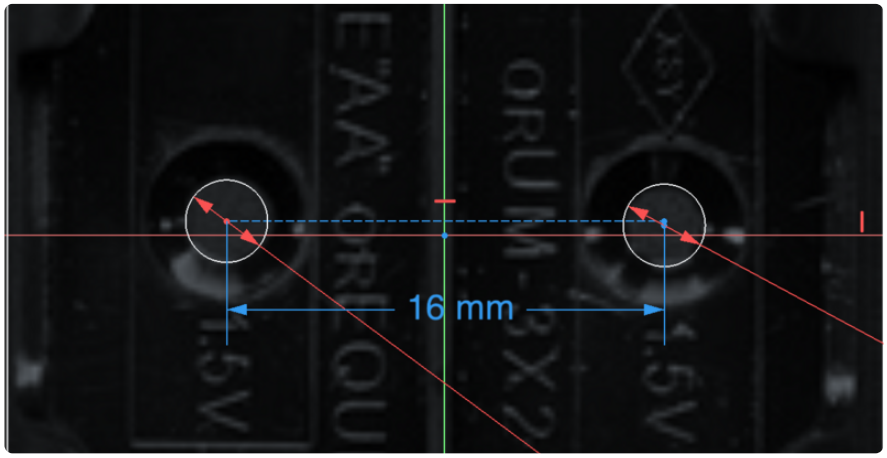
Toggle the **construction geometry button**. This toggles the lines from being white solid to blue dotted when drawing. These blue lines are not part of the structure, but only for labeling.

Draw a line between the two mount holes center point using the line icon or press **g l.**

Click on the **blue dotted line** between the holes and press **d** to see the length.

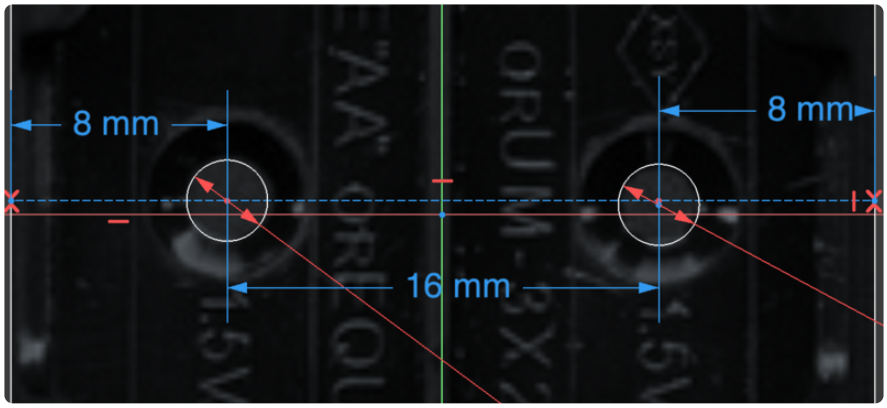


The mounting holes are spaced apart and appear to be 16mm on center.



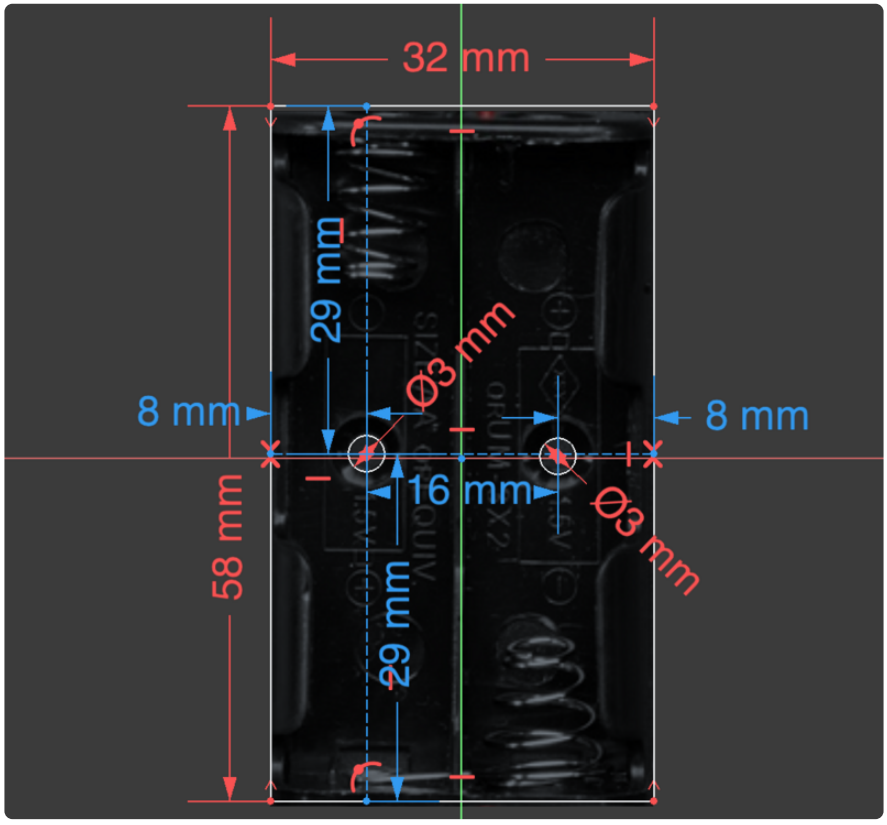
The mounting holes are each inset 8mm on center from the edges of the battery holder. I used the same draw line (**g l**) and dimensions (**d**) to determine this.

This sort of symmetry (16mm and 8mm) confirms that the photo alignment and dimensions are matching up with a well designed product. If you are seeing crazy values such as 7mm on one side and 9mm on the other, then you might have an alignment issue.



The last set of measurements to find is how far the mounting hole center point is from the top and bottom of the battery holder.

After measuring using the (**g l**) to draw a line and (**d**) for dimension, it appears that it is 29 mm in either direction to the center of the mounting hole.



Summary

With your scaled image and measurements in place, you can now jump into modeling! Turn that sketch into a solid body, create cutouts, or design a snug 3D-printed enclosure — all from a single product photo.