

# <Device Name> MAKER GUIDE

## Completion Checklist (DELETE BEFORE POSTING)

- Update <MONTH> and <YEAR> in header
- Update V<X.Y.Z> in header
- Update <DEVICE NAME> in header
- Add logo to or remove the “Place Logo Here” textbox in header
- Update <YEAR> in footer
- Update <Author> in footer
- Update webpage link in footer
- Complete Overview page
- Update Maker Checklist
  - Maker To Do List
    - Remove irrelevant steps
    - Add specific customization options (if necessary)
  - Items to Give to User
    - List components of the device and quantities needed
    - State that the parts need to be tested, if that is necessary
- Add tools to Tool List
- Add supplies to Supplies table
- Complete relevant parts of Customization Guide
- Remove irrelevant parts of Customization Guide
- Complete 3D Printing Guide
  - Complete summary
  - Complete settings
  - Complete post-processing instructions
  - Add images of quality prints
- Complete Assembly Guide
  - Add required components table
  - Add required tools
  - Add required PPE
  - Complete step-by-step instructions
- Complete Testing section (if necessary)
- Complete Troubleshooting section (if necessary)
- Remove any help text
- Update Table of Contents
- Delete Completion Checklist

For detailed instructions on completing the Maker Guide, please see the [OpenAT Documentation Guide](#).



# <Device Name>

## MAKER GUIDE

### Examples of “Gold Standard” Maker Guides

- [LipSync](#) (for complex devices)
-

# <Device Name>

## MAKER GUIDE

### Overview

This document contains the necessary information to build the <DEVICE NAME>, <INSERT ONE-LINE DESCRIPTION OF DEVICE>.

<INSERT IMAGE OF DEVICE>

# <Device Name> MAKER GUIDE

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## &lt;Device Name&gt;

## MAKER GUIDE

## Maker Checklist

This list provides an overview of the steps required to build and deliver the <DEVICE NAME>.

## Maker To Do List

- ☐ Read through the Maker Guide to become familiar with required components, tools, supplies, safety gear, and overall assembly steps.
- ☐ Talk to the User about customization options
  - <COLOUR OF PRINTS. LIST OUT DIFFERENT PARTS TO CUSTOMIZE>
  - <ADD OTHER SPECIFIC CUSTOMIZATION OPTIONS FOR THE DEVICE>
  - How they would like to receive the “User Guide” (PDF or physical copy)
- ☐ Order custom PCBs <REMOVE IF NO PCBs ARE USED>
- ☐ Order hardware components
- ☐ Gather tools, supplies, and safety equipment.
- ☐ Assemble the device <BREAK INTO SUB ASSEMBLIES IF NECESSARY>
- ☐ Flash firmware to <DEVICE NAME> <REMOVE IF NOT USED>
- ☐ Test the <DEVICE NAME>
- ☐ Print “User Guide” (if the User would like a physical copy)

## Items to Give to User

- ☐ <LIST COMPONENTS / DEVICES TO SEND. STATE THEY NEED TO BE ASSEMBLED AND TESTED>
- ☐ “User Guide”

# <Device Name>

## MAKER GUIDE

### Tool List

#### Tools / Equipment

<COMPLETE THE BELOW TABLE. TOOLS SHOULD BE GIVEN AN ID (T01, T02, ETC.)>

Tool ID	Description	Required / Recommended	Notes
<b>T01</b>	<TOOL NAME, SIZE, ETC.>	<IF REQUIRED OR RECOMMENDED>	<WHAT THE TOOL IS USED FOR>

#### Supplies

<COMPLETE THE BELOW TABLE. SUPPLIES SHOULD BE GIVEN AN ID (S01, S02, ETC.). SUPPLIES ARE CONSUMABLES LIKE GLUE, SOLDER, ETC.>

Supplies ID	Description	Quantity	Notes
<b>S01</b>	<SUPPLIES NAME>	<AMOUNT NEEDED>	<WHAT THE SUPPLIES ARE FOR>

#### Personal Protective Equipment (PPE)

<Complete the below table. PPE should be given an ID (P01, P02, etc.)>

PPE ID	Description	Notes
<b>P01</b>	<PPE NAME>	<WHAT THE SUPPLIES ARE FOR>

# <Device Name>

## MAKER GUIDE

### Customization Guide

The device can be printed in the user's desired colour.

<information on standard 3D printing customization options>

### Custom Printed Circuit Board (PCB) Guide

<This section is included if the device has one or more custom printed circuit boards (PCBs).>

The <DeviceName> uses <NumberOfPCBs> custom circuit board/boards.

The Custom PCB can be ordered from one of a variety of PCB Manufacturers. Typically, the minimum quantity for a custom PCB is five. Shipping options vary significantly in cost and shipping time. Plan on at least a week from the time of order to the PCBs arrival.

### Ordering the Custom PCB

1. Select a PCB Fabrication Company
  - a. [JLPCB](#)
  - b. [PCBWay](#)
  - c. [OSH Park](#)
  - d. [Seeed Fusion PCB](#)
2. Create an account or use a guest login.
3. Upload the Gerber Files (e.g., <Device\_Name>\_<PCB\_Name>\_YYYY-MM-DD.zip).
4. Select the fabrication options:
  - a. PCB Layers: <NumberOfLayers> Layers
  - b. PCB Quantity: <NumberOfPCBsPerOrder>
  - c. PCB Thickness: <ThicknessOfPCB> mm
  - d. Surface Finish: <SurfaceFinishRequired>
  - e. PCB Color: Choose what you like. Note that certain colours may impact build time and cost.
  - f. The default settings for the other settings should work.
5. Select shipping option.
  - a. Shipping options and costs vary significantly. Select the best option based on your budget and timing.
6. Submit the order.

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## 3D Printing Guide

The device was originally printed on a <3DPrinter> using <SlicerSoftware>.

<Include relevant information on the slicer settings (e.g. if it was a default printer profile from the slicer, if the acceleration or speeds were changed, etc.)>

## 3D Printing Summary

Metrics	Single Unit
Total Print Time (hour min)	<PrintTime (e.g. 1h10m)>
Total Number of Components	<NumberOfComponents>
Typical Total Mass (g)	<TotalMassOfAllParts>
Typical Number of Print Setups	<NumberOfPrintSetups>

## 3D Printing Settings

Note that the 3D printing material should be assumed to be PLA unless otherwise noted in the table below.

Print File Name	Qty	Total Print Time (hr:min)	Mass (g)	Infill (%)	Support(Y/N)	Layer Height/ Nozzle Diameter(mm)	Notes
<Device_Name>_<Component>.stl	<Qty>	<Time>	<Mass>	<Infill>	<If supports are needed>	<layer Height/Nozzle diameter>	

## Post-Processing

Inspect the 3D printed parts for any printing defects, sharp edges, or burrs. Sharp edges and burrs can be removed with sanding or deburring tools.

<Add any additional processes that must be done after print, such as removing supports>

## Examples of Quality Prints

Compare your 3D prints to the images here. If there are significant differences, you may need to reprint the part.

<The table below can be expanded (adding rows), or compressed (removing columns) as needed, depending on the number of parts in the device>

<Sub-Assembly Name>		
<Device_Name>_<Component>.stl	<Device_Name>_<Component>.stl	<Device_Name>_<Component>.stl



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Files available at <REPLACE WITH MMC GITHUB LINK>



# <Device Name>

## MAKER GUIDE

<INSERT IMAGE OF PART>

<INSERT IMAGE OF PART>

<INSERT IMAGE OF PART>

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## Maker Component List

<Fill in the table below. Continue the labeling convention for other added parts. Copy the table for another sub-assembly, if required, and label the parts as B<PartNumber>.>

<Sub-Assembly Name>								
A01	<Part Name>	QTY: <#>	A02	<Part Name>	QTY: <#>	A03	<Part Name>	QTY: <#>
<INSERT IMAGE OF PART>			<INSERT IMAGE OF PART>			<INSERT IMAGE OF PART>		

## Assembly Guide

<Describe sub-assemblies and order of assembling them (if necessary)>.

Assembly Section	
Part A: <Sub-Assembly Name>	<INSERT IMAGE OF SUB-ASSEMBLY>
Part B: <Sub-Assembly Name>	<INSERT IMAGE OF SUB-ASSEMBLY>
Part C: Flashing Firmware to <Device Name>	<INSERT IMAGE OF SUB-ASSEMBLY> <remove this row if there is no firmware to be flased>

### Part A: <Sub-Assembly Name>

#### Part A: Required Components

<Copy and paste the first sub-assembly table from the [Maker Component List section](#)>.

#### Part A: Required Tools and Supplies

<Add a bullet list of the required tools and supplies for this sub-assembly>

- 
- 

#### Part A: Required Personal Protective Equipment (PPE)

<Add a bullet list of the required PPE for this sub-assembly>

- 
- 

### Part A: <Sub-Assembly Name> Assembly Steps

#### Step A-01: <Step Summary>

<Explain step simply in words. Make sure the image(s) of the step are on the same page as the text.>



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<INSERT IMAGE OF STEP>

## Step A-02: <Step Summary>

<Explain step simply in words. Make sure the image(s) of the step are on the same page as the text.>

<INSERT IMAGE OF STEP>

## Part B: <Sub-Assembly Name>

### Part B: Required Components

<Copy and paste the second sub-assembly table from the [Maker Component List section](#)>.

### Part B: Required Tools and Supplies

<Add a bullet list of the required tools and supplies for this sub-assembly>

- 
- 

### Part B: Required Personal Protective Equipment (PPE)

<Add a bullet list of the required PPE for this sub-assembly>

- 
- 

## Part B: <Sub-Assembly Name> Assembly Steps

### Step B -01: <Step Summary>

<Explain step simply in words. Make sure the image(s) of the step are on the same page as the text.>

<INSERT IMAGE OF STEP>

### Step B -02: <Step Summary>

<Explain step simply in words. Make sure the image(s) of the step are on the same page as the text.>

<INSERT IMAGE OF STEP>

## Part C: Flashing Firmware to <Device Name>

<Make sure to change the C if this is not the third sub-assembly.>

### Part C: Required Components

<Copy and paste the firmware sub-assembly table from the [Maker Component List section](#)>.

### Part C: Required Tools and Supplies

<Update the bullet list with any tools and supplies required>

- Computer that is able to install Arduino IDE and other Arduino libraries to flash firmware



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### Step C-01: Connect <Device Name> to the Computer

<State how to connect device to computer, referencing part IDs from the component list.>

### Step C-02: Setup Arduino IDE on Computer

1. Download Arduino IDE for your operating system at <https://www.arduino.cc/en/software>.
2. Install the Arduino IDE.

### Step C-03: Setup Arduino IDE for <Microcontroller>

1. Open Arduino IDE.
2. Click on **File -> Preferences**
3. Locate the text field that reads **Additional Boards Manager URLs** beside it.
4. Copy and paste the following link into the field as a new line:

<Insert link to board URL>

5. Click on **OK**.
6. Restart the Arduino IDE by closing and opening the program.
7. Open the **Boards Manager** option from the **Tools -> Board -> Boards Manager...** menu.
8. Search for "<Search string for the board>" and select "<Board Name>" by <Creator of board / board library>. Make sure you select the exact board manager name stated as there may be some with similar names that will not work.
9. Click **Install** to install the board.

### Step C-04: Install Libraries

1. Go to the **Tools -> Manage Libraries...** menu.
2. For each library in the table below, search for the name. Ensure the Author and Version is correct, then install the library. If prompted to install any dependent libraries, click **OK**.

Library Name	Author	Version
<Library Name>	<Library Author>	<Version of the Library>

### Step C-05: Setup Local Code Directory

1. Download the Firmware\_Files from the GitHub Repository

<Insert link to GitHub firmware files zip file>

2. Extract / unzip the folder to a known location on your computer.
3. Confirm you have the following folder structure:
  - <Folder\_Name> (folder)
    - o <List files that should be in the folder, with file extensions (.ino, .h, etc.)>

### Step C-05: Flash Firmware to the <Device Name>

1. Open the <File\_Name> with Arduino IDE.
2. Select <Microcontroller> from the **Tools -> Board -> <Boards Type>** menu



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3. Connect the <Device Name> to the computer using the <Connection cable>.
4. Select the correct port from the **Tools -> Port** menu.
5. Verify and upload to code by clicking the arrow in the top-left corner of the Arduino program.

### Testing

<Explain any testing the maker will have to complete to make sure the device is working properly>

### Troubleshooting

<Include any common errors / issues the maker may encounter and suggestions how to solve them.>