

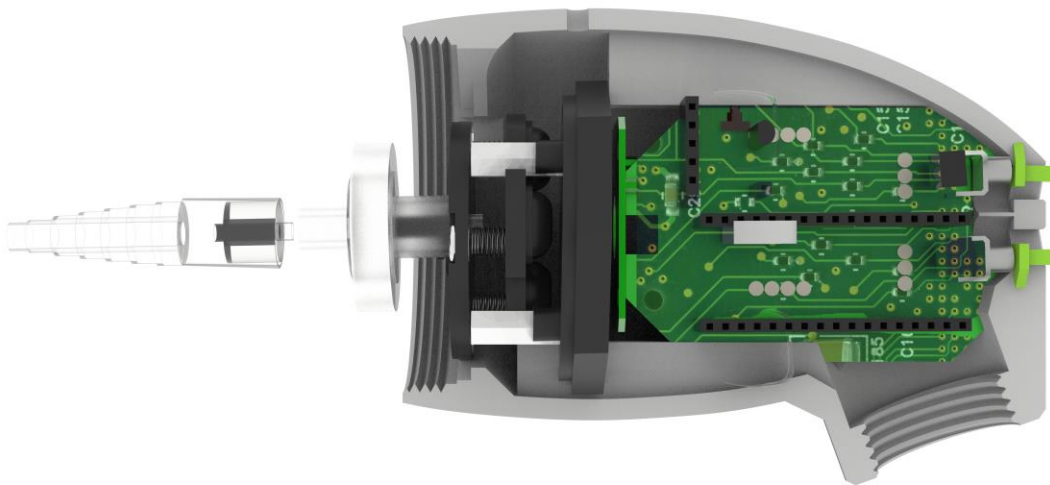
NEIL SQUIRE SOCIETY'S



# Makers

Making Change

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# LipSync

## STARTUP GUIDE

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INITIATIVE BY:



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# About the LipSync

The LipSync is a mouth operated joystick that allows a person who has limited or no control of their hands and arms to control a cursor on a mobile phone, tablet or computer using only head movement. It is an open source assistive technology design hosted by Makers Making Change, a movement that connects volunteer makers with people with disabilities to create more affordable assistive technology.

Open source designs are freely released by their creators for people to make for themselves, modify or incorporate in their own designs without charge. Join the online Makers Making Change community on <http://www.makersmakingchange.com>

**Need a build or a friend needs a build – join us.**

**Want to make a build – join us.**

**Want to fund a build for a person with a disability – join us.**

## What Do You Get?

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Your volunteer maker should be provided with the following parts in your kit:

**Part A** - LipSync

**Part B** – Mouthpieces and filters

**Part C** - Mounting arm

**Part D** - Mounting bracket

**Part E** - USB splitter cable to connect to a mobile phone or tablet

# 1 Getting Started

The LipSync requires the following items to get started:

- A LipSync
- Computing device (mobile phone, tablet, or laptop) which supports a USB mouse
- External power bank (optional but recommended)
- Mounting solution for securing the LipSync to a surface

Before plugging the LipSync, make sure of the following:

1. Computing device is fully charged and/or uses an external power source (e.g. power bank).
2. Computing device and LipSync are securely mounted to a stable surface.
3. LipSync USB, adapter cable and external power source are plugged together (see **Plugging the LipSync** in this section)

## Mounting

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**Wheelchair:** Every wheelchair has different points available for mounting. Common mounting points available on power wheelchairs are the headrest rail, back of wheelchair, armrest rail, under chair cushion, chair rail, and footplate. Try out different areas and see what works best. If you are not familiar with mounts, consult with a local assistive technology professional.

**Desk:** Find a clear space on the front edge of your desk or table. Orient the mount bracket toward the user being careful not to move the LipSync. Secure the bracket and adjust the mounting arm so the LipSync is within easy reach. Tighten the knob when the arm is in the desired position.

### Checklist for after mounting:

- ☐ Are the clamp and mount secure and do not move?
- ☐ Is there clearance around the wheels, wires, and chair frame with the mount attached?
- ☐ Does the wheelchair fit through doorways?
- ☐ Is the driving view of the user clear with no obstructions?
- ☐ Is the mobile device within viewing angle of the LipSync?
- ☐ Can the user easily reach the LipSync to use it?

## External Power Bank

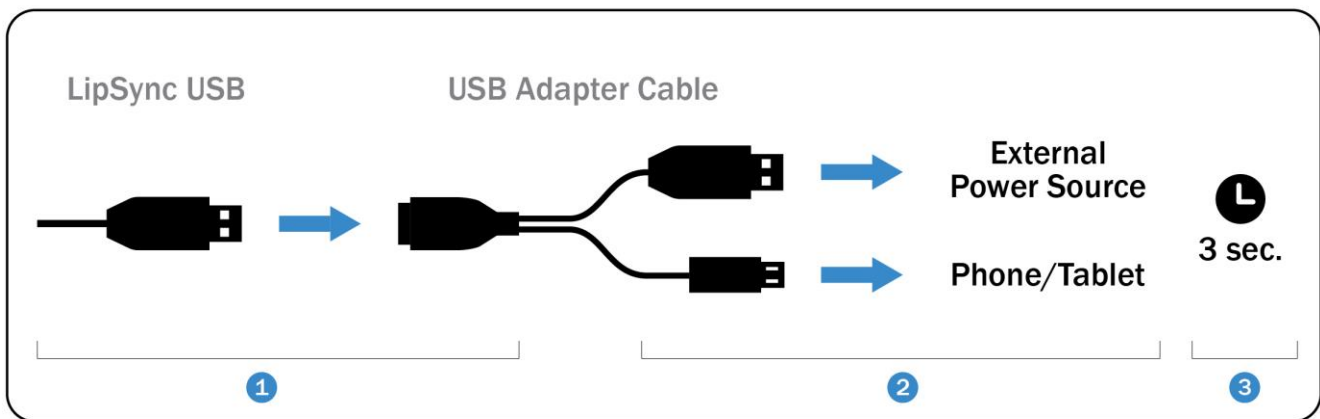
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The LipSync can be powered using an external power supply like power bank of at least 2700mAh or higher. This prevents the LipSync from drawing battery from your mobile or tablet. The power bank is only supplying power to the LipSync and the mobile or tablet will not be charged.

## Plugging the LipSync

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The order in which you connect the USB cables may affect how the LipSync functions. Plug the cables in the following order:



1. Connect the LipSync USB to the USB adapter cable's receptacle.
2. Connect the other end of the adapter into the computing device and external power source.
3. Wait 3 seconds for the LipSync to initialize. Initialization is complete when the LED blinks red and green four times.

Note: If you are using a desktop or laptop the LipSync USB can be directly plugged into the computer USB port.

## Device Compatibility

Not all mobile phones and tablets support external pointing devices like the LipSync or other mouse replacements. Apple iOS does not support external mice but an iOS compatible LipSync is currently being developed. Only some Android mobile phones and tablets support the LipSync. Check with the manufacturer before purchasing. Look to see if your device supports “USB OTG HID” or “Universal Serial Bus On the Go Human Interface Device” profile.


	Operating System	Compatibility
Phone / Tablet	Android <sup>1</sup>	✓
	iOS <sup>2</sup>	✗
	Windows	✓
Desktop	Windows	✓
	macOS	✓
	Chrome OS	✓
	Linux	✓

<sup>1</sup> Only with devices with USB OTG HID (Universal Serial Bus On-The-Go Human Interface Device)

<sup>2</sup> iOS currently does not support on-screen cursor. An iOS compatible LipSync is currently being developed.

## Supporting Applications

Some Samsung mobile devices and tablets have an application called **Assistant Menu**, which puts a small menu on the screen that allows quick access to important functions that cannot be accessed without physically touching the device, such as the **Home** button, the **Back** button, **Zoom In and Out**, **Screen Capture**, **Volume**, and **Restart**.

To turn on the Assistant Menu go the **SETTING** application → **MY DEVICE** → **ACCESSIBILITY** → **DEXTERITY AND INTERACTION** → **ASSISTANT MENU**. A little square icon will appear 

The icon will always appear on the screen and can be moved by clicking and dragging on it.

Not all phones will have **Assistant Menu**. If your device does not have it, applications like **Assistive Touch For Android**, **Back Button**, **Handy Soft Keys**, **Simple Control** or **Floating Toucher** can be downloaded from the Android Play Store. These applications provide access to at least the **Home** and **Back** functions, which are important for accessing all features on the phone.

A swiping action is required on some mobile device to unlock it. This can be avoided by setting the phone so that the **SCREEN LOCK** in the Settings Menu is set to **NONE**. Alternatively, an application called **Keep Screen On** can be downloaded from the Android Play store. It will prevent the phone from going to sleep so it does not require a swipe to unlock. However, this will drain the battery on your phone faster.

## 2 Using the LipSync



**IMPORTANT:** Each time after plugging the LipSync to a computing device, wait 3 seconds for the LipSync to initialize before moving the mouthpiece (LED will blink red and green 3 times). Moving it before the 3 seconds is complete will affect the usage.

### Functions

FOR MOBILE DEVICES		
Function	Action	Time (seconds)
Tap	Puff	1
Back button <sup>1</sup>	Sip	1
Toggle	Puff	3
Scrolling	Sip	3
Cursor drift reset	Puff	5
Home button <sup>1</sup>	Sip	5

<sup>1</sup> The back/home functions may not work if the device uses on-screen icons. In this case, move the cursor over the icon to tap.

#### Useful function examples:

Toggle: unlocking pattern lock screen, keyboard swipe typing, scrolling a precise distance

Scrolling: panning through home screen pages, and scrollable apps

Cursor drift reset: resolving cursor drift issue

FOR WINDOWS PCs		
Function	Action	Time (seconds)
Left click	Puff	1
Right click	Sip	1
Double-click	Puff	1 each
Toggle	Puff	3
Scrolling ( ↑ ↓ )	Sip	3
Cursor drift reset	Puff	5
Scrolling ( ↑ ↓ ← → )	Sip	5

### Useful function examples:

Click and drag: rearrange icons on desktop, dragging files to trash bin, highlight text

Right click: open secondary menu for cut, paste, select all, etc.

Scrolling: mouse wheel scrolling instead of clicking and dragging scroll bar

## Speed Control

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The LipSync has 9 speed control levels with the default level set to 5 when first initialized.

To adjust the cursor sensitivity and speed, set the computing device's cursor speed to its slowest setting to start and then adjust the LipSync speed control buttons until you get a speed that is comfortable for you.

Press the upward facing triangular button ▲ on the rear of the LipSync to increase the cursor speed or the downward facing triangular button ▼ to decrease it. The red LED will blink the speed level number (e.g. 5 blinks indicate the fifth speed level). The LED will rapidly flash red and green 10 times when the level is at the minimum or maximum speed level.

## Cleaning the LipSync

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The LipSync shell is 3D printed layer by layer in plastic. Due to this, tiny gaps are formed between each layer, making the casing porous and not resistant to water. Wipe the casing with a non-abrasive cloth lightly dampened with water. Do not use any cleaning agents or soap to clean it.

## Mouthpiece and Filter

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Each user should have their own set of mouthpiece and filter for hygienic reasons. It has a life cycle of 3-6 months depending on how often it is used and how much saliva is trapped by the filter.

All mouthpieces and filters are new and clean, but not sterile. Please wipe with the units with the provided Benzalkonium chloride antiseptic wipes before first use. Unused pieces should be kept in a clean sealable bag away from the sun and used ones should be disposed of after each cycle.

Do not use wipes with alcohol content as it will destroy the plastic. Do not wash the filter.



## 3 Feedback

**Your feedback is very important to us.** It helps to support the engineers and designers of the LipSync by learning what is working and what can be improved. It will help inform future development of the LipSync. None of your feedback will be shared publicly without your consent.

Our feedback form can be found at the following link: <https://tinyurl.com/yc57vkpr>

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## Troubleshooting

**Q: Why doesn't the cursor appear on the screen when I plug in the LipSync?**

**Solution 1:** Make a 5 second long puff to trigger the home position reset.

**Solution 2:** Wait 3 seconds for the LipSync to initialize. Moving the mouthpiece before the 3 seconds is complete will affect the calibration.

**Solution 3:** If the cursor does not appear after 3 seconds, disconnect the cable from the computing device, reconnect again, and let the LipSync initialize for 3 seconds.

**Q: Why does my cursor drift across the screen when I am not moving the LipSync?**

**Solution 1:** Make a 5 second long puff to trigger the home position reset.

**Solution 2:** Wait 3 seconds for the LipSync to initialize. Moving the mouthpiece before the 3 seconds is complete will affect the calibration.

**Solution 3:** If the cursor does not appear after 3 seconds, disconnect the cable from the computing device, reconnect again, and let the LipSync initialize for 3 seconds.