



# Makers Making Change

A Neil Squire Program



## LipSync

### STARTUP GUIDE

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PROGRAM OF:

FUNDING PROVIDED BY:



Foundation



# 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 by Makers Making Change, a program of the Neil Squire Society that connects volunteer makers with people with disabilities to create more affordable assistive technology.

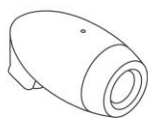
Open source designs are freely released by their creators for people to make for themselves, modify or incorporate in their own designs for free. Join the Makers Making Change to help people in your community: <http://www.makersmakingchange.com>

**Need a build – join us.**

**Want to make a build – join us.**

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

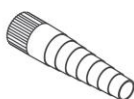
## What Do You Get?



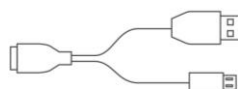
LipSync



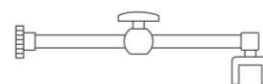
Filter x 3



Mouthpiece x 3



USB adapter



Mounting

## Types of LipSync

	Description	Connection Type
<b>LipSync</b>	<b>Works like a mouse</b>	<b>USB</b>
LipSync Wireless	Works like a mouse	USB & wireless
LipSync Macro	Works like a keyboard	USB & wireless
LipSync Gaming	Works like a gaming joystick	USB

# 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?

## Mobile Phone and Tablet Compatibility

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

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

<sup>2</sup> Only for iOS13+ and iPadOS. For previous iOS versions, use the *LipSync Macro*

Not all mobile phones and tablets support external pointing devices like the LipSync or other mouse replacements. Apple iOS phones and tablets with iOS13 and iPadOS or higher, and 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.

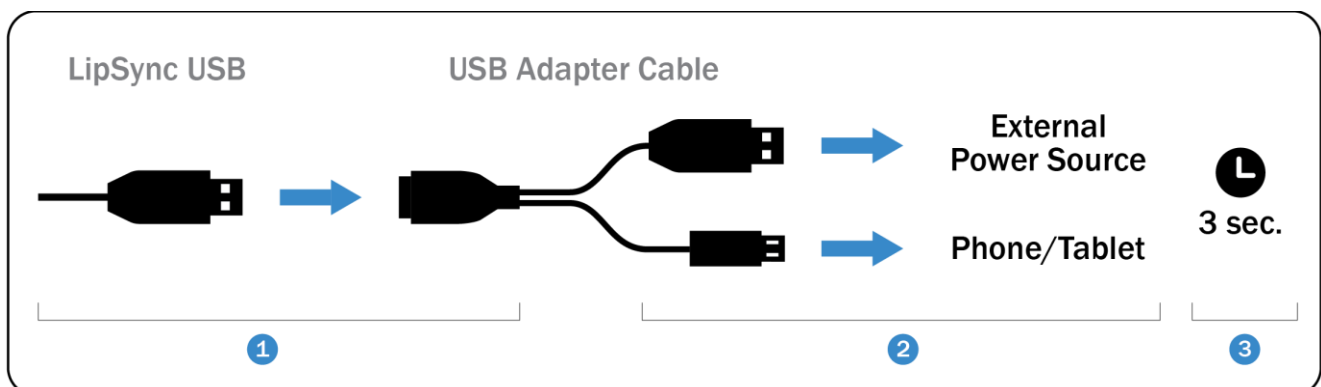
## External Power Bank

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.

## Connecting the LipSync to a Device

### Plugging into a Computer, Laptop or Android & Windows Device

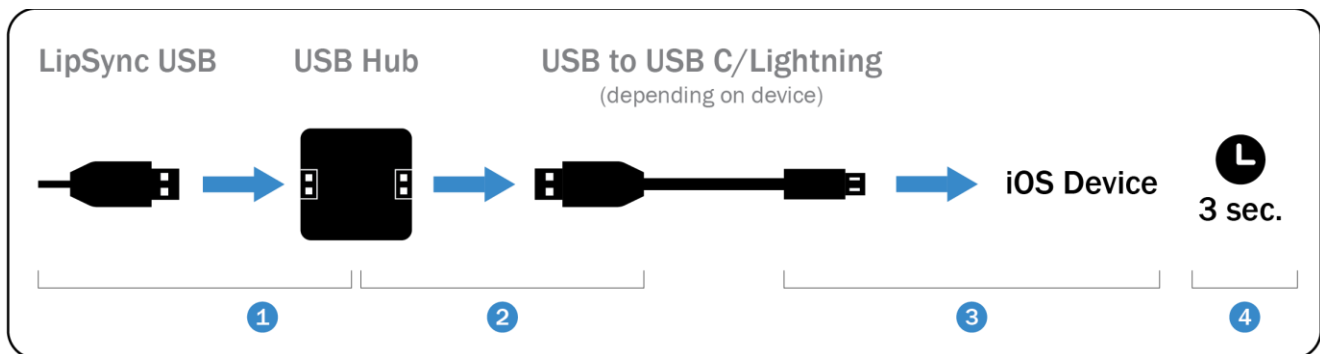
The order in which you connect the USB cables may affect how the LipSync functions. Plug the cables in the following order:



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.

## Plugging into an iOS Device



1. Connect the LipSync USB to a USB hub's receptacle.
2. Connect the USB end of a USB to USB C/Lightning cable into the hub's USB receptacle.
3. Connect the other end of the USB to USB C/Lightning cable into the iOS device.
4. Wait 3 seconds for the LipSync to initialize. Initialization is complete when the LED blinks red and green four times.







## Supporting Applications

The **Assistant Menu**  allows quick access to important functions that cannot be accessed without physically touching the device, like the **Home** button, **Back**, **Zoom In** and **Out**, **Screen Capture**, **Volume**, and **Restart**. Turn on the Assistant Menu by going to **SETTING** → **MY DEVICE** → **ACCESSIBILITY** → **DEXTERITY AND INTERACTION** → **ASSISTANT MENU**. If your phone doesn't have **Assistant Menu**, apps **Back Button** or **Handy Soft Keys** can be downloaded.

A swiping action is required on some mobile device to unlock it. This can be avoided by setting **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 doesn't require a swipe to unlock. However, this will drain your phone battery faster.

## 2 Using the LipSync



**IMPORTANT:** Allow 3 seconds for the LED initialization sequence       to flash **each time** the LipSync is connected to a device before moving the mouthpiece. Moving it before the 3 seconds is complete will affect the usage.

### Functions

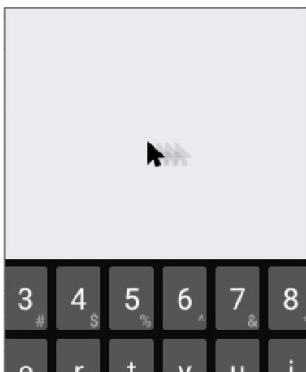
FOR MOBILE DEVICES AND TABLETS		
Function	Action	Time (seconds)
Tap	Puff	1
Back button <sup>1</sup>	Sip	1
Drag <sup>2</sup>	Puff	3
Scrolling <sup>3</sup>	Sip	3
Cursor drift reset	Puff	5
Home button <sup>1</sup>	Sip	5

<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.

<sup>2</sup> The red LED will stay on at all times in this mode

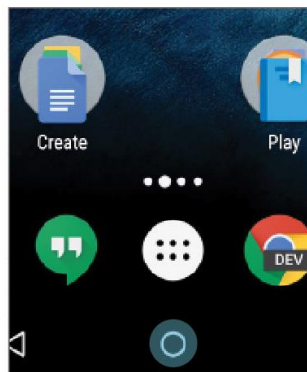
<sup>3</sup> The green LED will stay on at all times in this mode

### Useful function examples:



Drift reset / PUFF 5 SEC

- Resolve cursor drift



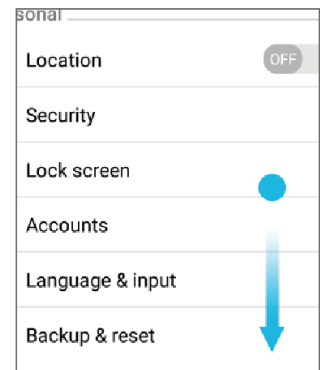
Home button / SIP 5 SEC

- Access home screen



Drag / PUFF 3 SEC

- Unlocking pattern lock
- Keyboard swipe typing

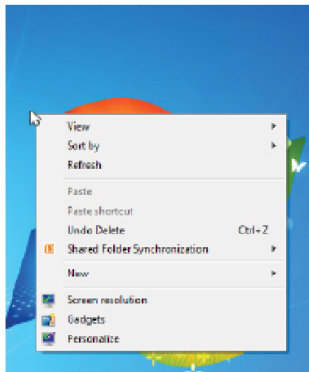


Scrolling / SIP 3 SEC

- Scrollable apps
- Pan through home page

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

### Useful function examples:



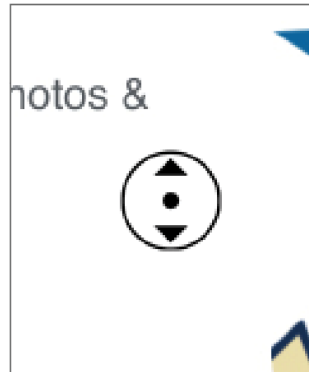
**Right click** / SIP 1 SEC

- Secondary menu for cut, paste, select all, etc.



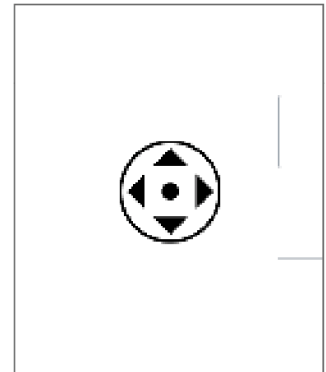
**Drag** / PUFF 3 SEC

- Rearrange icons
- Highlight text



**Scroll ↑ ↓** / SIP 3 SEC

- Up and down scroll on a webpage/ document



**Scroll ↑ ↓ ← →** / SIP 5 SEC

- All direction scrolling for large documents

## Speed Control

The LipSync has 11 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, then adjust the LipSync speed control buttons until you get a speed that is comfortable for you. Press the up facing triangular button ▲ on the back of the LipSync to increase the speed and the downward facing button ▼ to decrease. If the speed is still not fast enough, gradually increase the speed on the mobile device or computer.



## 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.

**Solution 4:** Perform the joystick calibration found on the follow page.

**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.


**Solution 4:** Perform the joystick calibration found on the follow page.

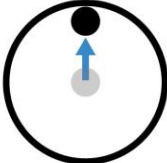
# Joystick Calibration




  
x 5

  
3 sec.  
pause

  
x 6



  
x 1

1

Press both speed adjustment buttons on the back of the LipSync simultaneously for a few seconds

2


LED slowly blinks red & green 5 times

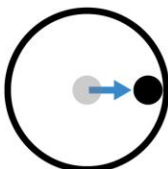
3


When LED blinks green 6 times, move the mouthpiece to the 12 o'clock position (up direction)

4

LED blinks red 1 time when position is measured

  
x 6




  
x 1

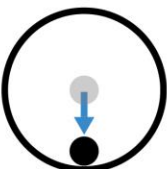
5


When LED blinks green 6 times, move the mouthpiece to the 3 o'clock position (right direction)

6

LED blinks red 1 time when position is measured

  
x 6




  
x 1

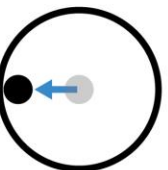
7


When LED blinks green 6 times, move the mouthpiece to the 6 o'clock position (down direction)

8

LED blinks red 1 time when position is measured

  
x 6





  
x 1

9

When LED blinks green 6 times, move the mouthpiece to the 9 o'clock position (left direction)

10

LED blinks red 1 time when position is measured

  
x 6

11

LED will rapidly blink red and green 6 times when calibration is complete