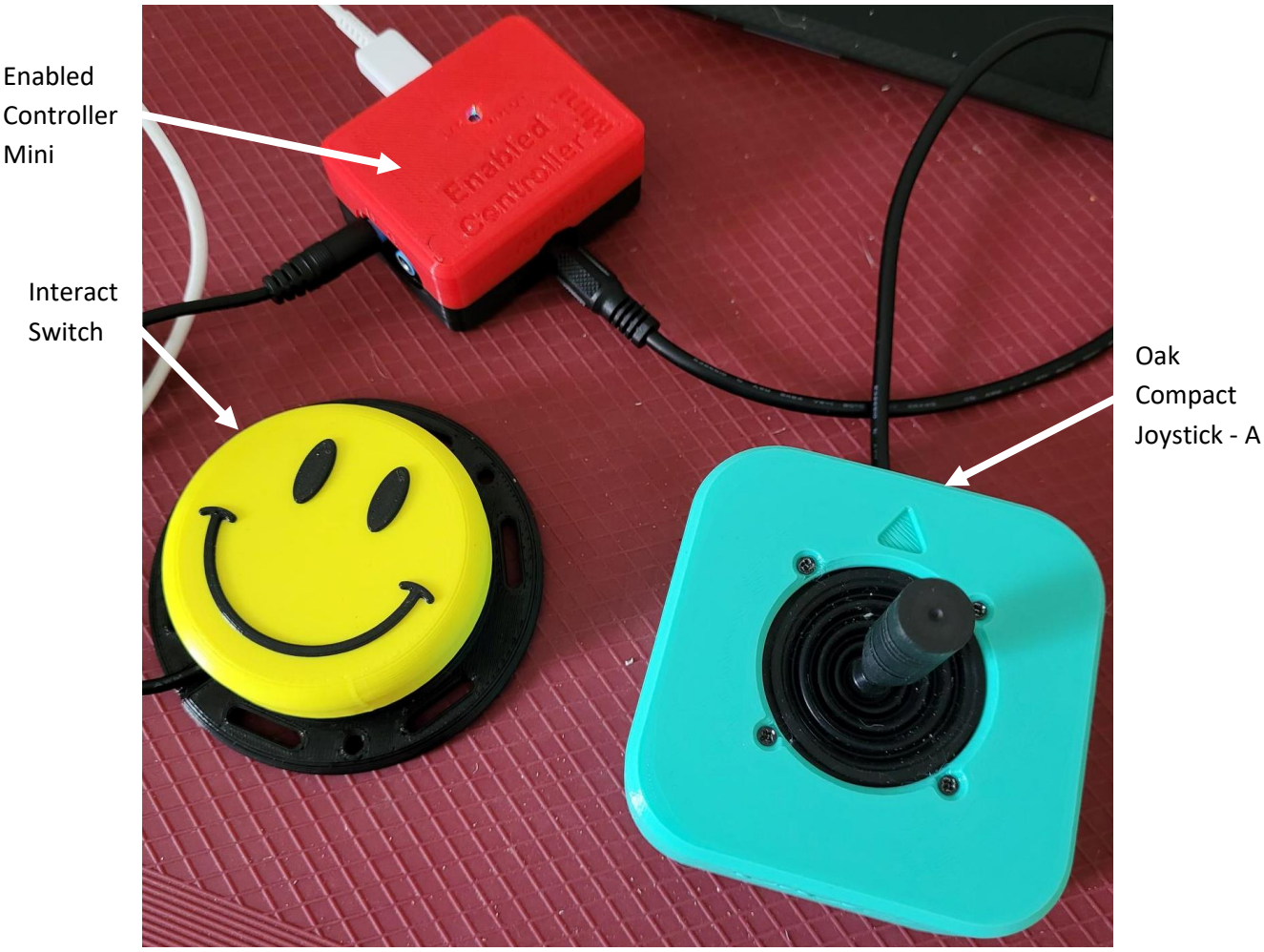
Oak Compact Joystick – A & Enabled Controller Mini
USER QUICK GUIDE

Makers Making Change
A Neil Squire Program

Introduction

The Enabled Controller Mini is a switch and analog joystick interface. It allows for an analog joystick to be used as either a gamepad, or an alternative computer mouse. Makers Making Change has a range of analog joysticks that are compatible with the Enabled Controller Mini. Featured in this project is the Oak Compact Joystick – A, or Oak – A for short. It is a midsized joystick that has a range of toppers with varying sizes that can be securely attached and removed with a 3D printed collet.

Features



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USER QUICK GUIDE

Usage

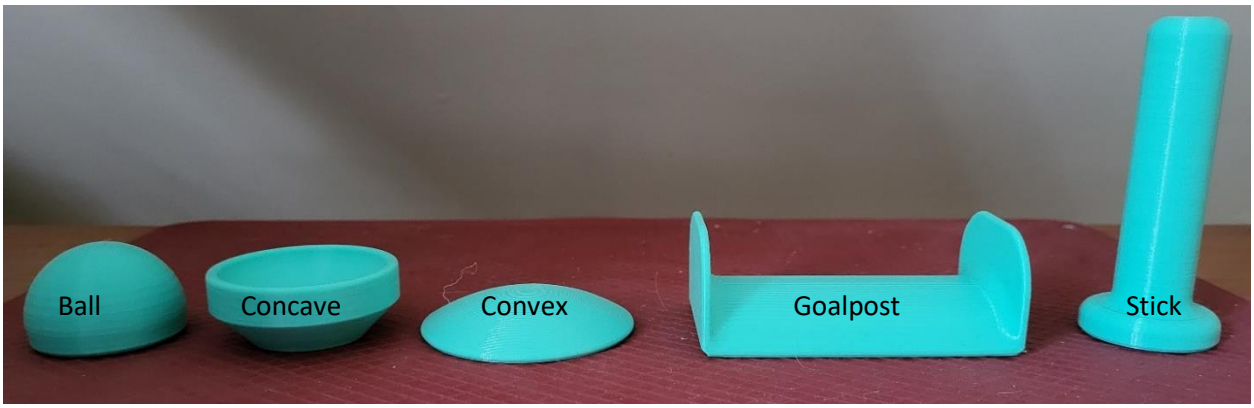
As this project features two devices to be used together, this guide is broken into two sections: the usage of the Oak Compact Joystick - A and its accessories, and the usage of the Enabled Controller Mini.

Oak Compact Joystick and Accessories

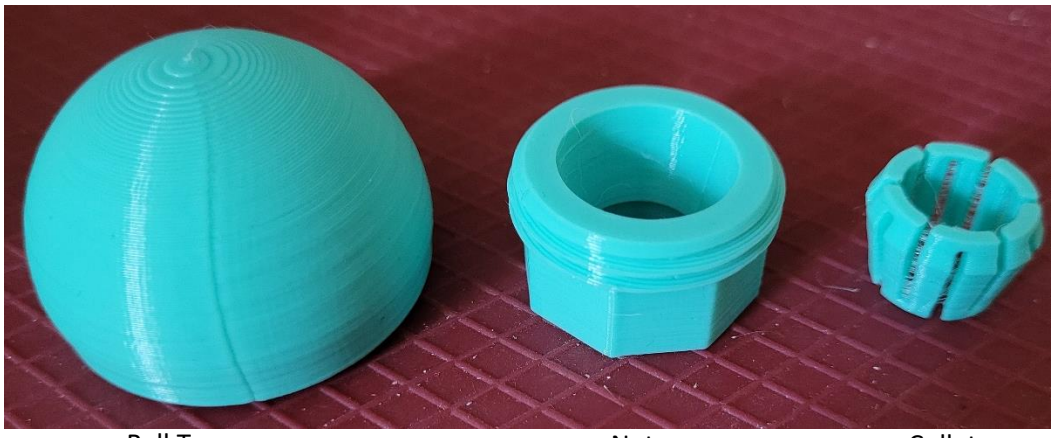
The Oak Compact Joystick – A has a range of toppers and mounting solutions.

Changing the Topper

The current range of Oak Joystick Toppers.



Installing and replacing the topper requires three 3D prints: the topper itself, the nut, and the collet. The image below shows the ball topper, nut, and collet, from left to right.



Ball Topper Nut Collet

Step 1

Place the nut over the black joystick shaft. The threads should be towards the top of the joystick, while the octagonal section should be towards the bottom.

Step 2

Place the collet on the black joystick shaft. The two ends of the collet have different thicknesses to them. The side of the collet that is thinner should go over the joystick shaft first, so that the thicker side is pointing up and away from the joystick. Note: if the collet does not sit at least ¾ of the way into the nut in this orientation, then the collet is likely upside down.

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USER QUICK GUIDE

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Step 3

Slide the nut up the joystick shaft just under the collet and line up the threads on the bottom of the topper with the nut. Thread the nut into the topper and tighten by hand.

To remove the topper, simply unscrew the nut and remove the topper. Note that you may require pliers or a wrench to grip the octagonal bottom of the nut if the topper is screwed on too tight.

Mounting the Joystick

The Oak Compact Joystick can be mounted using various methods, depending on your preference and how you can best access it.

Note: A different joystick is shown is the following mounting examples, but the same principles and methods will apply to this joystick.

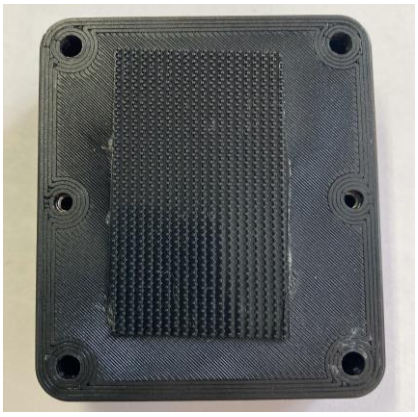
Table Top Mounting – Non-Slip Pads

If using the joystick on a tabletop, and height of the joystick is not a concern, nonslip pads can be added in each of the four corners on the bottom, as shown.

Oak Compact Joystick – A & Enabled Controller Mini
USER QUICK GUIDE

Table Top Mounting – Hook and Loop Fastener

If using the joystick on a tabletop or other surface with hook and loop fasteners, such as Velcro, stick the hook side (rough side) to the joystick and the loop side (soft side) to the surface to mount to.



Camera Mount

To mount the joystick on a camera mount, the optional Joystick Camera Mount Adapter can be used by simply screwing it to the bottom with two M3 screws.

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Enabled Controller Mini

When paired with the Enabled Controller Mini and a few assistive switches, any analog joystick (TRRS cable) can be used as either a gaming joystick, or as a computer mouse.

To switch between the two versions, the code must be reflashed to the microcontroller using Arduino IDE on a computer. Before flashing the code, **Line 36, Mouse_Mode_Enabled**, must have its value edited to either “true” or “false”. True will enable Mouse Mode, while false will default to Gamepad Mode.

```
36   #define Mouse_Mode_Enabled   true                    // Flag for mode. true for mouse mode, false for gamepad mode
```

Mapping

When using the Mouse code, the analog joystick becomes the means of moving the mouse across the screen, while the assistive switches become your other mouse functions. When using the Gamepad code, the analog joystick and assistive switches function as a gamepad. When in gamepad mode, the buttons can be mapped to specific inputs in whatever game or compatible application it is being used in. Default mappings are given in the table below.

Switch	Mouse	Joystick		
		PC	XAC (left)	XAC (right)
Joystick	Cursor Movement	Joystick Movement	Left Thumbstick	Right Thumbstick
A	Left click	Button 1	X1	View
B	Middle click (scroll)	Button 2	X2	Menu
C	Right click	Button 3	Left stick (left press)	Right stick (right press)
D	Left click	Button 4	Left bumper	Right bumper

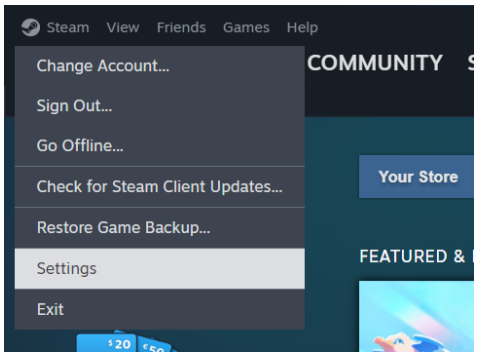
Instructions for some methods of changing the joystick mappings when in gamepad mode are given below.

Oak Compact Joystick – A & Enabled Controller Mini
USER QUICK GUIDE

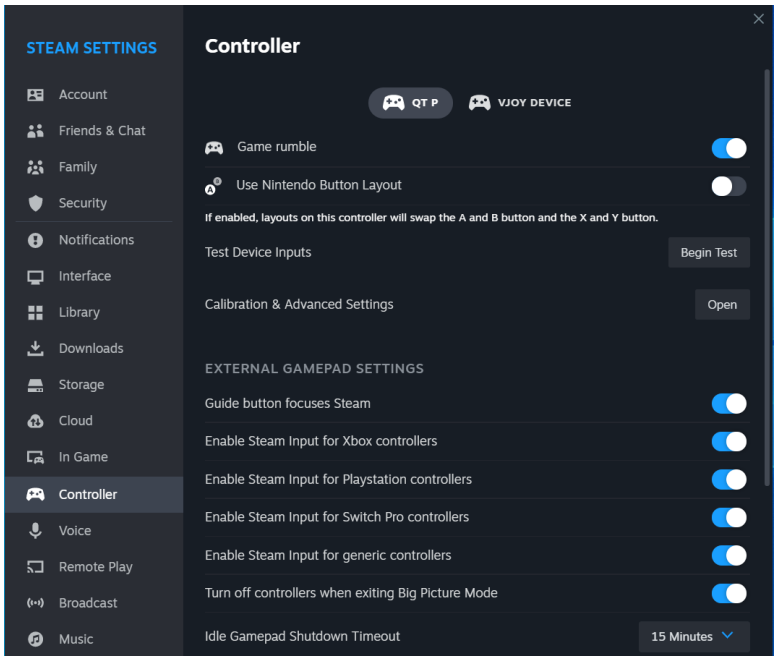
Steam

When you connect the Enabled Controller Mini to your PC for use with Steam, you will have to configure it as a controller before you can use it in game.

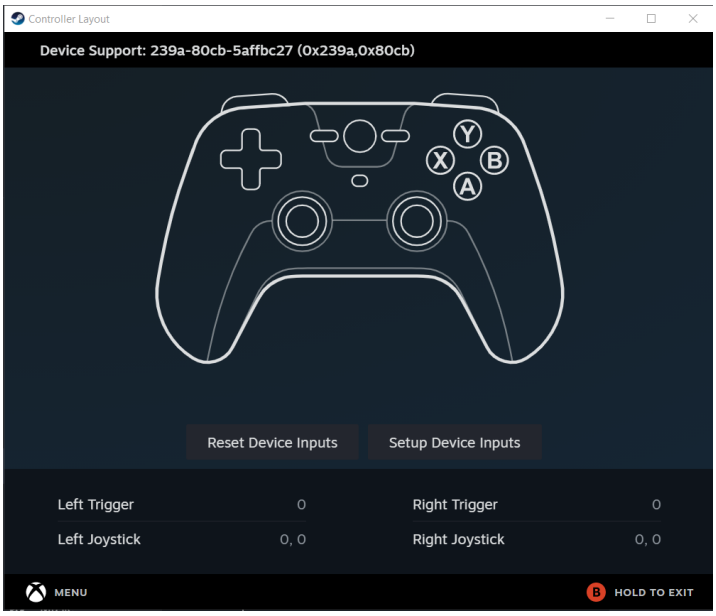
1. Open Steam and go to the settings menu.



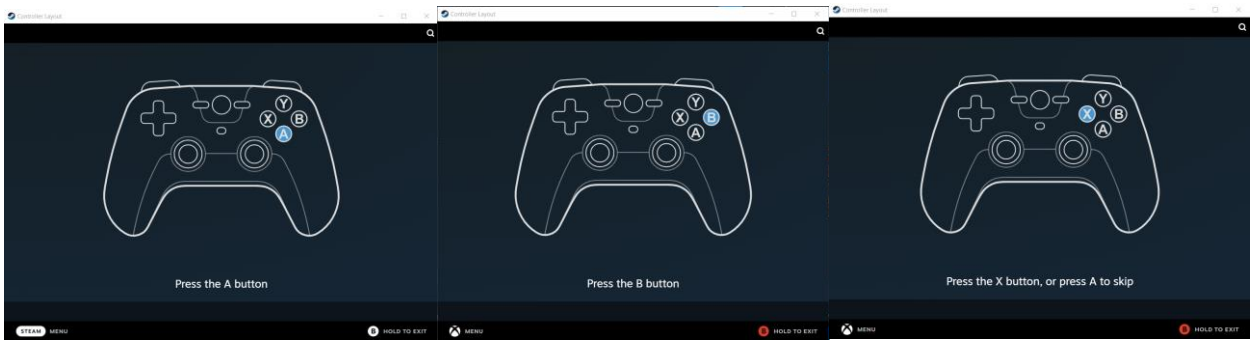
2. Select ‘Controller” in the Settings sidebar menu.



3. Select QT P as the controller and click on Test Device Inputs.



4. Select "Setup Device Inputs" and follow the prompts given. A and B must be mapped, but any other functions can be mapped to your preference or skipped altogether. Note that you only have 4 buttons available with this setup.



Xbox Adaptive Controller (XAC)

To connect to the XAC, simply plug in the Enabled Controller Mini into either the left or right USB joystick port and plug your respective joystick and switches into your Enabled Controller Mini.

Instructions for mapping the controls of your Enabled Controller Mini and Joystick for the XAC can be found at https://support.xbox.com/en-CA/help/account-profile/accessibility/customize-adaptive-controller-in-xbox-accessories-app

Oak Compact Joystick – A & Enabled Controller Mini
USER QUICK GUIDE

Joystick Gremlin & VJoy

Open source software such as Vjoy and Joystick Gremlin can be used to combine other inputs with the joystick.

Compatibility

The Oak Compact Joystick – A plugs into the Analog input on the Enabled Controller Mini and the remaining four switch inputs, A, B, C, and D will accept any standard assistive switches.

The Enabled Controller Mini has both a mouse mode and a gamepad mode that have different compatibilities. The following table breaks out what systems this device is compatible with in each mode.

System	Mouse Mode	Gamepad Mode
PC	Yes	Direct or via XAC
Mac	(Yes, but untested)	(Yes, but untested)
Android Mobile	(Yes, but untested	Yes, and also through XAC
Apple Mobile	(Yes, but untested)	Yes, and also through XAC
Xbox	(Yes, but untested)	Through XAC
PS4	(Yes, but untested)	Through XAC with an adapter
PS5	(Yes, but untested)	Through XAC with an adapter
Nintendo Switch	(Yes, but untested)	Through XAC with an adapter
Linux	(Yes, but untested)	(Yes, but untested)

A categorised list of relevant adapters can be found at the MMC Assistive Technology in Gaming Resource.

Specifications

Joystick Range of Motion	± 25°
Joystick Range of Motion	± 30 mm (default, changes with topper)
Joystick Activation Force	525 grams
Total Height	65 mm
Enclosure Height	34.4 mm
Enclosure Width	80 mm
Enclosure Length	80 mm
Weight	152 grams

Cleaning

Wipe the outside of the device with a lukewarm, damp cloth. Do not use hot water on this device or the plastic housing may warp. Do not submerge the device.