Gamepad M4L Device

By User Friendly

Introduction and FAQS

Gamepad is a M4L MIDI device and a fun way to control your instruments, FX, modulation sources, and anything else you want in Ableton Live with console controllers such as PS4, PS5, Xbox and more. You can keep it simple and just mash buttons to make a beat or dive deep and create complex networks of control. It's great for performing music live, recording performances in the studio or just to have fun when you can't decide whether you want to play video games or make music.

The device outputs MIDI notes as well as Mappable signals, but not MIDI CC. This means that it is intended to be used inside of Ableton. If you want to control things outside of Ableton you will need to use this device in combination with other Ableton tools.
It's important to mention that while I made this patch from scratch, it was possible for me to do so because of the brilliant work by the folks over at Cycling 74. The entire patch is based around their *gampad* object in Max which makes getting data from a controller much easier for beginners like myself. Thank you Cycling 74!

Why would you use a game controller instead of a MIDI controller?

The PS5 controller has a total of 64 outputs of control, packed into something that takes up less desk space than your computer keyboard…but beyond that if you think about it, it actually makes A LOT of sense. Most controllers such as piano keys, sliders, dials, etc, are based off of traditional instruments or analog hardware such as mixing desks. A game controller is actually meant to just be as flexible and intuitive as possible as nothing more than a controller for incredibly wide variety of games. Lots of MIDI keyboards and control surfaces have a joystick, maybe even two, but almost none of them are intended to be hand held. Fewer still, if any, are set up in such a way that you can theoretically hit every control at the same time in a relatively natural way. The hand held aspect gets really interesting when you think about what will naturally happen when you are playing a drum beat. As you are playing the beat you are naturally going to move a little bit. Especially when your finger comes down to hit a big snare drum button or something. With the ability to assign the gyroscope and accelerometer to things, you can have this natural movement control the sound in interesting ways! For example maybe a downward motion of the controller will turn up the reverb and velocity for the snare.

What Controllers work?

I don't know. Lol. There are so many controllers out there and I can't test all of them. There is Playstation controllers and Xbox controllers, yes, but there is also so many different controllers just for these two consoles! I know Playstation 4 and 5 work, but will Playstation 3? How about 2? Xbox 1? Xbox 360? A knock off Playstation controller not made by Sony? What about a controller that doesn't have Bluetooth? What about a controller that doesn't have a USB cable but you have a converter? What firmware is the controller itself on? I just don't know.

On top of that, there is the question of what kind of Computer and OS you are on. It may be that the controller will work for the Gamepad M4L device but may not work with your computer. After that, some controllers are equipped with different functionality whether it be gryo, touchpad, extra buttons ect. It's really hard to say.

For the most part it seems like PS4 and PS5 controller's work pretty flawlessly on Mac, with reports of connectivity issues on PC from time to time, but at the same time confirmations of no issue with connection on PC. Modern Xbox controllers seem to work better on PC. I made this device on Macbook Pro M2 with a PS5 controller and designed it with the PS5 controller in mind.

Does it work over Bluetooth?

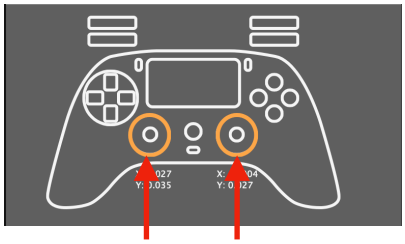
Kind of. Buttons, triggers, and joysticks all work over Bluetooth from a PS5 controller to Mac. To use the touchpad, gyro, and accelerometer, you must have the USB cable connected. Again, this is something where there could be variation depending on your controller and system. Largely speaking, this M4L device was made for the USB cable to be connected to your computer when using.

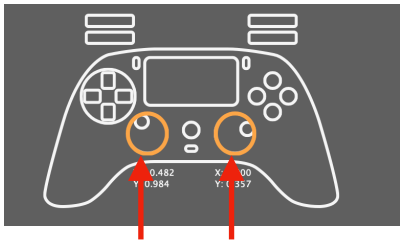
How do I connect the controller?

Yes. Lol. This, *again,* is tricky do to the variations in controllers and systems. On Mac with a PS5 controller, you simply connect the controller to your computer with a USB cable, drop the M4L device into Ableton, and it works. **There are no settings in Ableton you need to change or adjust.**

How do I know the controller is connected?

If you connect the controller, drop the M4L device into your session and move the joysticks, you should see them move on the UI. If they are moving in the UI, you are good to go!





Will the device work with Ableton 11 or older?

Unfortunately it will not work with versions of Ableton older than 12. This is out of my control.

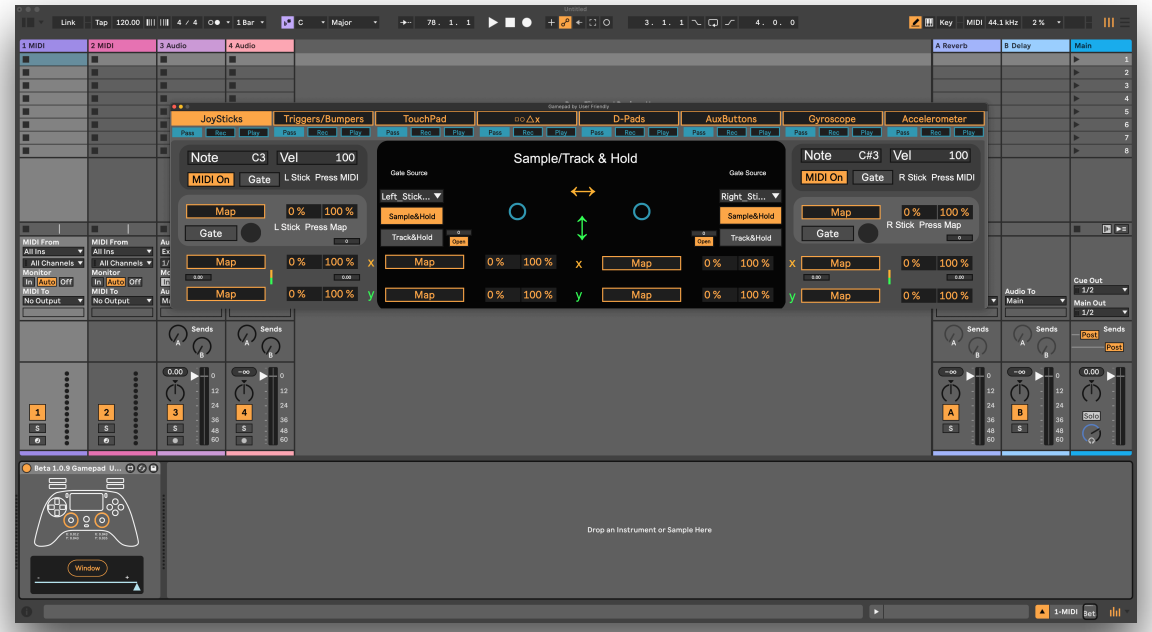
Can I use more than one controller at a time?

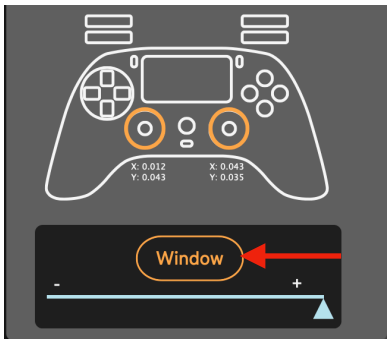
You can use as many instances of the Gamepad M4L device as you want, but currently there is no way to connect a second hardware controller. So no multiplayer yet!

Getting Started

Navigation

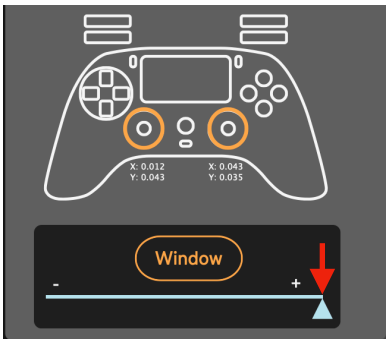
The Gamepad device has a moveable, scalable window. This window will stay visible in Ableton regardless of what track you are on. This allows for easy mapping to many different tracks and returns.



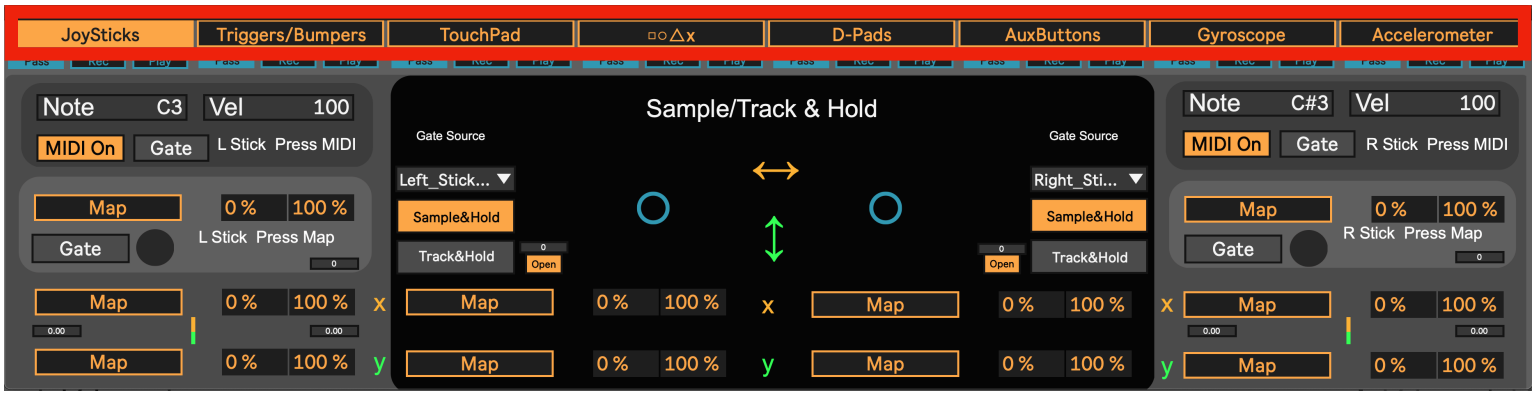


Open the window

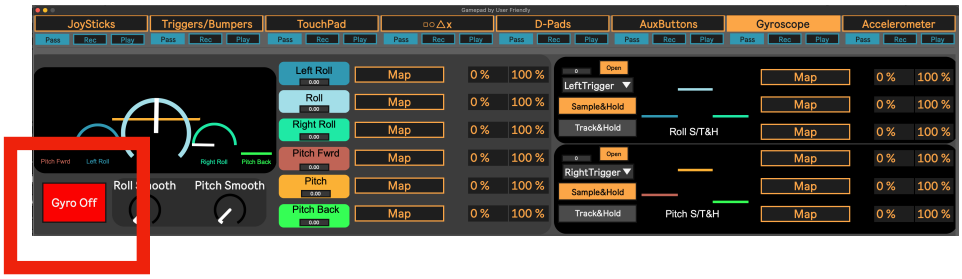
Close the window



Scale the window.

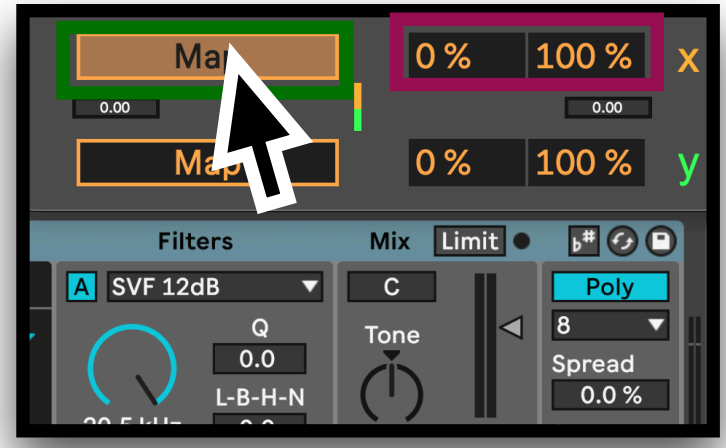


The tabs at the top will take you to the different sections of the controller.



Some tabs are turned off by default and need to be turned on before they can be used. It can be useful to have the ability to turn some controls on and off when patching, but also may help improve CPU performance.

Map buttons



Map buttons are the primary way Gamepad outputs control. These can be mapped to most things in Ableton and can be mapped to tracks outside of MIDI track where that Gamepad is placed on. Some buttons within the device such as the Joysticks, triggers, touchpad, etc, are have a variable output. Others are binary such as the bumpers, D-pads, buttons etc.

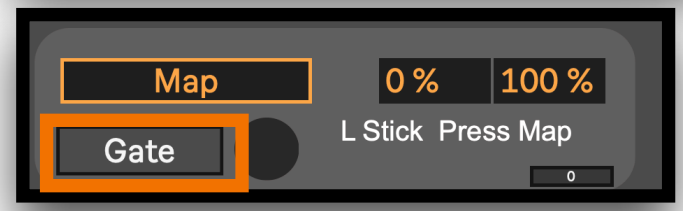
To map a particular control, click the Map button that corresponds to that control. The map button will begin to flash.

Next, click the parameter that you want to be controlled **twice. The name in the map button will change to that parameter. It is now assigned. To clear the assignment, click the x button next to the map button.

**The reason you need to click the parameter twice is due to the pop out window. The Ableton's UI has to be brought back into focus from the pop out window.

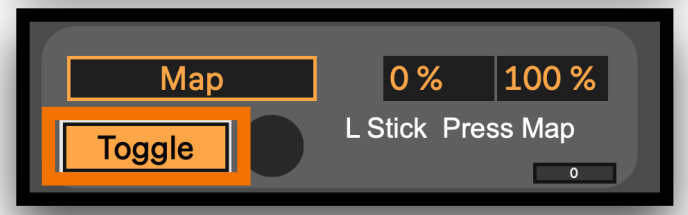
***If the parameter you are trying map will not map, unfocus that parameter then try again. For example, if the filter will not map, then click somewhere else in Ableton, for example, right next to the control, then try again.

Scaling



The numbers next to the map button will scale the output. For example, in the current configuration, if we move our assigned joystick to the left, it would close the filter completely (0%). If we move it to the right, it will open completely. (100%). If we changed 100% to 50% then the Joystick at rest would be at 25% and then go from (0%) to (50%) when moving it left or right.

Buttons (Binary controls)

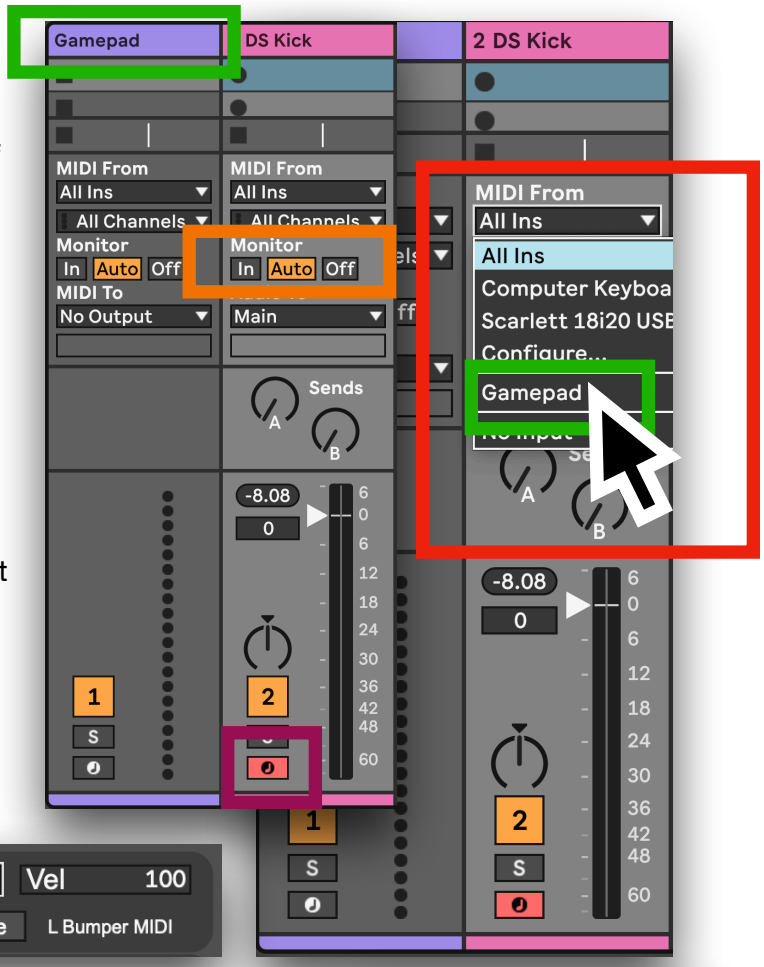


Many of the buttons will output both MIDI as well as a mappable control. For example, if you hit the Left bumper on the controller it will output a MIDI note (if enabled) at the same time it outs puts the Map control. This control is binary meaning on or off.

The binary Map buttons have a Gate/Toggle switch. In gate mode, the control will stay high as long as the button. In toggle mode it will go to (100%) after hitting the button and stay there until the button is pressed again.

MIDI Output

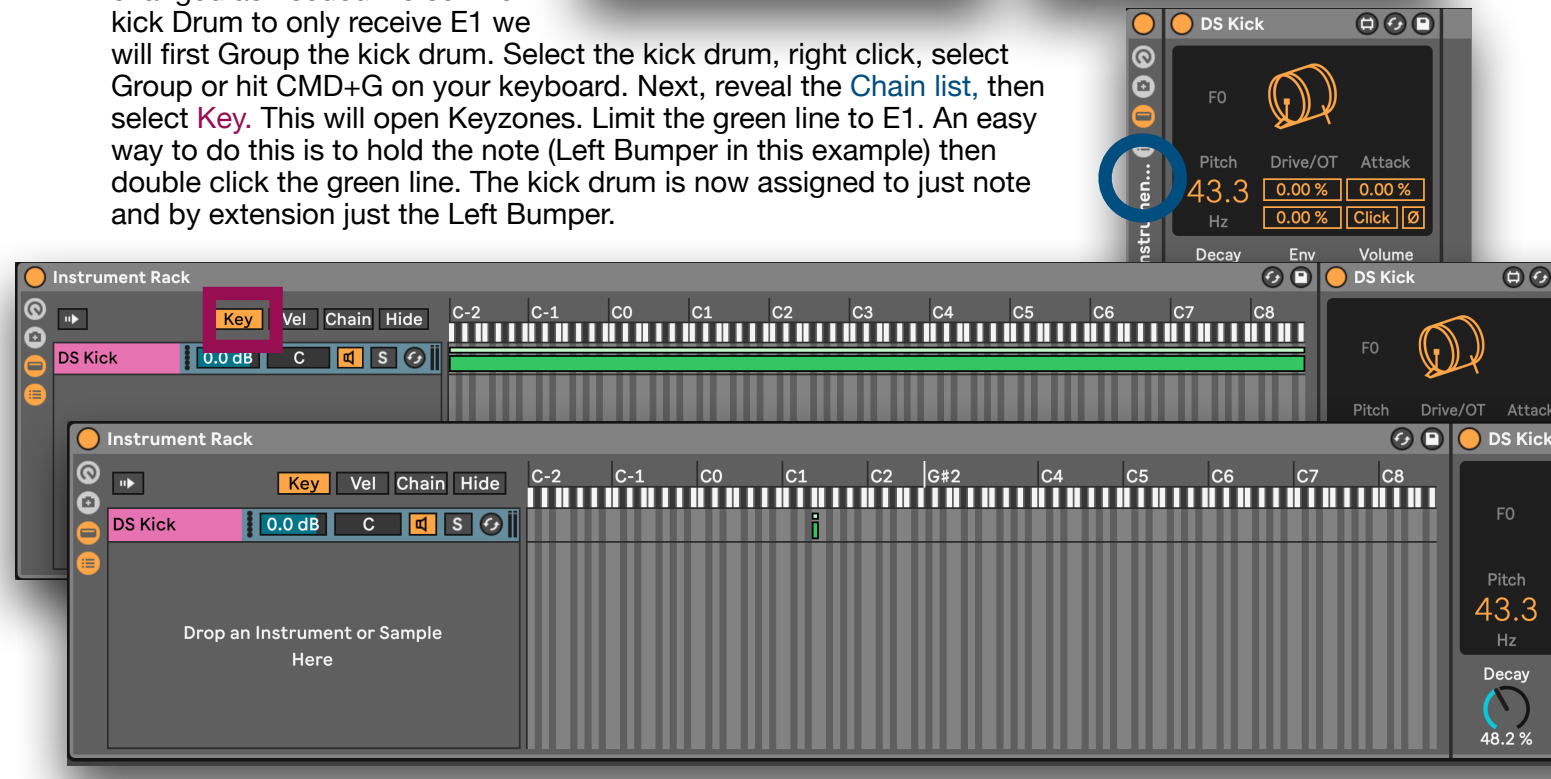
The Gamepad device generates MIDI within Ableton. This means Ableton is not “listening” for the MIDI, unlike a typical MIDI controller outside of Ableton. This means that you cannot record MIDI directly on to the track where it is placed. Instead, you would record the MIDI to the track where the instrument being controlled is. Because the controller doesn’t have a full keyboard range, it’s better to think of the MIDI output on the controller as control numbers rather than Notes. Lets assign the Left bumper to a kick drum.



On the track where the Kick drum is placed, navigate to the “MIDI From” dropdown menu and select the track where the gamepad device is placed. I’ve renamed that track “Gamepad”. Select that track. Make sure that the Monitor is set to either Auto or In and the Record toggle is on.

This track is now receiving all MIDI from the Gamepad device. So any of the buttons on the controller that have MIDI enabled will be sending notes to this track.

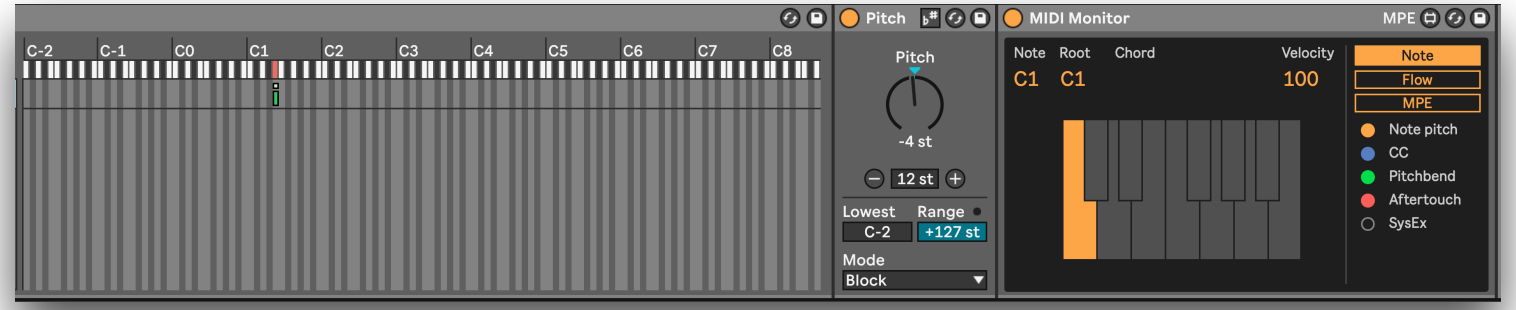
Inside the Gamepad window the Left Bumper is assigned to the Note E1. This Note can be changed as needed. To set the kick Drum to only receive E1 we will first Group the kick drum. Select the kick drum, right click, select Group or hit CMD+G on your keyboard. Next, reveal the Chain list, then select Key. This will open Keyzones. Limit the green line to E1. An easy way to do this is to hold the note (Left Bumper in this example) then double click the green line. The kick drum is now assigned to just note and by extension just the Left Bumper.



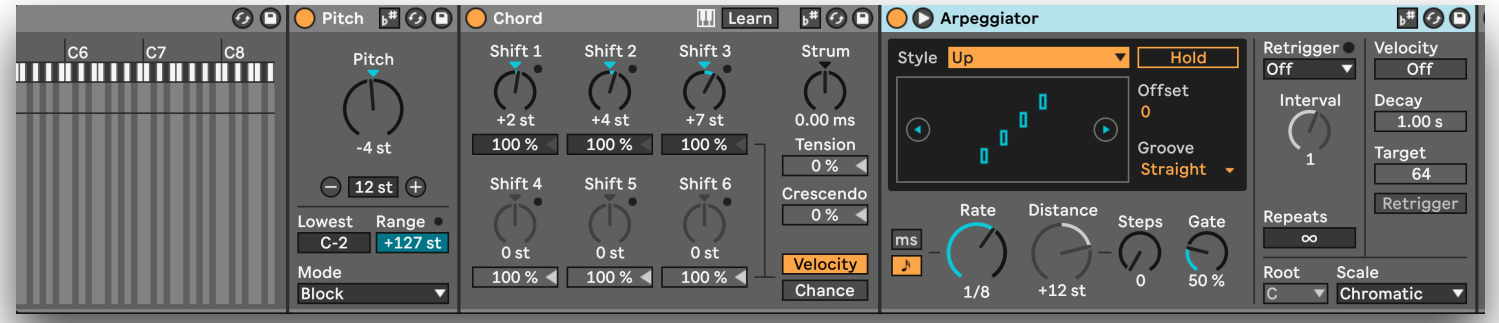
Another way, is to simply use a Drum rack. Placing the kick drum on the first cell would mean to trigger the kick we would want the Left Bumper to send out C1. So we can switch that in the Gamepad window.

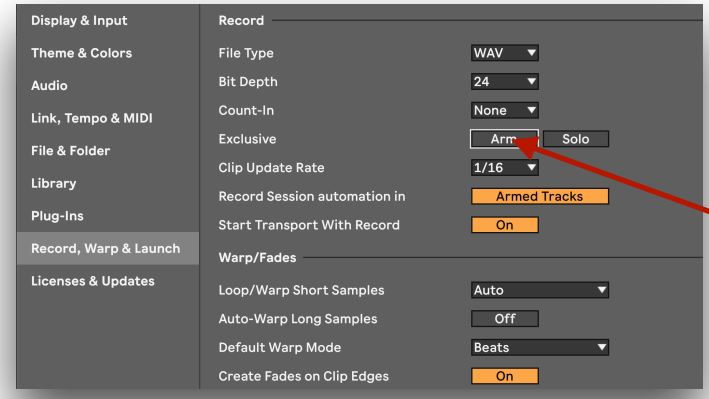
This is the simpler way, but fundamentally the same thing is happening. We are using notes as signals to select instruments. The Instrument rack method is useful to know especially when scaling notes with MIDI objects. Having the Key map visible can be useful.

For example, instead of a kick drum, suppose we wanted to use the Left Bumper with the MIDI note E1 to play a C note on Meld. We could follow the same procedure from before. But before the Meld instrument place a Pitch. We can use the pitch to offset the note to C1.



From there you could add a Chord and and arpeggiator. Now you have an arpeggiating chord!

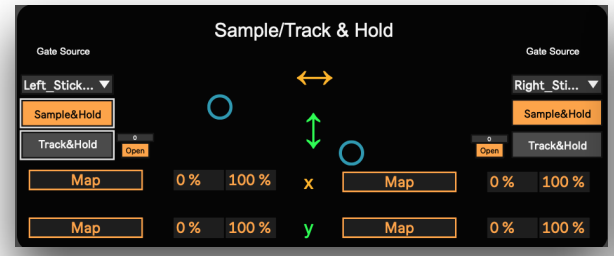




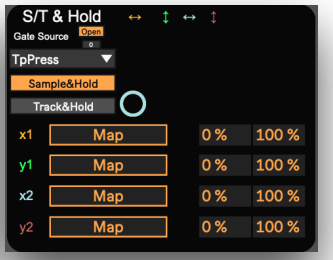
This same process can be followed for multiple tracks. **If Ableton will only let you toggle one track to record mode, go to Settings> Record, Warp & Launch and make sure Arm is off.**

Sample/Track & Hold

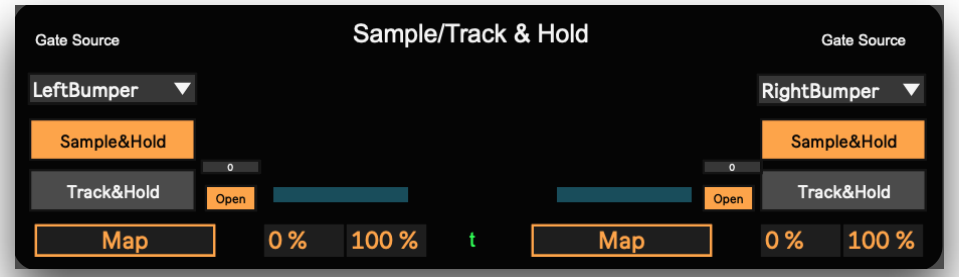
The tabs Joysticks, Triggers, Touchpad, and Gyroscope have a Sample/Track & Hold section. There are two modes Sample & Hold and Track & Hold. **These Sample/Track & Hold sections are independent of the main control outputs.** Sample & Hold will continuously output the control until it receives a gate. Track & Hold will NOT output control until it receives a gate. For example: We assign the x output for the left joystick in the Sample/Track & Hold section to a reverb send. We assign the gate source to be Left Joystick Press and set it to Sample & Hold. Move the joystick to the left the reverb send will go to (0%). Then press the Left Joystick. The control will stay (0%) as long as we continue to press regardless of whether or not we move the control. If we switch to Track and Hold and move the joystick to the left, the control will not move. If we continue to hold the control to the left and then press, the control will snap to (0%) While holding left, stop pressing, the control will stay (0%) until will press again.



Joysticks

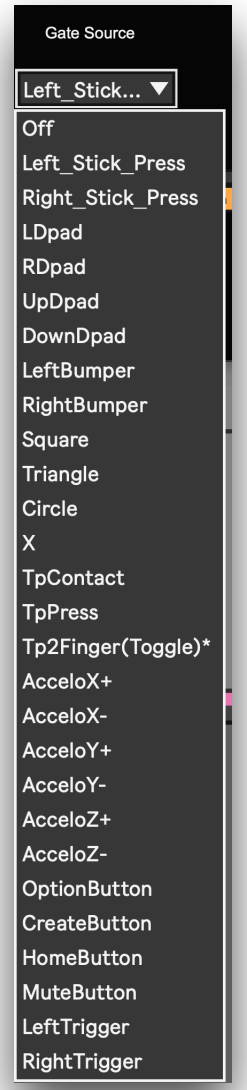


Touchpad



Triggers

Gyroscope



Gate Sources

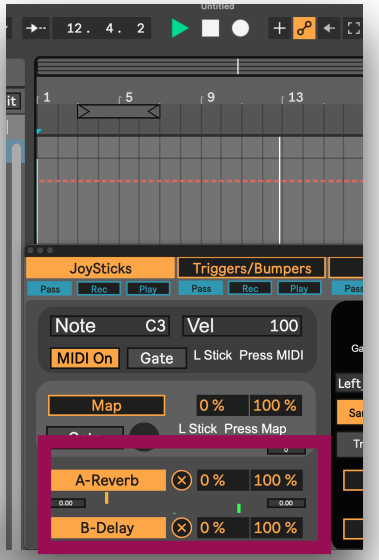
Recording Automation

All automation out of the Gamepad can be recorded to the track where the Gamepad is placed. **They will not get recorded to the track being automated.** One of the tricky parts about recording automation out of the Gamepad is that just picking up the controller will result in automation. Also, with 64 output lanes, it can be a lot to manage. If you were to draw a line of automation for a filter cutoff and then adjust the filter, the automation would be disabled. The result would be that same with the Gamepad device. If you used the Gyroscope or accelerometer to record a lane and then bumped the controller, you'd have to navigate to that control and reenable it. The way recording is set up with Gamepad this can be avoided. It also allows for overdubs or recording only certain tabs of the controller. All Mappable controls that are played will be recorded regardless of whether or not they are mapped.

There are 3 different options for each tab or section of the controller. Pass, Record, Play. When in Pass mode no automation will be recorded, but the physical control will always be output. In Record mode, automation is disabled until Ableton's transport is in record mode. Once the Gamepad M4L device and Ableton's transport are both in record mode that tab's physical control will be output and recorded to the timeline. In Play mode the physical control output is disabled but recorded automation will be output. Mapped controls can be reassigned after recording and you will not lose the automation.

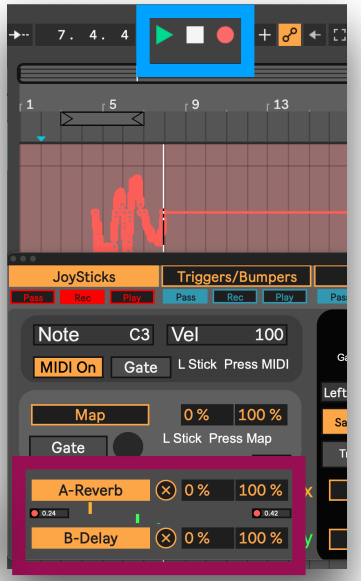
Pass mode:

Control is Passed through regardless of transport state. No automation is recorded. This will not overwrite previously recorded automation.



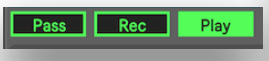
Rec Mode:

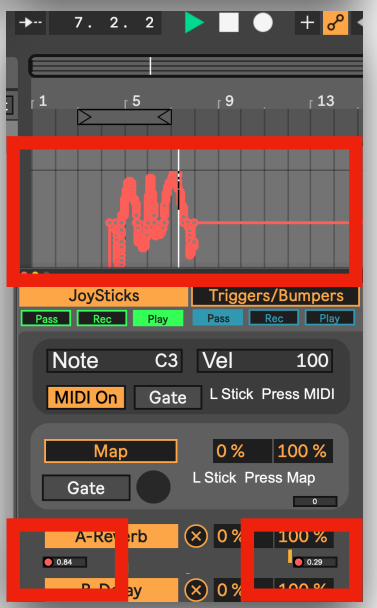
Automation is output and recorded when Ableton's Transport is in record mode.



Play mode:

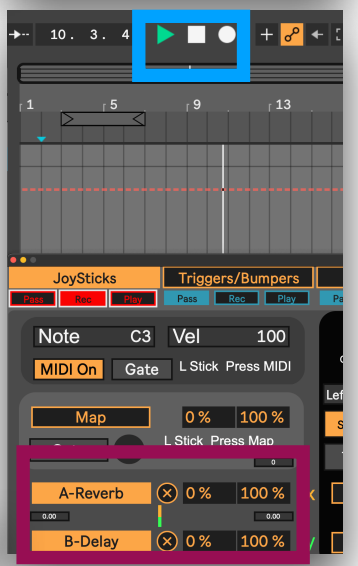
Recorded automation is played back while physical output is not sent thus not overwriting recorded automation.



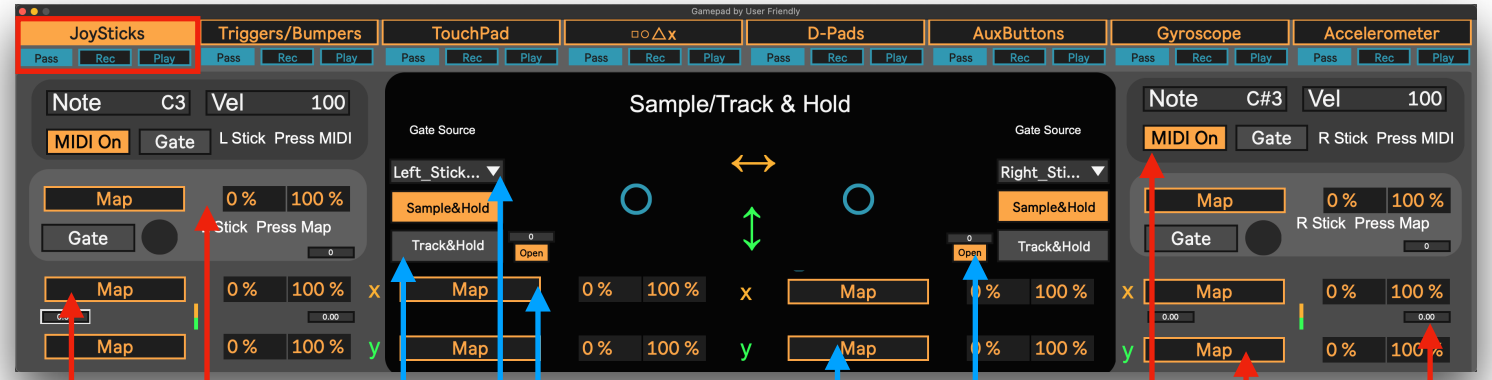


Rec Mode:

Note, here that the Gamepad is in record mode but no automation is being output because Ableton's Transport is not in record mode.



Joysticks



Left Joystick X axis (Left and right)

Left Joystick Press Mappable output

Sample/ Track & Hold toggle

S/T& H Gate selection menu

S/T&H Left Joystick X axis (Left and right)

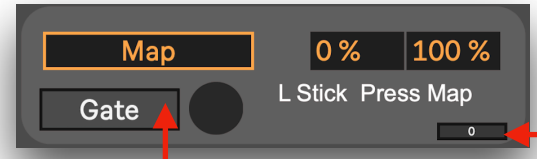
Sample/Track & Hold Modulation is independent of the main controls.

S/T&H Right Joystick Y axis (Up and down)

S/T&H gate state

Right Joystick Y axis (Up and down)

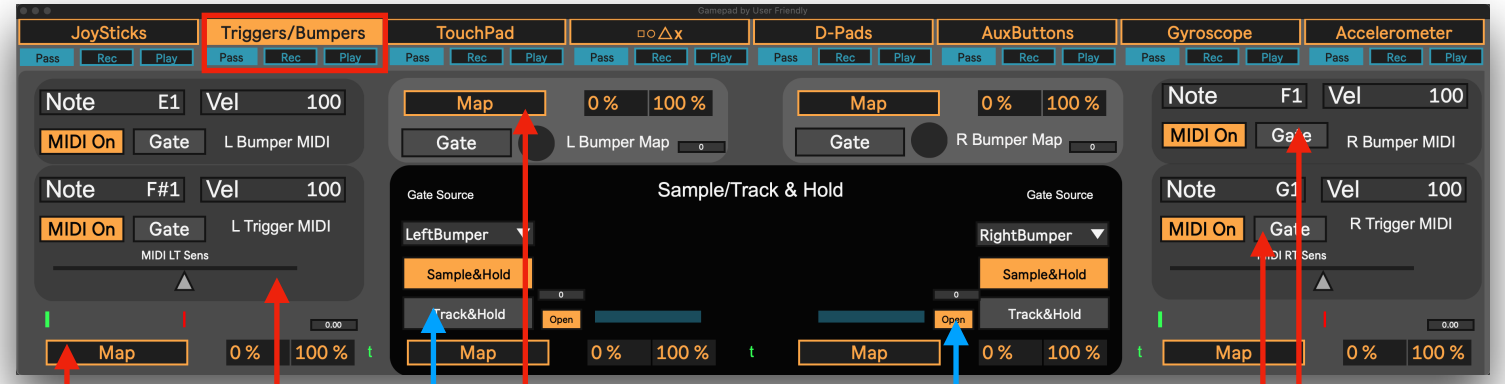
Right Joystick Press MIDI output.



These little boxes will have a red dot if automation has been recorded to the control.

Gate vs Toggle. Gate mode will output a signal only as long as the stick is pressed. Toggle mode will output a high signal after the stick is pressed and stay high even after being released. The control will go low after it is pressed again.

Triggers/Bumpers



Left trigger control output.

Sample/ Track & Hold toggle

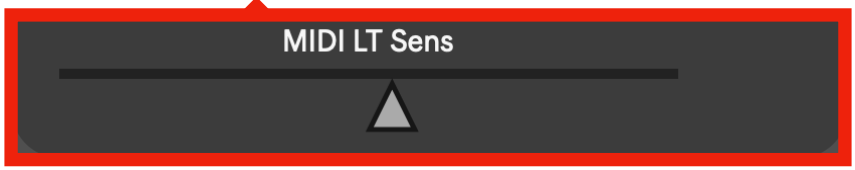
Sample/Track & Hold Modulation is independent of the main controls.

Gate vs Toggle. Gate mode will output a signal only as long as the bumper is pressed. Toggle mode will output a high signal after the bumper is pressed and stay high even after being released. The control will go low after it is pressed again.

MIDI Trigger sensitivity. This slider controls how far you have to squeeze the trigger before a MIDI note is sent from the trigger.

Left Bumper Press Mappable output

S/T&H gate state



TouchPad

Enable/Disable Touchpad

Pad Contact is when your finger touches the touchpad.

Press Pad is when you physically press down on the pad.

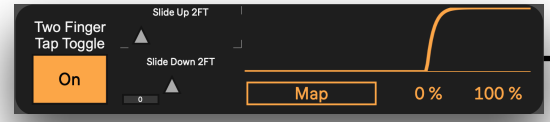
X & Y output for the first finger.

X & Y output for the second finger.

S/T&H is applied to both finger's axes.

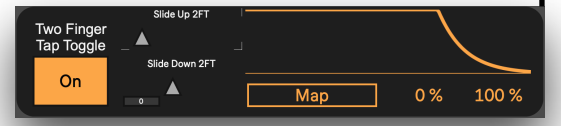
Two Finger Tap Toggle

2FT is a mappable toggle. When one finger touches the pad the toggle stays low. If you continue to touch with one finger then add a second finger it will go high. It will stay high after letting go both fingers. Touch the pad again with one finger to set it back to it's low state.



Touching with two fingers sets the toggle high

Adjusting slide up and slide down will result in a ASR style envelope.



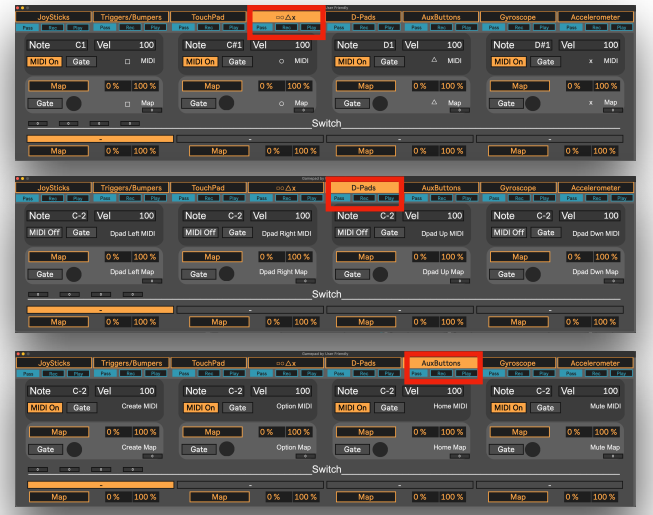
Touching with one finger will set the toggle low.

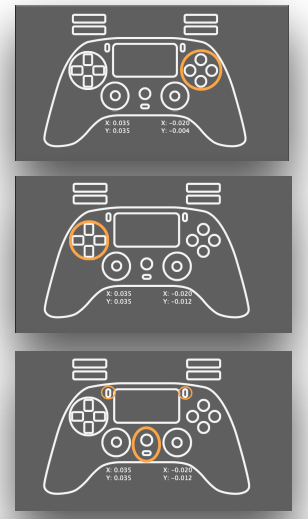
Snapback

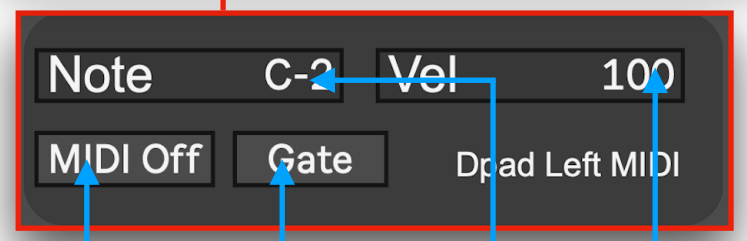
Normal mode means the output will follow your fingers and stay at that value even after no longer touching the pad.

Snapback mode will always send both axes back to (50%). The Snapback Tension slider determines the speed of the snapback. Lower values are faster, higher values are slower.

Buttons







Enable/Disable MIDI note output

Select the MIDI Note to be output

Select the MIDI velocity to be output

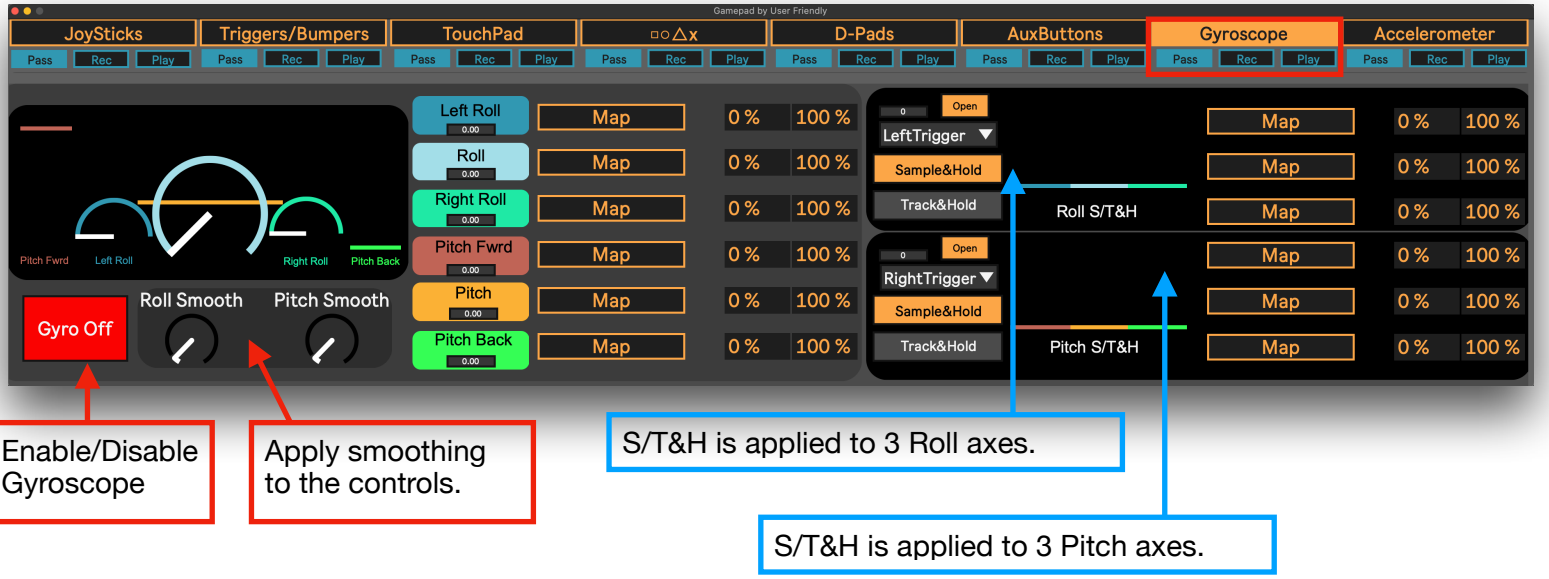
Gate vs Toggle. Gate mode will output a MIDI Note only as long as the button is pressed. Toggle mode will output a continuous MIDI note after the button is pressed and stay high even after being released. The note will turn off after it is pressed again.

Switch

These map buttons correspond to the controls above each map button in this section. Of these four map buttons, only one will ever output a high signal. For example if button A is high, then button B, C, and D will be low. If you then press button C, then C will be high and buttons A, B, and D will go low.

All buttons are binary (on or off). But remember to make use of the scaling percentages next to the map buttons. If you wanted to turn an effect off instead of on, simply flip the numbers. Instead of the left being (0%) and the right being (100%), make the left (100% and the right (0%).

Gyroscope

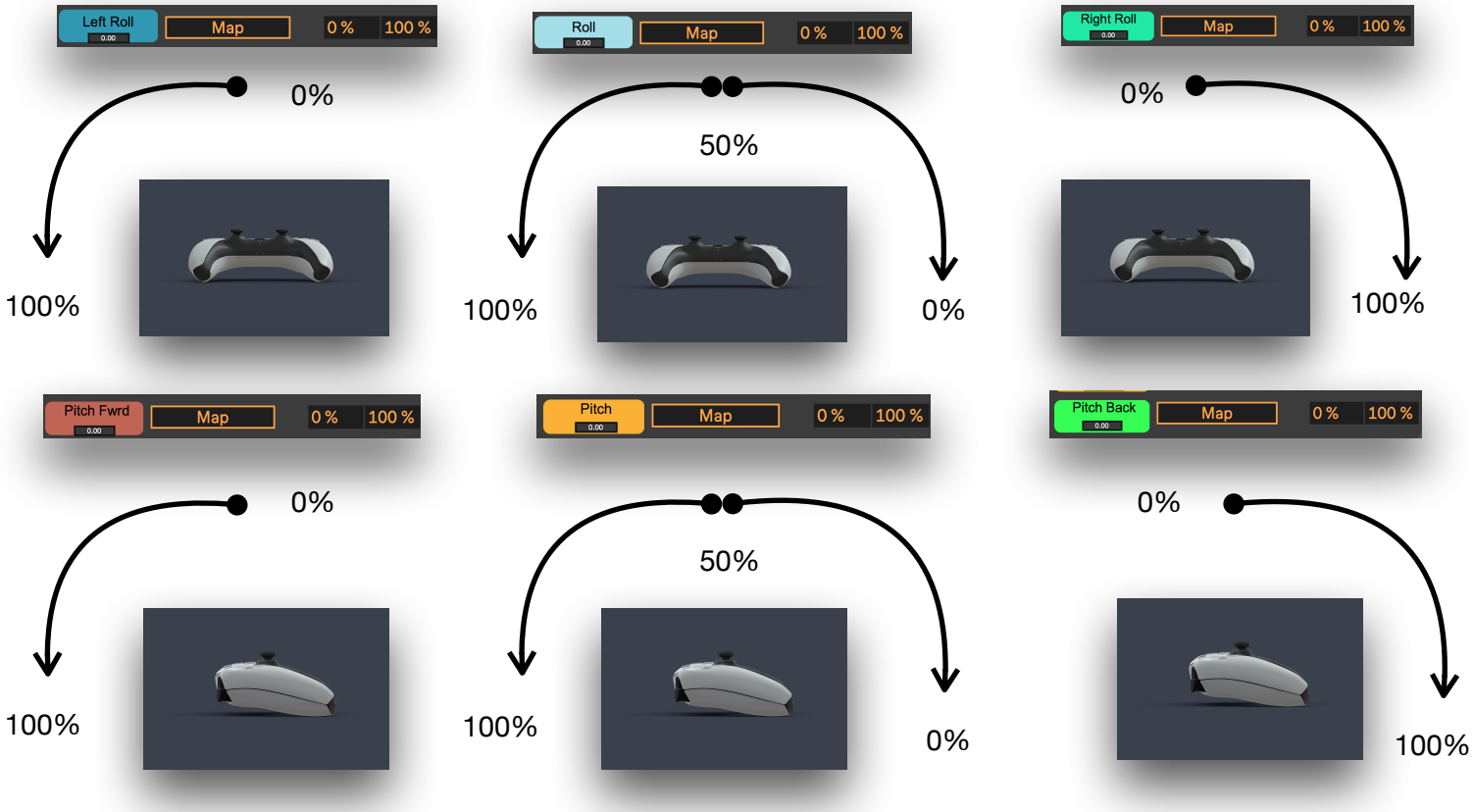


Enable/Disable Gyroscope

Apply smoothing to the controls.

S/T&H is applied to 3 Roll axes.

S/T&H is applied to 3 Pitch axes.

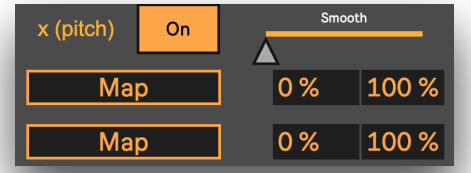


Accelerometer

Pitch

Yaw

Roll



Both Map outputs are will output the same control. Allowing you to scale as needed. Smooth will smooth the output but also require a more aggressive acceleration of the respective axis to reach (100%) output.

These are binary outputs (on or off). Note on Thrsh (Threshold) determines at what point a green note/map gate will turn on/off. Note off Thrsh determines at what point a red note/map will turn on/off.

Switch means either green or red will always be on. For example, in the Yaw axis, turning the control left will turn the green note on, and the red note off. Turning the control right will turn the red note on and the green note off.

Trig will trigger the note when the controller is moved in the respective direction. For example, turning the control left will momentarily trigger the green note, and turning right will trigger the red.

Toggle will turn the respective axis on until the same movement is made to turn it off. For example, turning the control right will turn the red note on. It will stay on until the same movement is made.

Accelerometer measures the speed at which the controller is moved in a particular direction. So, if you quickly twisted the controller in a downward motion the amount of output is determined by how fast the movement in that direction is. If you slowly move the controller in a downward motion a half of an inch, the output may only get to (10%). But if you move the controller in a downward motion an eighth of an inch very quickly, the output may go to (100%). This is important to keep in mind when using the triggering functions. If you move quickly the controller in a downward motion to trigger a snare on the green note, when the motion comes to a stop, you may naturally move back in the other direction, triggering the red note. The key thing to keep in mind is that the output is determined by acceleration, not distance.