MANUAL

Table of Contents

Introduction

Overview

DSP Trigger is a software based audio to MIDI converter. Unlike similar products on the market, DSP Trigger is specifically designed to be used with drum pads and as such provides faster and more accurate triggering.

Features

Here is a quick list of some of DSP Trigger's best features:

- supports positional sensing (mesh pads only)
- up to three articulations from a single zone
- sensitive and dynamic
- extremely fast and accurate triggering
- advanced controls for velocity curve shaping
- supports both single and dual zone pads and cymbals and even live drums
- crosstalk cancellation

How it Works
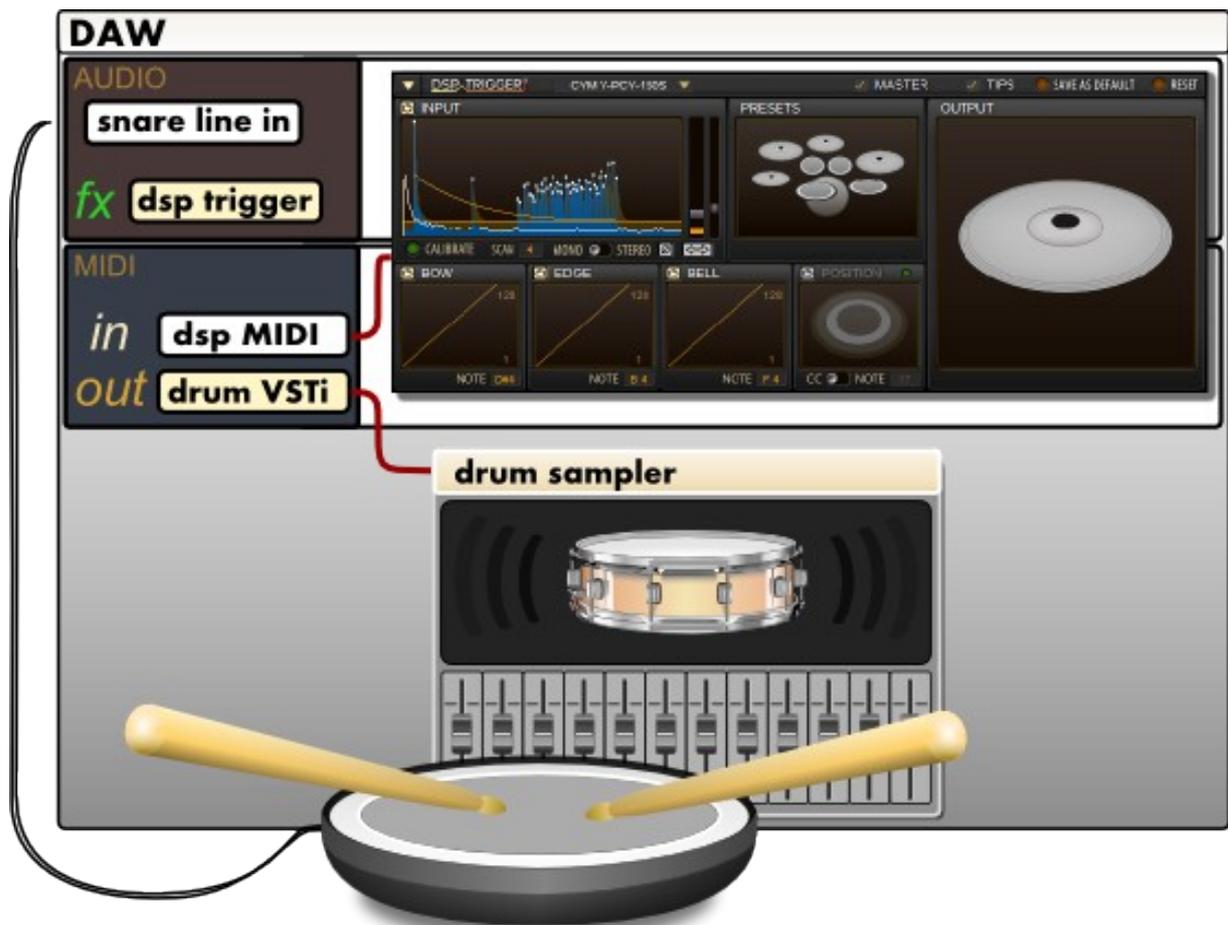
Getting Started

Connecting Your Drum Pad

Your drum pad should be connected to your audio interface through a line-in. The output from your drum pad should not be run though a preamp first even if you find that the signal is weak.

Depending on the number of zones your pads supports, you will need to use a different type cable to connect it to your audio interface.

Single Zone

If your pad is single zone, then you should connect it to your audio interface with a standard 1/4" mono patch cord.

DO NOT connect a dual zone pad with a mono cable. Connecting a dual zone pad using a mono patch cord will not work properly as the mono cable will be fed both zones. This results in cancellation and poor performance from DSP Trigger.

Patch a single zone pad with a mono patch cord.

Dual Zone

If your pad is dual zone, then you need to connect it to your audio interface with a stereo patch cord. Probably the easiest way to patch your dual zone pad into your system is using a set of adaptors similar to the one shown here:

Dual zone pads must be connect using a stereo patch cord.

Note that you may chose to only connect a single zone of your dual zone and use DSP Trigger in MONO mode. If you plan to only use a single zone, make sure you use the head zone and not the rim zone. Have a look at MONO / STEREO control information about the advantages and disadvantages of both modes.

Setting up DSP Trigger in your VST Host

DSP Trigger generates MIDI only. It does not produce any sound. In order to hear sounds, the MIDI from DSP Trigger needs to be routed to a VSTi such as BFD or Drum Superior.

This works in different ways with different hosts. For more information on routing MIDI, check your host's manual.   Here are a few other resources.

Setting up DSP Trigger in Sonar (forum)
Setting up DSP Trigger in Cubase (forum)
How to setup DSP Trigger in Reaper (Youtube)

Calibrating

Overview

Calibrating DSP Trigger is very important and needs to be done well if you want great results. With the calibrate LED light, you are ready to start. Turn if off when you are done.

Calibrating Pads

First, start by playing some high velocity hits on the head of the pad so DSP Trigger can calibrate the gain. Next, play some high velocity hits on the rim portion of the pad so it can measure the level of your sidesticks.

> If you are using a PD8-X (which has its head sensor mounted near the rim) you'll need to limit your hits to the lower portion of the rim. For pads with a center mounted sensor you should hit the rim all around the edge of the pad.
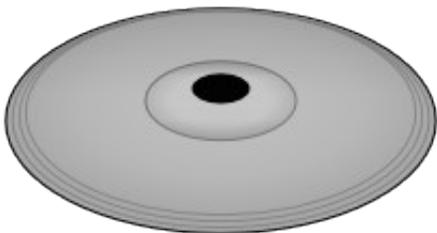
Calibrating Cymbals

Always start with the BOW portion of the cymbal, then the EDGE, and lastly the BELL. Just as with regular pads, you need to hit the cymbal pretty hard so that DSP Trigger knows how hot your signal is.

Tweaking the Calibration

For best results (especially in mono mode), the threshold needs to be as low as possible. Try to get the combination of the DECAY and THRESHOLD envelopes to hug your transients.
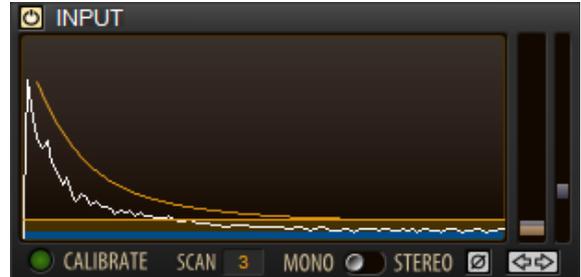
Drag the DECAY and THESHOLD to hug the transient.

Saving your Calibration

Your calibration settings are saved along with your project and when you reopen a project there is no need to recalibrate.

DSP Trigger, however, also has a few different methods of importing calibration settings into new instances of the plugin.

If you only plan to use a single pad with DSP Trigger, then save your calibration is by clicking the 'Save As Default' LED at the top right hand corner of the interface so that the current settings are loaded for any new instances of DSP Trigger.

Another method to save your calibration is to save the current settings as a preset which can be easily loaded using the Preset Selector.
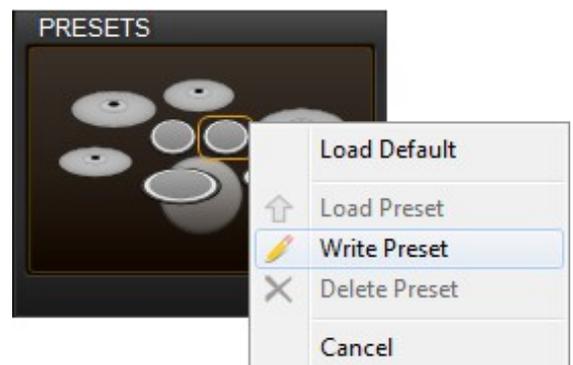
Calibrating Resources

Calibrating a Roland PD8-X (Youtube)

Playing Your Pads

Drum Pads

When used with drum pads, DSP Trigger is typically capable of triggering head hits and side-sticks. If used with a mesh drum pad, DSP Trigger also supports positional sensing. Furthermore, if used in STEREO mode, you will also be able to trigger rim shots.

Playing Side-sticks

If you have a pad with a center mounted piezo, you'll likely be able to trigger the side-stick articulation by hitting anywhere around the circumstance of the pad. For some pads like the Roland PD8-X that has a piezo mounted close to the rim, you'll only be able to trigger the side-stick by hitting the lower portion of the rim.

If you are using STEREO mode and you find you are getting too many or not enough side-sticks, you can try adjusting the right GAIN SCALER. In general, if the right channel's Vu is greater than the left channel's, a side stick will be triggered.

Playing Rim Shots

Rim shots can only be triggered in STEREO mode, meaning that you'll have to be feeding DSP Trigger a stereo input with the head zone in the left channel and rim zone on the right. Rim shots are triggered by simultaneously hitting both the rim and the head of the pad with a medium to great force.

Cymbals

In mono mode, DSP Trigger is capable of picking up three separate articulations for most cymbal types it supports. However, in order to get reliable results, you'll need to limit your strikes to the areas shown in the image on the right.
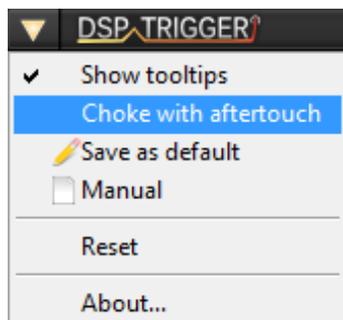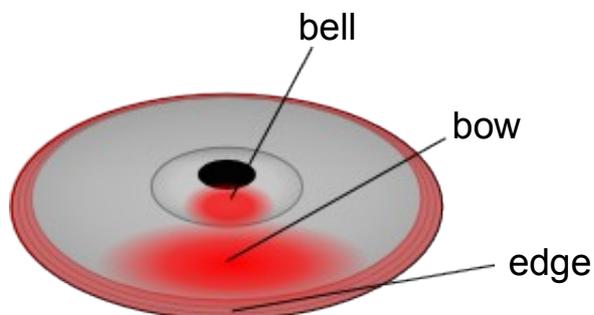
Cymbal Choking

For cymbals used in STEREO mode, DSP Trigger will be able to choke cymbals using after-touch. You can enable cymbal choking from the OPTIONS menu. After-touch can be triggered by gently grabbing the pad on the edge portion after a hit. To see which pads support choking, see the Pad Compatibility Chart.

DSP Trigger Controls

The interface is divided up into sections and each section's controls are described below.

Top Level Controls

OPTION MENU (1)

The option menu is a centralized place for adjusting settings in DSP Trigger.

PAD TYPE SELECTOR (2)

Select the entry that best matches the type of pad you are using.   If your pad isn't listed, selecting 'Generic Pad' will most likely work best. If you are using a cymbal, select a cymbal type that matches your make and model. Look here for a list of compatible pads.

MASTER (3)

When this is checked, all the MIDI from all instance of DSP Trigger is output by this instance. If no instance of DSP Trigger is set as the master, then each instance will output its own MIDI.

TOOLTIPS (4)

Checking this displays helpful tool tips making it easier to understand what different controls do.

SAVE AS DEFAULT (5)

When you click this LED, the current settings are stored to disc. When you start a new instance of the plugin, these setting will automatically be used.

RESET (6)

This returns all controls to their *original* default values. This is useful for overwriting calibration settings that were stored by the SAVE AS DEFAULT function.

Input Section Controls

The display area for the input section is not linear. Instead, it uses an exponential scale to provide more detail at the lower amplitudes allowing you to make more precise adjustments of the various controls.

(1) On / Off Button   (6) Stereo / Mono
(2) Hit Decay   (7) Flip Phase
(3) Threshold   (8) Swap Channels
(4) Calibrate LED   (9) Gain Scalers
(5) Scan Time   (A) Xtalk Scaler
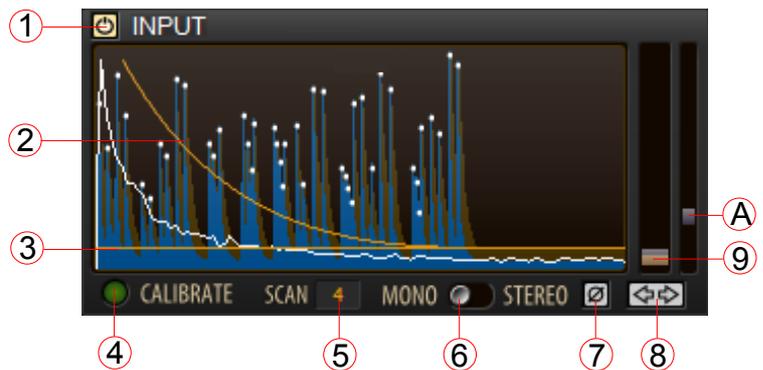
ON/OFF (1)

This button acts as a bypass for the entire plugin. When it is off, you can monitor the sound coming in from your pad.

HIT DECAY (2)

This curve represents a threshold that must be crossed in order for the next hit to be registered. It's called hit decay because this threshold value decays with time down to the value of the THRESHOLD. The white line under it displays the amplitude envelope of the first 500ms of the last hit. The HIT DECAY can be adjusted my clicking and dragging the curve within the display area. While the mouse it over this control, it will not be updated making it easier to adjust while audio is going through the plugin.

THRESHOLD (3)

This value indicates how high the signal must be before before DSP Trigger begins detecting a hit. Keep in mind that because the display area is not linear, changes near the low end of the display represent very small changes.

CALIBRATE (4)

The calibrate function is probably one of the most useful and unique features DSP Trigger has to offer.   Because every drum pad and every audio interface is different, the calibration function normalizes the signal coming into DSP Trigger and adjusts its setting to best detect the transients.
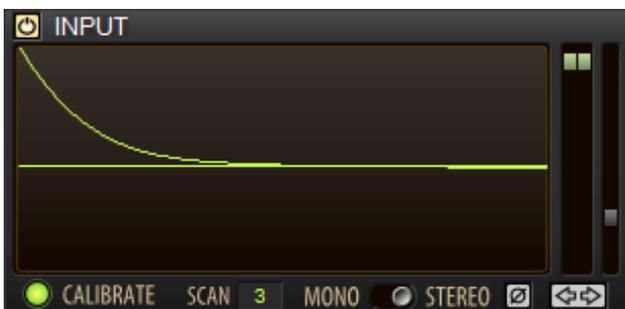
During calibration, controls that are being calibrated turn green and are adjusted as you play. You may override the calibrating of a control by moving it with the mouse. After adjusting its value, it will return to its usual color and will no longer be calibrated.

After calibrating, be sure to turn off the CALIBRATE LED to ensure that setting are locked in. Keep in mind that every time you re-enable the CALBRATE LED, the previous calibrating settings are lost.

For more detailed information about calibrating, look here.

SCAN TIME (5)

This value is the number of milliseconds that DSP Trigger scans for the maximum amplitude of a transient.   The higher you set this value, the more latency you will experience as DSP Trigger has to wait longer before it issues a hit.

In most cases, a value of 3 works best. If you find in the display area that the white dots do not line up with the blue peaks, try increasing the SCAN time.

MONO / STEREO (6)

If you are using a dual zone pad and have both zones connected to separate inputs on your audio interface, then select STEREO. The advantage of using STEREO depends on pad type you have selected.

For regular drum pads, you'll be able to trigger rim-shots. Not only that but you'll get more reliable side-stick triggering all around the entire circumference of the pad.

 For most cymbals you'll gain choke functionality.

⌀ FLIP PHASE (7)

DSP Trigger uses phase information to help distinguish between different articulations. If you are find that DSP Trigger is outputting the wrong articulation, chances are that you need to flip the phase of the incoming signal. Be sure to recalibrate after enabling this button.

⬅➡ SWAP BUTTON (8)

This button is only useful if you are feeding DSP Trigger a stereo input. It simply swaps the left and right channels. If you have DSP Trigger setup on a mono track or are using a mono input, then this button will have no effect.

GAIN CONTROL (9)

Most high-end audio interface use +4dBV type inputs. These types of inputs have about 4x more headroom that -10dBu inputs. To compensate for this difference, DSP Trigger uses a GAIN CONTROL to normalize the input. The background for the GAIN CONTROL is a Vu meter that shows you the gain adjusted output.

This control should not typically be adjusted by the user. Instead it should be adjusted using the CALIBRATE function. If you find that during calibration this control doesn't move, it could be that the signal from your drum pad is too weak and needs to be preamped.

XTALK CONTROL (A)

If you are using multiple instances of DSP Trigger or are using it in combination with an e-drum kit, this function helps you eliminate crosstalk. It's a combination of a slider and a meter. If you are only using a single instance of DSP Trigger and are not routing any MIDI through the plugin, then this control will have no effect.

Preset Selector

Overview

DSP Trigger's Presets section gives you the tools to quickly save, load and preview presets. The display contains nine kit piece images which correspond to 'slots' where you can save presets.

By clicking on a kit piece, you select it and it gets highlighted in gold. The last loaded preset is outlined in gold as shown in the picture on the left. Slots that are empty are dimmed.

Saving and Loading Presets

To save a preset in one of the slots, select the slot and click ✏. Similarly, to load a preset select slot and click ⬆. Presets can also be loaded by simply double-clicking on the desired preset. With a slot selected, moving the mouse over the load icon allows you to visually preview the preset without actually loading it. However, you can also preview a preset by clicking and holding on a preset slot.

Loading Kit Piece Note Values

The presets section also provides a quick way to set the note values for articulations so that you can quickly switch from playing snare, for example to playing a cymbal or any other kit piece. Select the kit piece you would like to play and then click ♪. Assuming you had selected the snare, this would change the hit note value to D3 (38), the sidestick to C#3 (37), and the rimshot to E3 (40).

Presets are written to disk and as such are shared between instances of DSP Trigger and are available across multiple applications.

Articulation Controls

Overview

Each articulation in DSP Trigger has its own display area for visual feedback and number of powerful controls that allow you to adjust the dynamics, feel, and response of your pad.
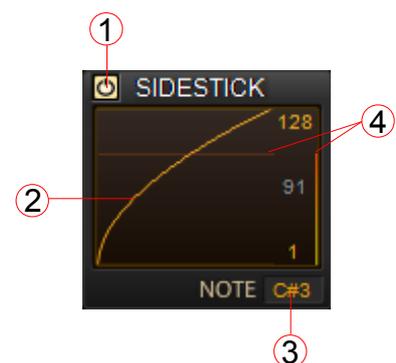
ON / OFF BUTTON(1)

Articulations can be turned on and off. If you turn off any of the articulations, (except BOW or HIT) the HIT or BOW articulation will sound instead. If you turn of the HIT or BOW articulation, no MIDI will be sent when playing those articulations.

VELOCITY CURVE (2)

This line in the display area is actually three controls (MIN, MAX, CURVE) that work together to allow you to fine tune the MIDI output produced by DSP Trigger. MIN and MAX are used to specify the lowest and highest velocities while the CURVE allows you to control the velocity

curve between the lowest and highest values.

By moving your mouse over the bottom of the display, the MIN control indicator lights up. You can drag it upwards to set the minimum velocity. In a similar fashion, you can drag down the top of the display area to set the maximum value. The CURVE control can be adjusted by dragging anywhere between the MIN an MAX indicators.

Doubled clicking on a control returns it back to its default value. Holding down the SHIFT key allows you to make more precise adjustments.

MIDI NOTE (3)

Note values can be displayed as numbers 1-128 or as using standard note notation (C#8). You can switch between the two formats by right clicking on the value.

The value can be changed by either dragging the value up or down with the mouse or by double-clicking and entering a value with the keyboard. You may enter the value as a number or as standard note notation regardless of the format that is displayed

VU METER (4)

After a hit, the VU meter moves to indicate the velocity of the hit. Also, a horizontal line is drawn in the display area showing where it intersects on the velocity curve. While the Vu meter quickly resets to zero shortly after a hit has passed, the horizontal line remains. And if you adjust the velocity curve after the hit, the horizontal line moves indicating what the velocity would have been given the adjustments you make.

RIMSHOT RANGE

The rim-shot articulation has an advanced control which you can adjust to set the tradeoff between how easily rim-shots are triggered vs. mistriggered.

Providing that you are in stereo mode and the current pad type is not a cymbal, this control can be revealed by right-clicking in the curve display area for the rim-shot articulation.

This control includes a red 'hit indicator' and a grey 'range' bar. By dragging up and down in the display area you can shrink or enlarge the range of hits that are determined to be rim-shot articulations. If the 'hit indicator' falls to the left of the 'range' bar, DSP Trigger determines the hit to be a 'head' articulation. If the 'hit indicator' falls to the right of the 'range' bar, the hit is determined to be a 'side-stick' articulation. And if the hit falls inside the rim-shot 'range' bar, DSP Triggers determines the hit to be a 'rim-shot' articulation.

A value of 30% generally works best, however if you feel it's too difficult to trigger rim-shots, you might want to adjust this control.

Check the videos section on the website for a tutorial describing how to properly fine DSP Trigger's rim-shot detection.

Positional Sensing

If you are using DSP Trigger with a mesh drum pad, it has the ability to detect the location of your hit and pass that information on to your drum sampler.
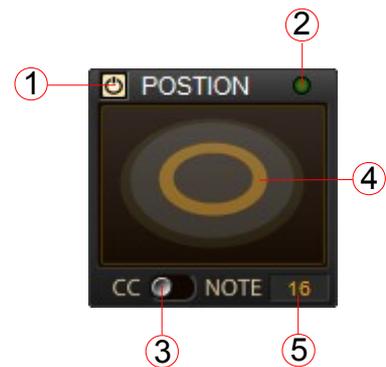
ON / OFF BUTTON (1)

By default, positional sensing is off. If positional sensing is disabled, the label will be greyed out and you will not be able to turn positional sensing on.

CALIBRATE (2)

The positional sensing must be calibrated before you can use it. To begin calibrating, click on the green LED. Next, hit your drum pad a few times with medium force moving from the centre of the head out to the left and right edges. As you move out you should start to see the OUTPUT indicating where you have hit. When you are happy with the calibration, turn off the calibrate led and your settings will be locked in. Be sure to use the positional BIAS control to set the cutoff between the HIT and EDGE zones.

OUTPUT MODE (3)

DSP Trigger offers two ways to output positional information. The first mode sends out a MIDI CC just before it sends out the HIT note. This mimics the behaviour of some well known high end drum modules. The second mode sends out two different MIDI notes. For hits that are close the centre, this mode sends out HIT notes and for hits that are close to the edge, it sends out EDGE notes.

POSITIONAL BIAS (4)

The POSITIONAL BIAS allows to adjust the size the of your positional zones. If you feel the cutoff between what registers as being a HIT and what registers as being an EDGE articulation needs adjusting, then this is the control you need to work with.

By dragging the indicator up (towards the center), hits will be detected as being closer to the centre—effectively increasing the size of your HIT zone while making the EDGE zone smaller.

The control is very sensitive and a little goes a long way. However, extremes settings are useful if you would like all hits to be detected as only HIT notes or EDGE notes.

CC / EDGE OUTPUT (5)

Using MIDI CC output mode, this box displays CC value to be sent before each hit.   If in NOTE mode this box displays the edge note value that will be used for hits that register as 'edge' articulations. Like the MIDI note values for the other articulations, you can switch between displaying note numbers and standard note notation by right clicking on its value.

The value can be changed by either dragging the value up or down with the mouse or by double-clicking and entering a value with the keyboard. You may enter the value as a number or as standard note notation.

ADAVANCE POSTIONAL CONTROLS

Like the advanced controls for rim-shots, the advanced positional controls can be revealed by right-clicking in the positional display. If you are on a MAC and are using a single button mouse, use command click. There are two advanced positional controls, STEADY SHOT and EDGE SCALER.

STEADY SHOT

During fast rolls, it's difficult for DSP Trigger to always accurately measure the position of hits. This can lead to occasional fluctuations in the positional sensing. Steady Shot is designed to steady fast rolls while still allowing movement from the center out to the edges and vice versa.

The Steady Shot control is comprised of a red BPM indicator and a slider. As you play a fast roll on your pad, the red indicator will grow in size representing how fast you are playing. The slider can be dragged left or right to set the BPM at which steady shot begins to kick in.

EDGE SCALER

One complain you often hear in regards to mesh drum pads is that response from the center of the pad out to the edge is uneven, resulting in much louder hits when hitting the center of the pad as opposed to the edge area. The EDGE SCALER control compensates for this by scaling the velocity of hits that occur on the edge portion of the pad.

EDGE VELOCITY CURVE

For those who just can't get enough tweaking, you may also define a separate velocity curve for the edge portion of the pad. When positional sensing is on, the 'LINK' check-box appears in the HIT articulation. By unchecking this box, and right-clicking in the display area, you can access the velocity curve of the outside edge of the pad.

When the 'LINK' check-box is unchecked, DSP Trigger will use a weighted average of both velocity curves to determine the velocity of the hit. The weighting is determined by the position on the hit.

GETTING THE BEST RESULTS

As mention before, it's important to get a good calibration in order to get good positional performance from DSP Trigger. To accurately measure positional sensing, input section threshold needs to be a low a possible so that it begins detecting as early as possible. Also the hit decay needs to be adjusted so that it hugs the transient very closely. If the hit decay does not hug the transient closely enough, the positional detection will begin to break down in rolls.

Output Section

Overview

The output section gives you visual feedback regarding the velocity and the articulation that is being output by DSP Trigger. Depending on the PAD TYPE that you have selected, you will a different image in its display area.

Triggering Articulations

By clicking in the output section, DSP Trigger sends out a HIT or BOW MIDI note. The velocity of the note is scaled by how high up in the display you click.

In a similar fashion, the SIDESTICK or EDGE articulation can be triggered by right-clicking and the RIMSHOT / BELL articulation can be triggered by SHIFT-clicking on the display area.

This is useful for checking to make sure your MIDI note assignments correspond to the notes in your drum sampler.

MIDI Activity Indicator

The MIDI cymbal at the bottom right hand corner of the output section lights up when MIDI is passing through DSP Trigger. This MIDI has crosstalk applied to it as per the crosstalk threshold and if MIDI is filtered out the indicator briefly flashes red.

BPM Indicator

A simple yet useful tool, the indicator displays the current bpm of hits passing though DSP Trigger. The number is an average of up to the past 12 hits. After a pause of 2 seconds, the hit history is reset and the average is recalculated again only using data from new hits.

Support

Registered users of DSP Trigger may contact technical support for help.

Support http://www.audiofront.net/contactSupport.php

The following resources are available to all users and likely contain any information you are looking for.

Website http://www.audiofront.net/dspTrigger.php

Forums http://www.audiofront.net/forums/index.php

Videos http://www.audiofront.net/videos.php

FAQ http://www.audiofront.net/FAQ.php

APPENDIX A: Pad Compatibility

While DSP Trigger should work well with just about any drum pad, the following pads have been tested.

PADS

PAD	PAD TYPE	MONO MODE	STEREO MODE	HIT	SIDESTICK	RIMSHOT*	POSTIONAL SENSING
PD-8x	ROL PD8-X	O	O	O	O	O	O
PD-85	ROL MESH	O	O	O	O	O	O
PD-105	ROL MESH	O	O	O	O	O	O
KD-8	Microphone	O	X	O	X	X	X
KD-120	Microphone	O	X				
TP-65	TP-65	O	X	O	O	X	X
TP-65S	TP-65	O	O	O	O	O	X
KP65	Microphone	O	X	O	X	X	X

* The rimshot articulation is only available in STEREO MODE.

CYMBALS

CYMBAL	PAD TYPE	MONO MODE	STEREO MODE	BOW	EDGE	BELL	CHOKE*
CY-5	R-CY-5	O	X	O	O	X	X
CY-12RC	R-CY-12RC	O	O	O	O	O	O
CY-15R	R-CY-15R	O	O	O	O	O	O
PCY-130S	Y-PCY-130S	O	O	O	O	O	O
PCY-150S	Y-PCY-150S	O	O	O	O	O	O
PCY-155R	Y-PCY-155	O	O	O	O	O	X
Kill Toys 16R	KToys16R	O!	O	O	O	O	X

* Cymbal choking is only available in STEREO MODE.
! In MONO mode bell articulation is not available

You pad is not well supported?   Look here for information about how to get support for your pad.