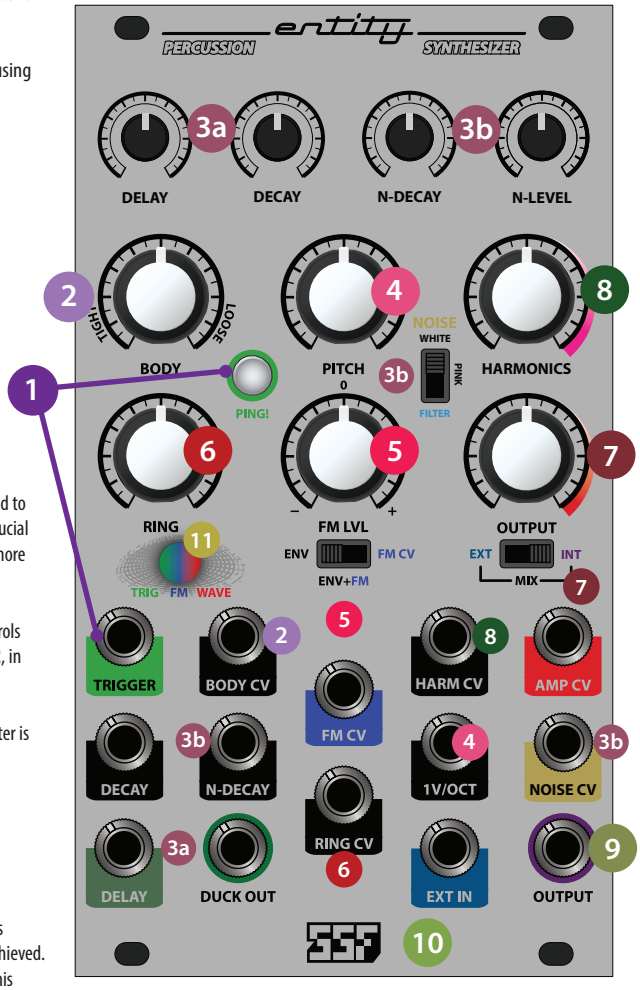
entity PERCUSSION SYNTHESIZER

rev1.00

SYNOPSIS

The Entity Percussion Synthesizer is a modern amalgamation of the most important functions to create a wide range of percussive sounds. Additional functions have been incorporated in order to increase both the versatility in use within a modular environment and broaden the sound sculpting abilities of the Entity PS itself.
The Entity PS is capable of producing a huge variety of percussive effects including but not limited to: snares, claps, snaps, rim shots, synth percussion, bass and lead lines and even a new flavor of kick drum sounds. As with the Entity BDS, the PS is a complete synthesizer voice focusing on versatility and high quality, 100% analog sound design.
Please read the manual carefully to enjoy all the benefits the Entity Percussion Synthesizer has to offer.



1 TRIGGER INPUT and PING!

The **TRIGGER** input jack is used to initiate a percussive tone and trigger the main and noise envelopes from the respective decay generators. Any signal above 1V can be used - not just triggers or gates.
The **PING!** Button is used to audition a sound without anything patched into the **TRIGGER** input.

2 BODY and BODY CV

The **BODY** control emulates the response of a drum head. It is a subtle control and the effect can vary depending on the status of other parameters like RING and FM levels. The center position is the most tuned response while Tight produces the least resonant, lowest amplitude and loose produces a flabbier, more bass-y sound. **BODY CV** works best with bipolar voltages but will accept any polarity CV. The Body Control works as an offset when external CV is used.

3a MAIN ENVELOPE CONTROLS

The **DELAY** and **DECAY** potentiometers control the envelope trigger delay and decay time for the main sound produced by the resonator.

DELAY will add a time lag between the trigger source and actuation of the main sound and respective envelope. As this control is increased to the right, the delay time increases. Minimum setting produces no delay. This control is very effective as a variant for snare sounds and is crucial for clap and snap sound design. Control voltages may be patched into the **DELAY CV** jack for automating this parameter. CV can produce more of a delay than is capable with just the **DELAY** control alone. The **DELAY** control works as an offset when control voltages are utilized.

DECAY controls the envelope decay time for the main sound source. The envelope can be routed to the **FM** section and automatically controls the output level of the main sound's VCA. This control works specifically for the main sound source unless the **NOISE** mode is set to **FILTER**, in which case the **DECAY** controls the overall envelope length, in conjunction with the **NOISE** controls (see NOISE modes, below). Control voltages for this parameter are patched into the **DECAY** jack. The control works as an offset when CV is used.
For general percussive sounds, nominal position for the **DECAY** control is from minimum to roughly center of the dial. Use beyond center is generally for, but not limited to laser and synth effects, bass and lead sounds and external processing.

DUCK OUT provides an offset and inverted version of the main envelope for ducking external VCAs.

3b NOISE LEVEL,MODE and ENVELOPE CONTROLS

The **N-DECAY** and **N-LEVEL** potentiometers control the envelope decay time and volume level for the noise generator.

N-DECAY controls the envelope decay time of the dedicated, internal **NOISE** VCA. Like the main DECAY control, the **N-DECAY** control offers somewhat specific use when set to the left or right of center position. Set from minimum position to center, very short decay times are achieved. This is useful for variations in producing short clicky sounds. For snare and clap sounds, or if a much longer decay time is desired, setting this control from just below center to maximum is recommended. The control works as an offset when CVs are patched into the **N-DECAY** input jack

N-LEVEL controls the CV depth going into the internal NOISE VCA. The **N-DECAY** envelope is normalized into **NOISE CV** via the **N-LEVEL** potentiometer. This normalization breaks when a signal is patched into the **NOISE CV** jack, allowing the noise level to be actuated separately from the main sound and CV level adjusted via the **N-LEVEL** control.

NOISE MODE: The **NOISE** switch selects from 3 types of noise; **WHITE, PINK** and **FILTER,** which processes the noise through the main sound signal chain, including the bandpass resonator, harmonics and main VCA. As stated in section 3a, While the N-DECAY and N-LEVEL controls still work independently, the main envelope **DECAY** and **OUTPUT** control the overall decay and level when **FILTER** mode is selected.

4 PITCH and 1V/OCT

The **PITCH** control tunes the tonal frequency of the output. Featuring a large span of control from about 8Hz to roughly 2.2kHz. Both higher and lower frequencies are capable using the **1V/OCT** and/or **FM CV** inputs. The **1V/OCT** input is used for tracking Entity with a sequencer, keyboard or as an additional FM input. The module will reliably track at least four or more octaves.

5 FM LVL, FM CV and FM SWITCH

The **FM LVL** control is a bipolar attenuator. Center position reduces the modulation depth to zero. Fully right is maximum positive depth, fully left is maximum inverted depth. **FM CV** jack is used for patching external modulation sources to frequency modulate the output. The switch below **FM LVL** has three positions that select the routing to the **FM LVL** control. The rightmost position selects **FM CV** only and doubles as an "OFF" selection if no CV is patched into the **FM CV** jack. The center position will sum any signal patched into **FM CV** with the internal ***MAIN*** envelope generator. The leftmost position selects the internal ***MAIN*** envelope only.

6 RING and RING CV

The **RING** control affects the resonance and resonant decay time of the output signal. The amount of resonance/decay produced by this function is independent of the other controls. However, using the internal ***MAIN*** envelope or external CV to control the amplitude (volume) in the **OUTPUT** VCA section (see below) can have an affect on how much resonant decay is heard - a useful sound design feature. At maximum setting, **RING** will produce a sustained self oscillation. When set to minimum, a small amount of resonance will still be present. The **RING CV** input is used to modulate the **RING** function and the **RING** control works as an offset when **RING CV** is in use. For most percussive sounds, **RING** is typically set to minimum or very low - this is a good starting point, especially for snare sounds. For longer duration sounds and/or more resonance is desired, **RING** should be increased to suit.

7 OUTPUT, AMP CV and SWITCH

The **OUTPUT** control affects the amplitude (volume) of the main resonator sound. When WHITE or PINK noise modes are selected, **OUTPUT** affects only the volume of the main sound from the resonator. When **FILTER** noise mode is selected, **OUTPUT** controls the overall volume of both the main resonator and processed noise. **AMP CV** jack is provided for external modulation use and will bypass the internal envelope when a signal is patched into this jack. **OUTPUT** then controls the level of the applied CV. Plenty of headroom and the signal may be pushed into hard clipping, for a crunchier sound.
The **SWITCH** below the OUTPUT control affects the mixer going into the main signal chain. An external signal may be combined, or processed independently from the main sound. You may choose between the internal sound only, external only or a mix of both processed sounds. This greatly enhances the sound possibilities while also providing a fast way to switch between the three sound variants. External sources are patched into the **EXT IN** jack (see 10, **EXT IN**).

POWER CONSUMPTION

QUIESCENT: +61mA, -91mA
MAXIMUM: +72mA, -125mA

8 HARMONICS and HARM CV

The **HARMONICS** control adds heavy upper harmonic content to the main sound and/or external sources. This control can have a dramatic affect on percussive sounds as well as bass, lead and synth percussion. It is in essence, a wavefolder and may be used as such for processing external signals.
Use the **HARM CV** jack to voltage control the **HARMONICS** parameter. The control works as an offset when external modulation is used.

9 OUTPUT

Entity PS **OUTPUT** jack. The main, noise and external signals mixed into the **EXT-IN** jack are routed here.

10 EXT-IN

EXT-IN is the direct input into Entity's resonant bandpass filter, harmonics and main VCA . This input is used for a two major functions, described below:

PROCESSING external VCOs, drum modules etc. As mentioned, an external sound source may be processed through Entity's filter, harmonics and main VCA. All the main controls will affect the sound and behavior of the externally patched signal. This signal can be processed alone, combined with the internal sound or switched out of the mix using the mix **SWITCH** below the **OUTPUT** control.

AUX TRIGGERING resonator with a different trigger pattern or source. AUXILIARY triggering is achieved via the **EXT IN** jack to produce more complex rhythms and dynamics. The effect is sensitive to the pulse-width of the trigger or gate signal used and therefore provides a way to get even more expressive with your rhythms. The effects can be dramatic and you are encouraged to experiment in order to understand the possibilities. All the main controls will affect the sound and behavior of the externally patched signal. This signal can be processed alone, combined with the internal sound or switched out of the mix using the mix **SWITCH** below the **OUTPUT** control.

11 RGB STATUS LED

This LED provides visual feedback for the major functions related to the processed signal.

An active **trigger** is displayed in **green**. The duration of the green pulse is affected by the **BODY** control as a faster green blip indicates a tight response and a longer pulse indicates a loose response.

Depth of **frequency modulation** is displayed in **blue**. Whether positive or negative, the level of depth is always indicated by the intensity of the blue portion of the LED.

The **output waveform** is displayed in **red**.

GENERAL PERCUSSION SYNTHESIS EXAMPLES

Here are a few patch examples to be taken as a starting point, and to get you familiar with the Entity Persuasion Synthesizer. Any patch can be further expanded upon using external CV and audio sources.

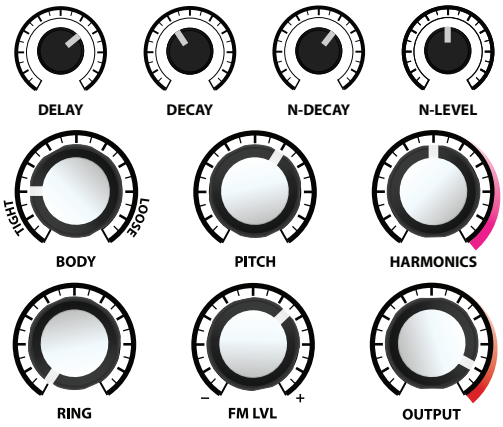
SNARE

The Entity PS is capable of a very large variety of snare sounds. This may certainly vary with taste and related program material. Please experiment with variations of the following patch to grasp the range of possibilities for snares.

SWITCH SETTINGS:
NOISE to **WHITE** or **PINK, FM** to **ENV** or **ENV+FM**
OUTPUT SWITCH to **INT**

CLAP

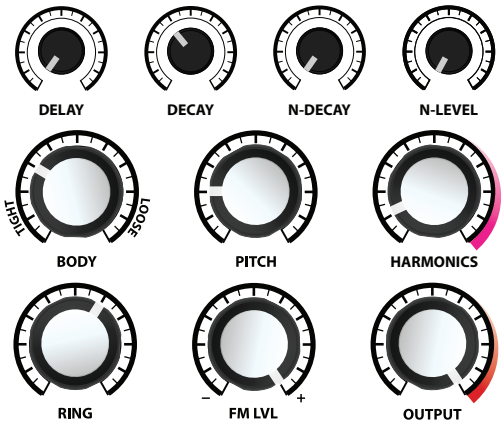
The Entity PS is capable of a very large variety of claps and snaps. Please experiment with variations of the following patch to grasp the range of possibilities for claps and snaps.



SWITCH SETTINGS:
NOISE to **FILTER, FM** to **ENV** or **ENV+FM**
OUTPUT SWITCH to **INT**

KICK

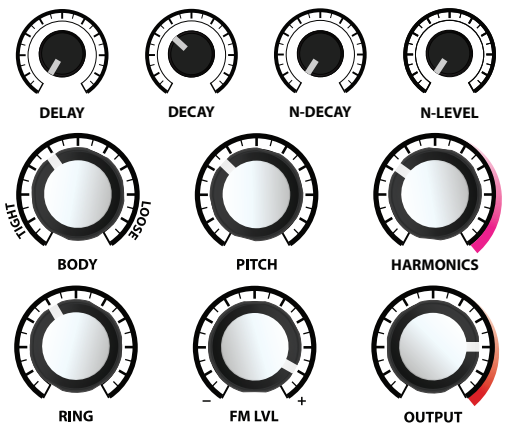
Kicks and similar percussion are possible with the Entity PS. Please experiment with variations of the following patch to grasp the range of possibilities for kicks etc.



SWITCH SETTINGS:
NOISE to **WHITE** / **PINK** for boomier kick or **FILTER** for a tighter kick
FM to **ENV** or **ENV+FM, OUTPUT SWITCH** to **INT**

RIM SHOT

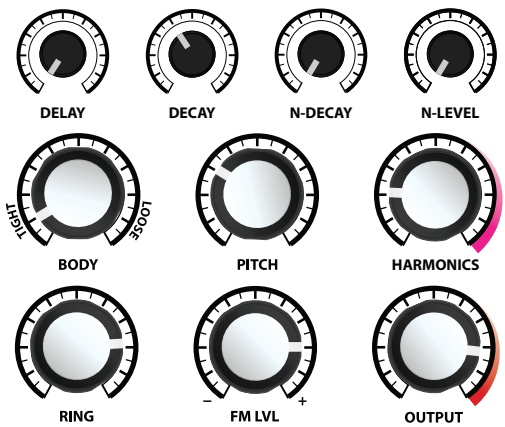
Experiment with **HARMONICS, BODY, FM LVL, PITCH** and **RING**



SWITCH SETTINGS:
NOISE to **WHITE** or **PINK** or to **FILTER** for a tighter **(808/909)** sound
FM to **ENV** or **ENV+FM**
OUTPUT SWITCH to **INT**

TOM

Experiment with **HARMONICS, BODY, FM LVL, PITCH** and **RING**



SWITCH SETTINGS:
NOISE to **WHITE** or **PINK, FM** to **ENV** or **ENV+FM**
OUTPUT SWITCH to **INT**

TOM/BONGO

Achieve more of a bongo sound using the **TOM** patch and applying a VCO to **FM CV.**

SWITCH SETTINGS:
NOISE to **WHITE** or **PINK, FM** to **FM CV** or **ENV+FM**
OUTPUT SWITCH to **INT** or **MIX**

PERCUSSIVE BASS/LEAD

Follow the **KICK** patch with increased **RING** and trim **DECAY** to suit. Experiment with **HARMONICS** and other controls. Optionally apply a VCO to **EXT IN.**

SWITCH SETTINGS:
NOISE to **desired pos. , FM** to **desired pos.**
OUTPUT SWITCH to **INT, MIX or EXT**

NOISE HATS+

Noise can be processed separately in any patch via the **NOISE CV** jack. Therefore, one can trigger both a percussive affect and separately controlled hi-hat simultaneously. Adjust CV level using **N-LEVEL**

SWITCH SETTINGS:
NOISE, FM, OUTPUT SWITCH (patch dependent)

*REV 2.02c users, please adjust Decay and N-Decay a few ticks higher