



# Rack Extension for Reason Instruction Manual



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#### THANK YOU

We thank you for expressing your confidence by purchasing one of our effect units; in this case the Stimulant Sub Harmonic Generator. This 2-channel high-quality effect unit was designed with our experience of creating in the digital realm as well as the crafting of audio for all types of users; producers, engineers and artists alike.

We hope you continue to enjoy using Stimulant in your projects for now and for future.

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#### ACKNOWLEDGEMENTS

Thanks to all of the Lab One Alpha Team for all the testing, comments, suggestions and feedback, as well as aiding us to bring our products to you.

Propellerhead Software (for Reason, the SDK and the concept of the Re)

Presets designed by:

#### DEDICATIONS

This Re is dedicated to all the Propellerhead Reason users & forum threaders, friends, & colleagues we have spoken to over the years.

DjFresha: Thanks goes out to my studio buddies; Dos aka Ocro, Dj EQ, for the support & feedback, shouts go out to all who know me; Ben 'Devious', Andy 'Ruthless', Scott 'Sniper', the REBIRTH crew and SCHTUM massive (Pete C, Kalist, Aybee), and all who continue to work with and support us.

Also not forgetting my family for the support, and last but by no means least, my wife Alicia who now enjoys the fact that we can bring products to your guys faster is now a happy bunny :D

Now let's get into Stimulant....

### **Introduction**

Stimulant is a dedicated rack unit, built as a Rack Extension for the Propellerhead Reason environment. This device has a maximum of what would be 1U space in the real world – the classic 19in rack unit. Being a Rack Extension (Re), this gives you various options of versatility within your projects.

Stimulant features at a glance:

Input Gain trim control (+/-18dB) Two Independent Harmonic Generators Two 'Focusing' Frequency tuners Harmonics Boost Control Dedicated Mix Control Audio signal Phase Inversion Sub Harmonic Monitoring Dual Function Display 'Ears only' mode to disable the display True stereo processing (allowing for dual mono inputs to be process together) Clip Safe Softclipper Signal source option for the harmonic generators

All these controls are adjustable to suit your application, and these settings can be stored as part of a Combinator preset (when combined) as well as settings stored within your project. Due to the minimal amount of controls needed, the need for presets is not required due to the efficiency and speed you can dial in your settings.

Stimulant features two audio inputs and two audio outputs, which are processed independently; this allows you to have two totally separate signals being processed together at the same time using one set of controls. Mono operation is also an option (see 'How to connect audio' section).

For reference, the key groups of controls are:

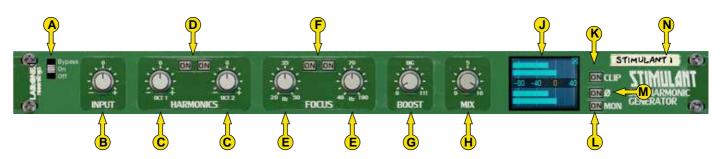
INPUT:	To control the original input level at source
HARMONICS:	Two Harmonic Generators which are 1 and 2 octaves below original signal pitch
FOCUS:	Two Frequency Focus drivers for added emphasis on the sub harmonics
BOOST:	Increase the level of the harmonics independently
MIX:	Control the level of the harmonics further with the ability to mix with the dry signal
SOURCE SELECT:	Choose the input that determines the harmonic generation

NOTE: INPUT level will change the level of the dry signal regardless of the mix amount.

Stimulant is designed to be a transparent effect, meaning that if no adjustments are made on the device, the audio passing through the effect is 'clean' and has not been affected by the internal processes. This is the ideal, so that no coloration is applied to the sound.

## <u>A brief guide of Stimulant</u>

Stimulant is based on sub-harmonics generators that may be commonly found as 19in rack units.



The Front Panel

- A] Bypass Switch (Bypass effect / Enable effect / Disable effect)
- B] Input Trim Control
- C] Harmonic Gain Controls (for Octave 1 and Octave 2)
- D] Enable Harmonic Generator (for Harmonic 1 / Harmonic 2)
- E] Focus Frequency Controls (applied across both Sub Harmonics)
- F] Enable Focus
- G] Boost Harmonics
- H] Mix Amount (dry + sub harmonics)
- J] Dual Function Display (meters, harmonic generator source)
- K] SoftClip Enable
- L] Phase Flip (invert total signal)
- M] Monitor Harmonics
- N] Device Label

The folded front view includes the Bypass switch (A) and the Device Label (N).

The Input control sets the level of the input signal. This can help boost or attenuate before processing further.

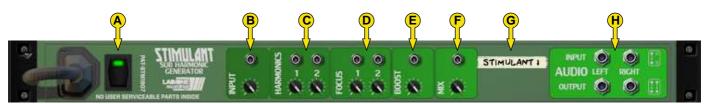
The two Sub Harmonics Generators can be applied to the source signal by means of the enabling buttons plus the +/- Sub Harmonic level controls. When you apply positive harmonics, this will create the harmonics in phase with your signal. When you apply negative harmonics, this will create the harmonics out of phase (inverted). You can try setting one harmonic level to a positive value with the second at a negative value, depending on the source signal.

Focus enables additional boosting of the sub harmonics at the frequency centre. This can help add even more weight to the sub harmonic, giving booming heavy bass where needed.

The Boost control allows you to turn up the harmonics only while leaving the dry signal intact, allowing for louder sub harmonics if required.

The Mix control allows you to dial in a balance between the original signal (no harmonics added) and the fully affected signal (full harmonics added, depending on the other knob controls).

The Dual Function Display allows you to see the metering before and after harmonic generation, plus an additional mode to select the way Stimulant should create the sub harmonics. See 'Using the Dual Function Display' for more



The Back Panel

- A] State indicator
- **B]** Input CV + trim controls
- C] Harmonics level CV + trim controls
- D] Focus Frequency CV + trim controls
- E] Boost amount CV + trim controls
- F] Mix Amount CV + trim controls
- G] Device Label
- H] Audio Input & Output sockets

The Audio Inputs & Outputs [H] are used to connect Stimulant to various modules within the Propellerhead Reason environment, in a form of either an insert or a send effect.

Connecting up the audio sockets can be done automatically by Reason, or can be manually done to your own requirements. Mono devices, when connecting a new Stimulant to them, can automatically route their mono signal in to the left channel, and the left output of Stimulant is connected to the originally wired socket of the mono device, closing the audio loop. Stereo devices can automatically connect their outputs to the left and right inputs of Stimulant, and Stimulant completes the audio chain by connecting its outputs to the originally connected stereo pair sockets.

Each audio socket processes the audio separately from each other within Stimulant. Left and right channels never mix within Stimulant. This ensures that if you have two separate mono devices connected to Stimulant, the settings on Stimulant affect both channels at the same time with the same amount of effect.

The State Indicator allows you to see if the unit is ACTIVE (green), BYPASSED (red) or OFF (black, off). This helps when cabling up what the signal chain is actually doing.

### How to connect audio

To connect Stimulant you can use Reason's own auto-connection system, and Stimulant will decide the best way to auto-wire; if you have a mono-output device (Subtractor, for example), and you wish to add Stimulant to it, Stimulant will auto-connect the Subtractor output to the Left input, and then continue to route the Left output of the Stimulant to the Left input of the mix-channel (or next device in your processing chain).

You can do any of the following to create Stimulant;

a) right-click (Win) / CTRL-click (Mac) on the device, select 'Create Device', choose sub-menu 'Studio Effects', and select 'Stimulant Sub Harmonic Generator' from the listing.

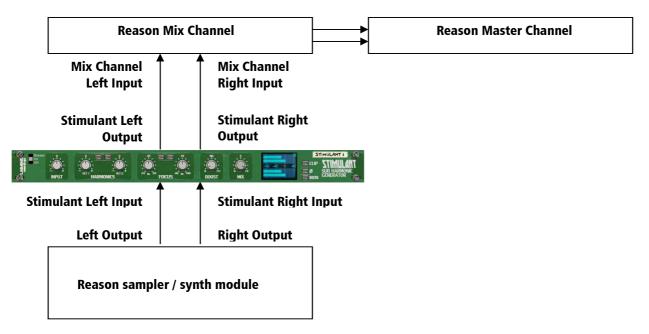
b) with the device selected, use the 'Create', select 'Create Device', choose sub-menu 'Studio Effects' and select 'Stimulant Sub Harmonic Generator' from the listing

c) using the Tool Palette in Reason (F8), select 'Studio Effects' when in the 'Devices' tab, and locate the 'Stimulant Sub Harmonic Generator' device, click on the icon and drag it to the device you wish to add it to.

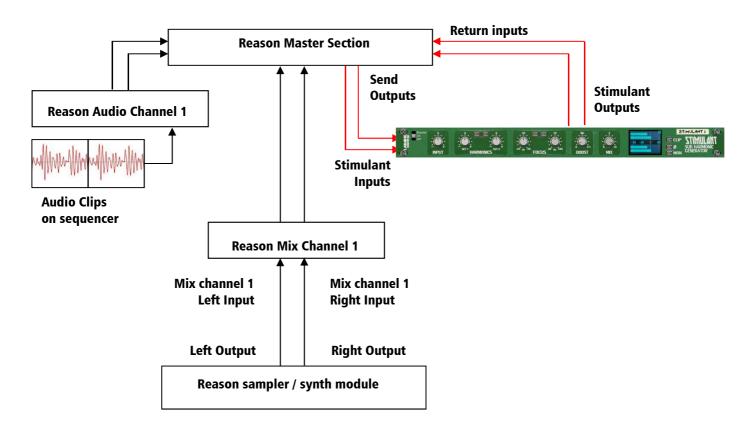
### Working with Stimulant

Stimulant is designed to be a flexible device, allowing it to be used however you see best fit. Only typical applications will be listed in this manual.

A) Using Stimulant as an insert (mix channel setup).



In setup (A), this would use Stimulant as an insert effect. This means that whatever control you adjust on Stimulant, it will affect the total sound coming out of the sampler / synth module. If Stimulant is in bypass mode, the audio playing would still sound 'clean' and unaffected.



#### B) Using Stimulant as a send effect (mix / audio channel setup).

In setup (B), this would use Stimulant as a send effect. This means that whatever control you adjust on Stimulant, it will affect the sound coming from the Master Section at a set amount, determined by the Send Effect dial on that specific Mix / Audio channel. This means you can have a clean sound mixed with an altered equalized sound. This is known as Parallel Processing, and may be desired in some cases.

Again you can adjust Stimulant as mentioned in setup (A) above, with the addition of the SEND dial located on the Main Mixer in Reason. Full left setting of the SEND dial has no effect on the sound, while full right setting of the SEND dial will send a maximum level possible to Stimulant. This means you can have one Stimulant as a send device for all your audio channels. For best practice, enable MONITOR mode, when used as a Send effect (to prevent 'doubling' of source audio).

#### **Alternative setups**

For devices which have multiple outputs (ie NN-XT, Redrum, Thor, Spider Audio), then if required additional Stimulant units could be added as either mono-devices (only connecting left audio input & output sockets), or as stereo devices. This in turn allows you to edit specific sounds within a preset if you so wish (ie split zone instrument patches may have a bass guitar for one half of the keymap, while a synth lead is using the other half, and you wish to effect the sounds independently). See the next page for more examples of setups.

Another possible option would be to use one instance of Stimulant, and have 2 mono devices linked into it (ie guitar lead and guitar bass), and process both inputs in parallel, and output the two signals to two separate mixer channels. This may be desired to help use the same settings on two mono devices at the same time.

### **Using the Dual Function Display**

Stimulant's Dual Function Display allows you to see the metering before and after harmonic generation, plus an additional mode to select the way Stimulant should create the sub harmonics. The options are:

MID: Uses the SUM of Left+Right for harmonic generation LEFT: Uses the left channel only for harmonic generation RIGHT: Uses the right channel only for harmonic generation STEREO: Uses both left and right channels INDEPENDENTLY for harmonic generation

MID, LEFT and RIGHT modes would apply mono sub harmonics to the original signal, whether a mono or stereo source. STEREO would apply dual mono sub harmonics so each channel is independent (like running 2 mono channels side by side). Try out different modes to see what suits best for your sound / application.



**Meters mode** 



Signal Source Selection mode



Ears only mode

The Input and Output Meters can be used to assess initial audio signal levels, and processed final output levels. The best way to use the meters is as follows;

1) Set the output of the sound module (synth / sampler / insert effect) so that the input meter on Stimulant is below the zero line – this aids your decisions later in and also helps to prevent any clipping if any louder signals come through the signal chain into Stimulant.

2) Use the controls how you see best fit – use a combination of Harmonics, Focus, Boost, Mix, Source, Softclip and Monitor (plus phase flip if required) to create the harmonics your require.

3) Whilst affecting the signal within Stimulant, you may notice the Output meters may vary above or below the input levels. This is due to the additional signal created by the extra sub harmonics.

NOTE: Stimulant can allow up to +40dB signal output maximum. Any higher than this level may result in hard clipping; If you find you are driving a loud signal through Stimulant, use the CLIP control to soft-clip the signal and prevent digital hard clipping (also known as overs). This can also create a pleasing sound. NOTE: Human nature determines louder sounds as 'better', even as little as 3dB gain can give the listener a 'false' pretence that a 3dB louder mix sounds better that a 0dB mix of the same material.

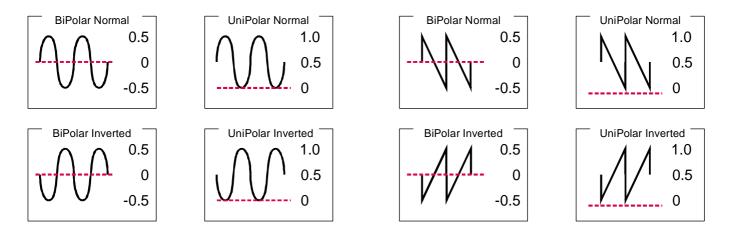
### **CV inputs and controls**

Stimulant has a total of 7 CV inputs, with corresponding trim knobs (to scale CV input signals). The CV input sockets are unipolar by design but can allow bi-polar signal. Each of the 7 CV sockets connect to the 7 knob controls on the front of Stimulant, giving more creative use of the equalizer where the user sees best fit.

Each CV input has a corresponding label to the parameter the CV may control.

To use the CV inputs, simply connect a CV output from another device. Default settings for CV trim knobs are at maximum, so be aware of possible loud signals if using CV inputs whist in 18 or 24dB modes.

In relation to the way CV works, polarities and inversions please see the illustration below



From the example above, we can see the effect of changing the polarity and bi-polar / uni-polar modes has on CV input signals.

NOTE. CV signal patching will remain only within Mixer / Audio Channel effect chains, or within a Combinator, and of course your template rack setups.

### **MIDI Implementation table**

Below is a listing of all MIDI Control Change (CC) numbers, which can be applied to your choice of device.

MIDI	
CC	Controls
12	Input Gain
13	Focus 1 Frequency
16	Focus 2 Frequency
17	Harmonic 1 Level
18	Harmonic 2 Level
20	Boost Level
21	Mix Amount
15	Focus 1 Active
14	Focus 2 Active
19	Harmonic 1 Active
22	Harmonic 2 Active
23	Clip Safe
24	Phase
25	Monitor

### How to 'latch' your own MIDI via Remote Overriding

Reason allows the user to re-define certain controls via MIDI devices by using the Remote Override configuration. This means that a control on Stimulant can be mapped by any MIDI controller you have connected to your DAW. However, you can only map one specific control to any of the available Remote 'receiving' controls on the Rack Extension. Also, Remote Override controls are only saved within each independent Reason song file. Ideally, if you use a dedicated piece of MIDI equipment for Stimulant, a template start-up file would be a better option, so that the Remote Override template is pre-defined on each new song from the off.

All the controls on Stimulant are Remote Override-able. To access the override editor, select from the 'Options' Menu 'Edit Remote Overrides'. The Rack will now display the specific device selected, with either pre-defined Remote control indicators (the Remote symbol), yellow Lightning bolts (overridden Remote controls pre-defined) or blue arrows (unassigned Remote controls)

You can right-click one of the controls (except for the main EQ handles) and select 'Edit Remote override'. This will open a new popup window, with some available options, and to show you which MIDI controller is currently set to that specific Remote Override.

Item: ReQ131 1 - H	ligh Pass
Control surface:	Mackie Control 🗸
Control:	Fader 1 👻
Learn from con Control surface act	

By moving one of the controls on your MIDI device (already predefined in Reason), you should then see MIDI activity indicator display that a MIDI message was received. Note also the control surface and the control itself on the MIDI device that was adjusted relays to the new Remote Override. Once you are happy with the control being set, you can click 'OK' to continue with the new setting, or 'CANCEL' to abort the mapping. Also note that if you accept this mapping, the control (if already linked to another) will be fixed to the new mapping. Any previously set mappings will be 'moved' to the new mapped control. This should be used with care if you already have pre-defined Remote Override mappings.

This Remote Overriding method can be handy if you don't know how to set up your own MIDI controller to the dedicated MIDI controls mentioned in the previous chapter. For speed, you can simply double click a blue arrow, and the arrow with turn into a spinning yellow Lightning bolt, indicating that Reason is awaiting a MIDI signal to that control. You can then adjust a MIDI control on your MIDI device, and the control will map automatically without the need to use the popup previously mentioned. Double-click each specific control you want to map to save time and to use the mapping in a faster method.

All Remote Overrides can then be used to record automation within Reason, which can be fine tuned using the Sequencer and the clips (see the Reason Operating Manual for more information on how to edit & record automation)

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