

Objekt Modeling Synthesizer

Operation Manual

Reason Studios

reasonstudios.com

The information in this document is subject to change without notice and does not represent a commitment on the part of Reason Studios AB. The software described herein is subject to a License Agreement and may not be copied to any other media except as specifically allowed in the License Agreement. No part of this publication may be copied, reproduced or otherwise transmitted or recorded, for any purpose, without prior written permission by Reason Studios AB.

©2023 Reason Studios and its licensors. All specifications subject to change without notice.

Reason, Reason Intro, Reason Lite and Rack Extension are trademarks of Reason Studios AB.

All other commercial symbols are protected trademarks and trade names of their respective holders. All rights reserved.



Objekt Modeling Synthesizer



Introduction



Objekt Modeling Synthesizer is a physical modeling synthesizer from Reason Studios. With Objekt, you can discover the character of organic instruments and real-world acoustics in a whole new way. With plenty of control, you can explore the physics of how materials interact and shape them to arrive at something that might sound very familiar or like an imaginary acoustic instrument that didn't exist until you made it.

Objekt is dynamic, playable, and easily customizable, with hundreds of patches ranging from realistic bells, hang drums, cymbals, and percussion to unique acoustic textures, pads and made-up instruments that add a raw, natural element to any genre of music.

So, if you're ready to take your music to the next level and synthesize reality (or virtual reality, if you prefer), Objekt is your new best friend!

Don't forget to check out the Objekt video [here!](#)



Panel overview

The Objekt front panel contains the following sections:

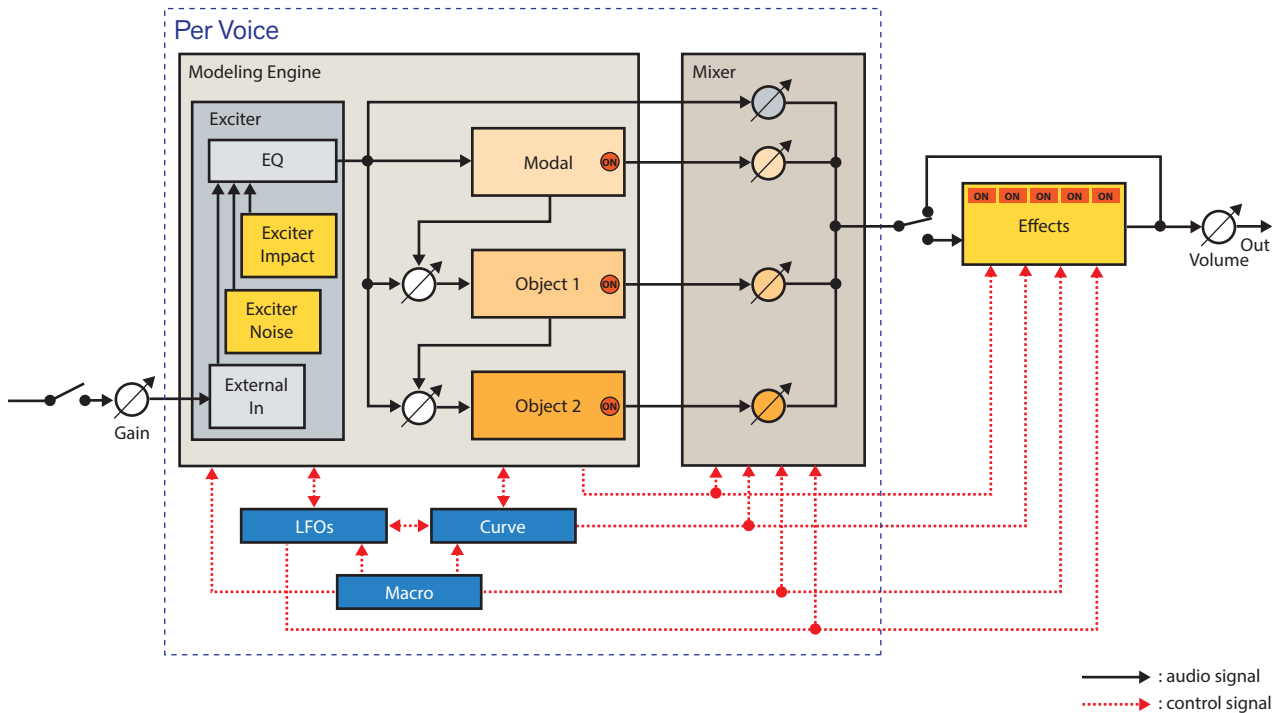


- 1. Patch Selector (for browsing, loading and saving patches) (see **“Loading and saving patches”**)
- 2. Tuner (see **“Tuner”**)
- 3. Exciter EQ (see **“Exciter EQ”**)
- 4. Exciter Impact section (see **“Exciter Impact section”**)
- 5. Exciter Noise section (see **“Exciter Noise section”**)
- 6. External (audio) In (see **“External Audio In”**)
- 7. Modal/Objekt 1/Objekt 2 sections (see **“Modal section”** and **“Object 1/2 sections”**)
- 8. Mixer section (see **“Mixer”**)
- 9. Randomizer section (see **“Randomizer”**)
- 10. Effects section (see **“Effects section”**)
- 11. Performance and “play control” section (see **“Global performance and “play” controls”**)
- 12. Modulation Matrix section (see **“Modulation Matrix”**)
- 13. LFO and Modulation section (to be used as Sources in the Modulation Matrix) (see **“Modulation section”**)



Signal flow

Since Objekt is a physical modeling instrument, the “modules” and the signal flow are different compared to a traditional subtractive synthesizer. The picture below shows the different sections and the basic signal flow:



The Exciter section generates an impulse (most often a very short impact or click), which then excites the three resonating modules, where the sound is shaped. One of these uses Modal synthesis, with up to 8 tunable, resonating filters. The other two (Object 1 & 2) use waveguides (tuned delay lines), which can feed back into themselves and each other. In addition to the Exciter, the Modal section can feed Object 1 which can in turn feed Object 2. It's not necessary to use all three resonating modules; one or two is often sufficient. Think of the Objects like the instrument itself and the Exciter how the instrument is struck—the pluck of a finger or impact of a stick.

The signals are mixed and passed through global effects. There are also extensive modulation capabilities, with various built-in sources and a modulation matrix.



Playing and using Objekt

Loading and saving patches



Loading and saving patches is done in the same way as with any other internal Reason device. See the “Sounds and Patches” chapter in the Reason/Reason Rack Plugin/Reason Intro/Reason Lite Operation Manual pdf for details.

As with all Rack Extensions, you can find the included patches by clicking "Rack Extensions" in the Reason browser, navigating to the Objekt Modeling Synthesizer folder and opening it.

Global performance and “play” controls



Pitch

The Pitch bend wheel can be used for bending note pitches up and down. Objekt also responds to Pitch Bend MIDI data from a connected MIDI master keyboard. You set the desired Pitch bend Range with the “Range” control above the Pitch bend wheel.

Mod

The Mod wheel can be used for controlling almost any parameter in Objekt. Use the Mod wheel as a Source parameter in the Modulation Matrix section and then route to the desired Destination parameter(s), see “Modulation Matrix”.

Range

- **Set the desired Pitch Bend range for the “Pitch” wheel by dragging up/down in the display.**
Range: +/-12 semitones (+/-1 octaves) in steps of +/-1 semitone.

Key Mode

- **Set the desired maximum polyphony for the patch by clicking in the display and selecting from the list.**
Range: Mono, Legato, Auto Legato, Poly 1-16

Key Mode	Description
MONO	The patch is played back in a monophonic fashion (one note at a time with the same voice). The Exciter is retriggered for each new note.
LEGATO	The patch is played back in a monophonic fashion (one note at a time). Playing back monophonic notes in a legato fashion will not retrigger the Exciter.
AUTO LEGATO	Chords are played back in a regular polyphonic fashion. If you play monophonic notes in a legato fashion, or add monophonic notes before releasing a chord, the monophonic notes are played back without retriggering the Exciter.
POLY 1-16	The patch can be played back with the set number of polyphony. In the “Poly” modes new voices are always triggered unless the same notes are retriggered (to avoid clicks). This also happens when set to “Poly 1”, which differs it from the “Mono” and “Legato” modes.



! **Since the Exciter is not retriggered in the Legato modes you might want to route Velocity to something that is active all the time (like Mix Gain or similar) in the Mod Matrix, see “Modulation Matrix”.**

See “Portamento” below for details on how the different Key Modes are affected by the Portamento mode.
See more about when to use the Mono setting in “External Audio In”.

Portamento

Portamento makes note pitches glide from previous notes to new ones, at the time set with the Rate knob.

→ **Click the display to select Off, On or Auto.**

The results vary depending on what Key Mode you have selected (see “Key Mode” above):

Portamento	Key Mode	Description
ON	MONO	The pitch will glide between consecutive monophonic notes.
ON	LEGATO	The pitch will glide between consecutive monophonic notes. When you play legato, i.e. if you press a new note before releasing the previous, the notes will not retrigger the Exciter. If you release the previous key before hitting the new key, the pitch will glide between consecutive monophonic notes and will also retrigger the Exciter.
ON	AUTO LEGATO	The pitch will glide between consecutive monophonic notes only when you play legato. If you play notes or chords in a non-legato fashion, the pitches will glide from any of the available voices. The results will be unpredictable since there is no way of controlling from which note(s) the glide(s) will commence. However, if you hold one chord and play a new chord in a legato fashion there will be portamento between the chords.
ON	POLY 1-16	The pitches will glide from any of the available voices. The results will be unpredictable since there is no way of controlling from which note(s) the glide(s) will commence.
AUTO	MONO	The pitch will glide between consecutive monophonic notes when you play legato. Each new note will also retrigger the Exciter. If you release the previous note before hitting a new note there will be no portamento effect.
AUTO	LEGATO	The pitch will glide between consecutive monophonic notes when you play legato and the Exciter will not retrigger. If you release the previous note before hitting a new note there will be no portamento effect.
AUTO	AUTO LEGATO	The pitch will glide between consecutive monophonic notes only when you play legato. If you play notes or chords in a non-legato fashion, there will be no portamento effect. However, if you hold one chord and play a new chord in a legato fashion there will be portamento between the chords
AUTO	POLY 1-16	The pitches will glide from any of the available voices when you play monophonic notes in a legato fashion - and when you play chords. The results will be unpredictable since there is no way of controlling from which note(s) the glide(s) will commence. If you play monophonic notes in a non-legato fashion, there will be no portamento effect.

Global output controls



Volume

This is the main stereo output volume control.



Sound design tips

Objekt has a lot of parameters, exposing a fair bit of the inner workings of physical modeling synthesis. This gives you unprecedented freedom and control but can also make sound design rather complex. It's easy to get unexpected results and sometimes it's not apparent why things sound the way they do. Here are some ways around this:

Start from an existing patch

Objekt comes with a large number of patches. Quite often the best way is to browse through these patches, choose one that you like and then start changing parameters to turn it into something else. This is also the best way to learn how the modules and settings work. There is also a very useful Randomizer which can randomize parameters in the various Objekt sections to achieve really interesting results, see ["Randomizer"](#).

Use Templates

The Modal and Object 1-2 sections have Template selectors. Loading a template will set some of the parameters in the section to give you a starting point. Some parameters (like Decay in the Object 1 & 2 sections and Pickup in the Modal section) are not affected by the Templates. Also, settings outside the section are not affected, so you can combine different Templates for different sections.

Panel reference

Exciter Impact section



The Exciter Impact section is where you define the characteristics of the strike/pluck/pick signal (pulse) which is sent to the Modal and/or Object sections further down in the signal chain. The modeled impact pulse is reminiscent of how you would strike/pluck/pick a real acoustic instrument.

Level

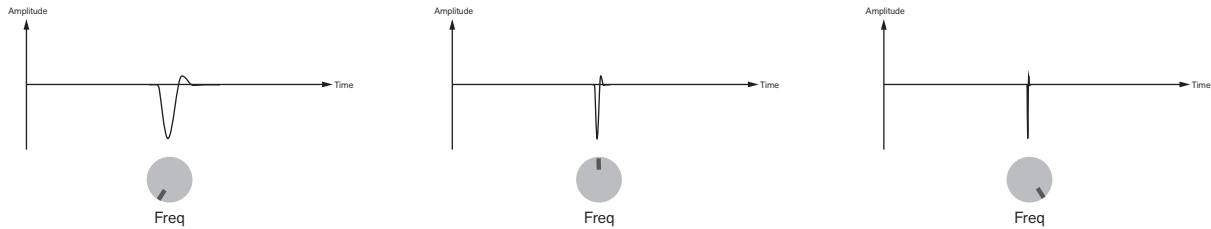
- **Set the volume of the impact signal with the Level knob.**
If you don't want to use the Impact part of the Exciter, set the Level to zero.
- **Adjust how the Level should respond to keyboard velocity with the Vel knob.**



Impact Freq

- **Set the length of the pulse, without changing its basic character, with the Impact Freq knob.**

The higher the setting, the brighter - but also the less bassier - the pulse:



Click

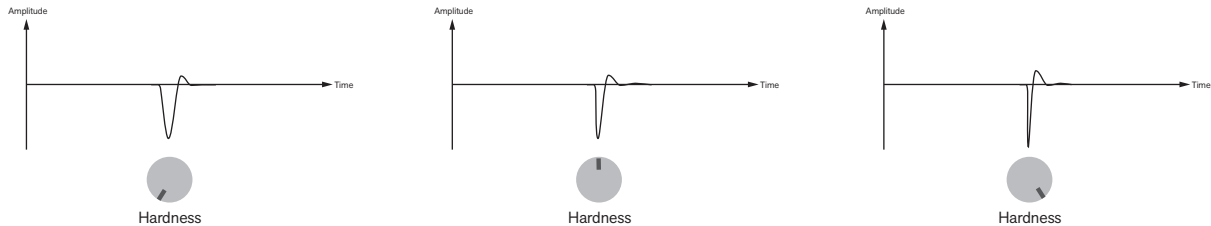
Click is a short noise pulse.

- **Set the click level of the pulse with the Click knob.**

Raise this to add more of a pronounced click attack to the Impact pulse.

Hardness

The Hardness controls the attack shape of the Impact Pulse, without changing the length of the pulse. Raising the Hardness gives a brighter sound, but the bass frequencies are preserved (if the Impact Freq is low):



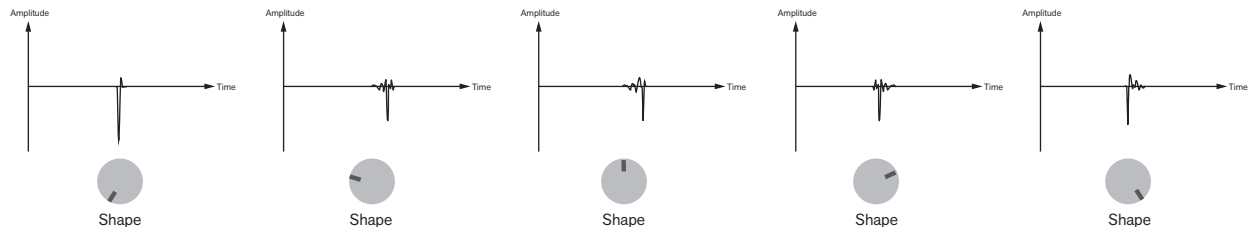
- **Set the hardness of the pulse with the Hardness knob.**

You could compare this with using a rubber mallet (low Hardness) or a wooden-headed mallet (high Hardness) for generating the pulse.

- **Adjust how the Hardness should respond to keyboard velocity with the Vel knob.**

Diffuse

The Diffuse parameter simulates hitting with something that hasn't a distinct surface, like a hand, for example. There are several fast random pulses after one another. Between 0% and 50% Shape the main "hit" comes towards the end of the pulse. Between 50% and 100% Shape the hit gradually moves towards the start of the pulse:



- **Activate the Diffuse section to "smear" the attack of the impact pulse.**

The Shape knob controls the envelope curve for the hits, going from a delayed short pulse via rising attack to a longer, decaying pulse. The Time parameter controls total time of the envelope curve.

- **A Shape of ~25% can simulate fingered string playing and a Shape ~75% is good for hand percussion sounds.**



Exciter Noise section



The Exciter Noise section lets you build a custom impulse from noise to be used (alone or together with the Impact signal) as exciter for further processing by the Modal and/or Object sections. The noise can be used e.g. for simulating non-plucked instruments, since the noise signal can be freely shaped by the built-in ADSR envelope.

Level

→ **Set the noise volume with the Level knob.**

If you don't want to use the Noise part of the Exciter, set the Level to zero (or set the Noise Type to "Off", see Noise Type below).

→ **Adjust how the noise Level should respond to keyboard velocity with the Vel knob.**

Rate

→ **Set the character (or pitch) of the noise, as described in "Noise Type" below.**

Noise Type

→ **Select the desired noise type by clicking the drop-down selector.**

The following noise types are available:

- **Off**

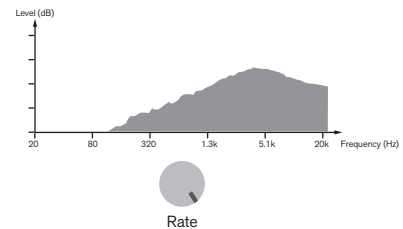
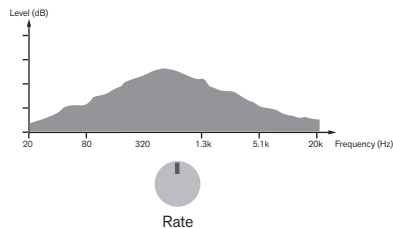
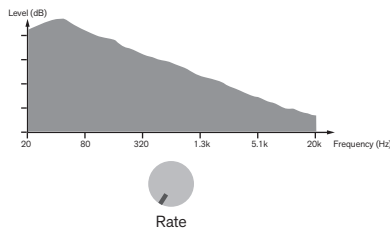
This turns off the Exciter Noise.

- **White**

This is standard white noise, where all frequencies have equal energy.

! Note that the Rate knob has no effect with White Noise selected.

- **Color**



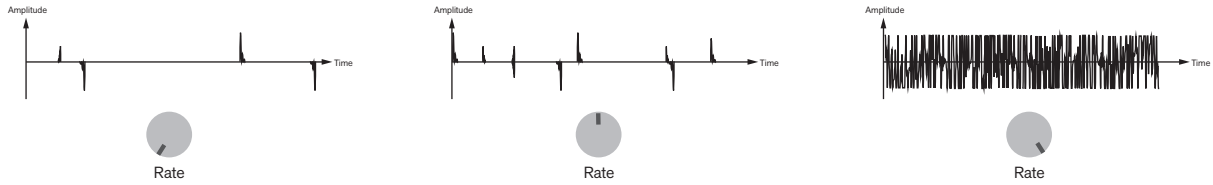
Colored noise

This is filtered noise.

Low Rate settings give progressively darker noise while high settings emphasize the higher frequencies.



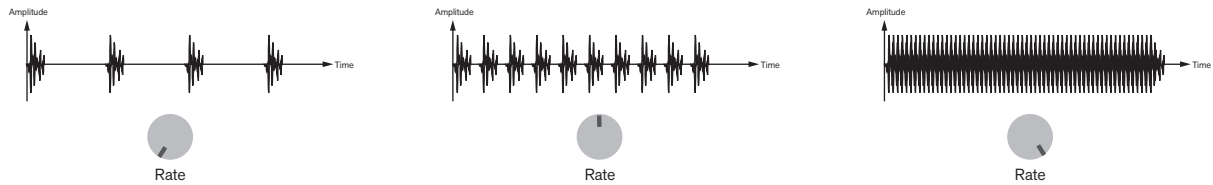
- **Static**



Static noise

This generates noise similar to random static interference. The Rate knob controls the density of the static spikes.

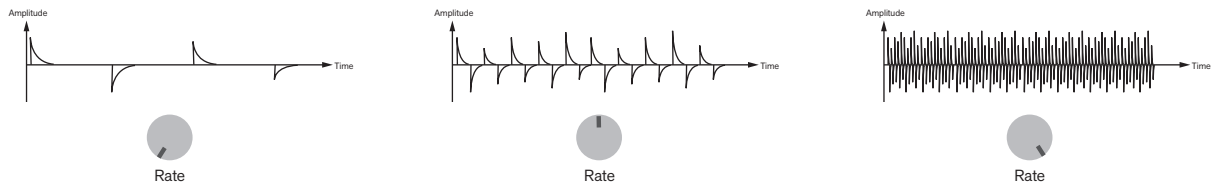
- **Noise Pulse**



Noise Pulse

This generates repeated noise pulses of equal amplitude. The Rate knob controls the repeat rate of the noise pulses. High values give continuous noise.

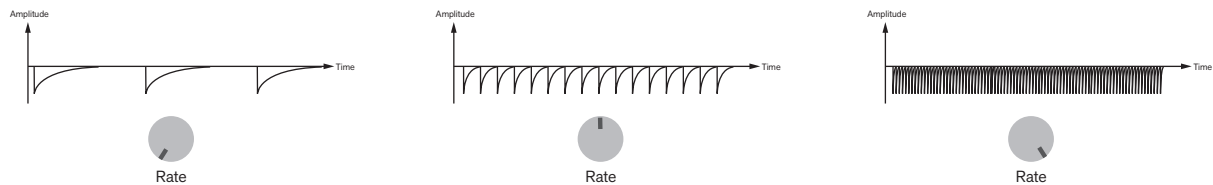
- **Rand. Pulse**



Random Pulse

This generates repeated short pulses of random amplitude. The Rate knob controls the repeat rate of the pulses.

- **Pulse**



Pulse

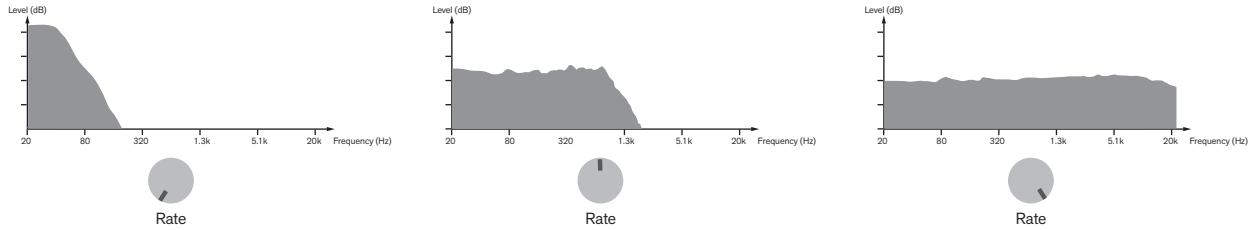
This generates repeated short pulses of equal amplitude. The Rate knob controls the repeat rate of the pulses. High values give a continuous tone where the Rate sets the pitch.

- To have the Pulse pitch track the keyboard 1:1, set up “Key” as Source and “Noise Rate” as Destination in the “**Modulation Matrix**” and set the Amount to “80”:

Source	AMT	Destination	AMT2
Key	80	Noise Rate	0
	0		0



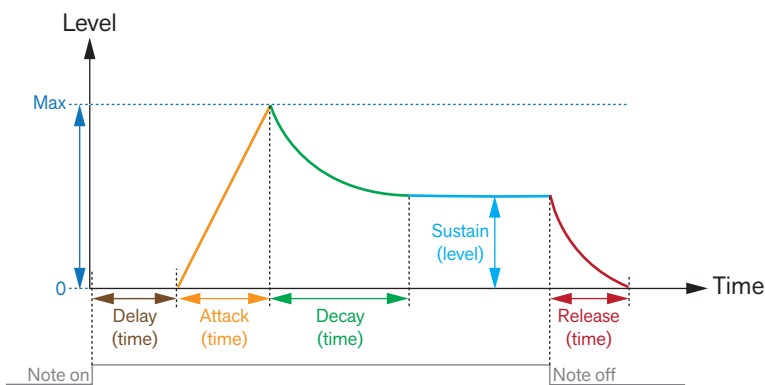
• LP Noise



LP Noise

This is lowpass filtered white noise.
The Rate knob controls the LP filter cutoff frequency.

ADSR Envelope with Delay



The ADSR envelope stages.

This is a five-stage ADSR envelope with Delay for the noise signal. The envelope can be used as a modulation source in the Mod Matrix. It can also be used as a modulation destination (to be triggered) in the Mod Matrix (see [“Modulation Matrix”](#)).

Delay

- **Set the time it should take before the Attack stage of the Envelope starts after you play a note.**
Setting a delay could be useful in combination with the Exciter Impulse signal, to create “multiple” impulses.

A(ttack)

- **Set the time it should take for the level to go from zero to max.**
If the Attack is set to “0”, the max level is reached instantly. If the Attack value is raised, it will take longer time before the maximum level is reached.

Range: 0.0 ms to 5.0 s

D(ecay)

- **Set the time it should take for the level to drop from max to the Sustain level.**
If you want to emulate the volume envelope of a note played on a piano for example, the Attack should be set to “0”, the Decay parameter should be set to a medium value and the Sustain level should be set to “0”, so that the volume gradually decreases down to silence, even if you keep holding the key down. Should you want the decay to drop to some other value than zero, you raise the Sustain parameter.

Range: 40 ms to 20.0 s



S(ustain)

→ Set the level the envelope should rest at, after the Decay stage.

If you set Sustain to full level, the Decay setting is of no importance since the level is never lowered.

If you want to emulate the volume envelope of an organ, you theoretically only really need to use the Sustain parameter set to full level, as a basic organ volume envelope instantly goes to the maximum level (Attack "0") and stays there (Decay "0"), until the key is released and the sound instantly stops (Release "0").

But often a combination of Decay and Sustain is used to generate envelopes that rise up to the maximum level, then gradually decreases to finally land to rest on a level somewhere in-between zero and max level. Note that Sustain represents a level, whereas the other envelope parameters represent times.

Range: -inf to 0.0 dB

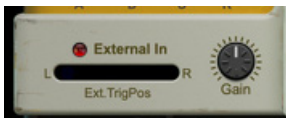
R(elease)

→ Set the time it should take for the level to drop from the Sustain level to zero after you release the key(s).

The Release parameter works just like the Decay parameter, except it determines the time it takes for the level to drop back to zero after you release the key(s).

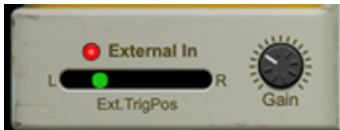
Range: 40 ms to 20.0 s

External Audio In



On the rear panel of Objekt is a stereo input for external audio, which can be used as Exciter signal (see "External In"). The external signal can be used alone or in combination with the Exciter Impulse and Exciter Noise signals.

When an audio signal is patched to the External Inputs jacks on the rear panel the red LED is lit. If the external signal is connected to both input jacks, the Ext. Trig Pos display shows the balance between the Left and Right inputs:



This value ("Ext Trig Pos") is available as a source in the Modulation Matrix (see "Modulation Matrix"), which means you can make the sound change depending on the stereo position of the external input signal.

The result of using External Input depends on the Key Mode setting (see "Key Mode"):

- **When Key Mode is set to "Auto Legato" or "Poly 1" and higher values, you need to play notes on Objekt for the external input to be used. There will be a single synth voice for each note, allowing you to play chords - like an "acoustic vocoder".**
- **If Key Mode is set to "Mono" or Legato" any external input signal will be sent to the Modal/Object sections with no need of "triggering" the Objekt synth (making it work more like an effect).**
- **Note that it's possible to listen to the Exciter (and External Input) signal by raising the Exciter Mix Level fader in the Mixer section, see "Mix Level".**
- See "Using the External In to create effects with variations" for a practical example.

Gain

→ Turn the Gain knob to adjust the level of the External Input signal.

Range: -inf to +12 dB



Exciter EQ



Above the Exciter Impulse section is a single-band parametric equalizer for the combined Exciter Impulse, Exciter Noise and External signals. The Exciter EQ works per voice and can also be modulated from the “Modulation Matrix”.

! Note that using the Exciter EQ is different from using the EQ in the Effects section (see “EQ”), especially if you are using nonlinear modulations, such as Pitch Mod, Dispersion Mod and Collision in the “Object 1/2 sections”.

Freq

→ **Set the center frequency of the equalizer.**

Range: 40 Hz to 12.00 kHz

Reso

→ **Set the resonance amount of the equalizer band.**

The resonance amount also affects the width of the equalizer band.

Gain

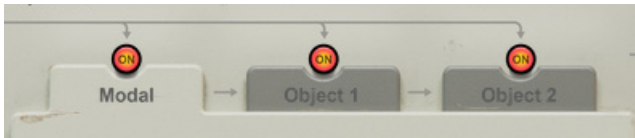
→ **Set the gain of the equalizer band.**

A positive value results in a peak in the equalizer band and a negative value results in a notch.

Range: +/- 24dB



Modal/Object sections selectors



- **Click the ON LED button to turn on/off the desired section.**
These buttons are also mirrored above the Mix Level faders in the Mixer section, see "[Mixer](#)".
- **Click the desired name "tab" to select that section for editing.**
The center area of the front panel shows the currently selected section.

Modal section

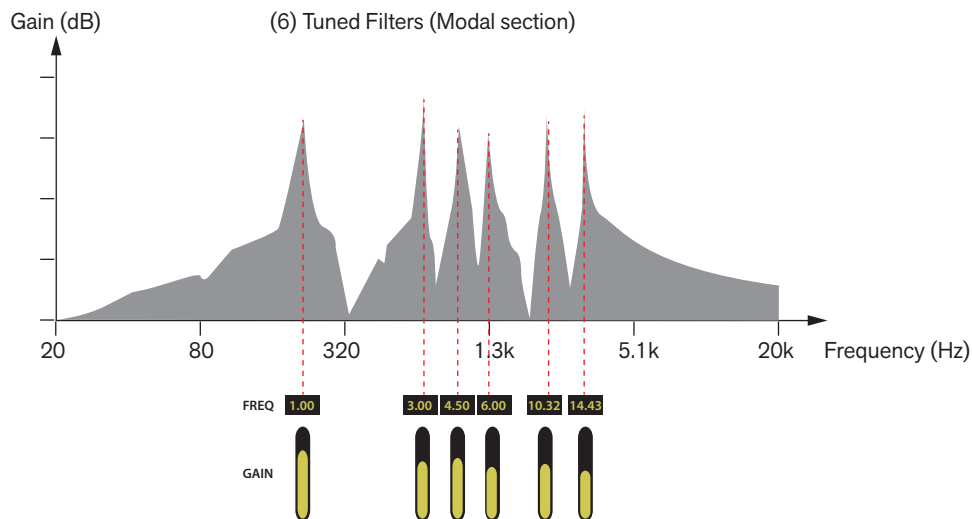
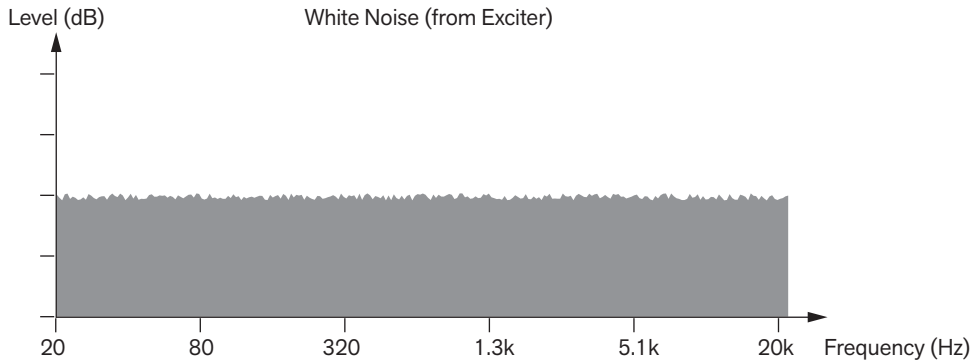


Modal synthesis works by sending a signal (from the Exciter) into a bank of tuned, resonating filters. The result is a bit similar to combining overtones, i.e. additive synthesis.



Modal principle

Here is an example where white noise is sent from the Exciter to the Modal section, and where the Modal section uses six filters with different Frequency and Gain settings:



White noise from the Exciter run through the Modal section with six active filters.

Pitch

→ **Drag up/down in the Pitch display to transpose the Modal section in semitone steps.**

All tuned filters will follow the transposition value.

Range: -36 to +12 semitones.

Template

Selecting a Template is a shortcut to achieve the basic type/character of the sound you're looking for. Selecting a Template from the list automatically configures all parameters in the display plus the Decay and Release Mute parameters.

→ **Click the Template drop-down menu to select one of the preset templates.**

The Templates include Bell 1-4, Bowl 1-3, Chimes 1-3, Chordal 1-3, Drawbars, Harp, Metal Bars 1-3, Tines 1-3 and Wood 1-2. There is also an Init item which resets the parameters.



Modal Display

The display shows the filter stages and their settings. You can use up to eight filters. The Modal Display parameters are described below:

Filter On/Off and KBD tracking

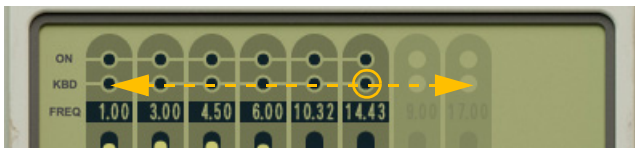
- **Set the desired number of active filter stages by clicking in the ON row at the top.**

You can also click an ON button and drag left/right to hear the result of removing or adding stages:



- **Click in the KBD row to set how many stages should track the keyboard.**

Filter stages that don't track the keyboard will produce tones of constant pitch:



- ! **Note that the filter stages are always consecutive (tied together), i.e. you can not disable a filter stage “in the middle” of the filter bands. Similarly, you cannot disable KBD tracking “in the middle” of the filter bands.**

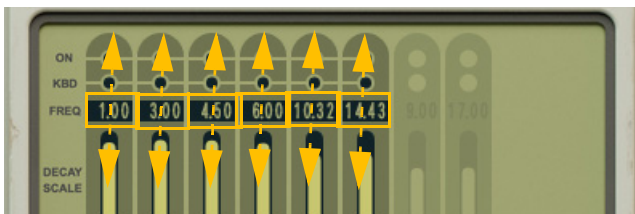
Freq

- **Set the frequencies of the filter bands by dragging up/down in the FREQ displays.**

You can drag the integer and decimal parts of the FREQ display independently.

Range: 0.00-64.00

- **Hold [Command](Mac)/[Ctrl](Win) and click the integer part of the display to reset the value to “1.00”, or click the decimal part to reset the decimals to “00”.**

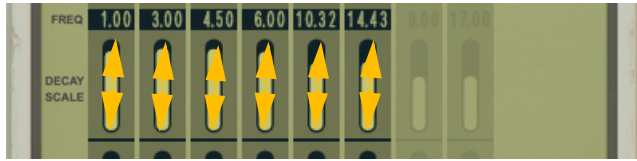


- **The FREQ value is the frequency of the filter expressed as a factor, where "1.00" is the fundamental. "2.00" means the second harmonic (pitched one octave up), "3.00" is the third harmonic and so on.**
- **If KBD tracking is turned off, "1.00" produces a C3.**
- ! **Note that very high FREQ settings might limit the upper note range so that high notes produce clicks/noise instead of the expected sound.**



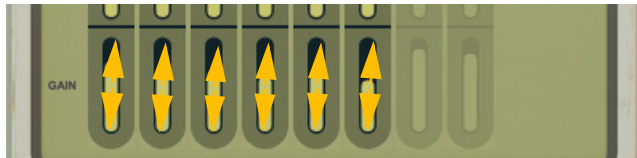
Decay Scale

- **Drag the Decay Scale sliders up/down to set the decay time of the tones from the filter bands.**
The decay times are scaled by the overall Decay parameter (see “Decay” below):



Gain

- **Drag the GAIN sliders up/down to set the level of the tones from the filter bands:**



Pickup



This emulates the electromagnetic pickups on an electric piano, transforming the sound radically.

- **Turn the Drive knob to control the overdrive amount.**
- **Turn the Symmetry knob to set the “position” of the simulated pickup, to get different timbres.**

Decay



The Decay section sets the overall decay and release times of the filter band tones, as set with the individual Decay Scale parameters in the Modal section display (see “Decay Scale” above).

- **Set the desired overall decay time with the Time knob.**
- **Set how fast the sound should be silenced after you release a key with the Release Mute knob.**
This would typically be set to zero or a low value for bell sounds but a higher value for something like an electric piano sound.

Note that the higher the Release Mute value, the shorter the release time.



Object 1/2 sections



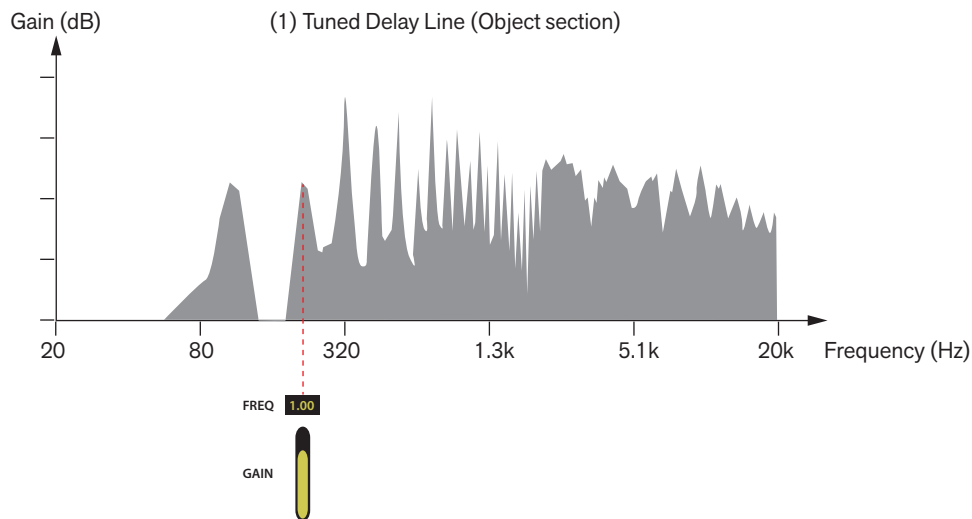
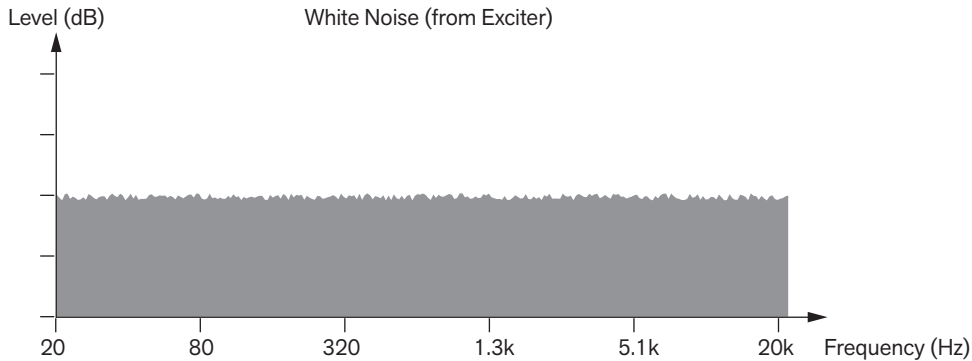
The Object sections use tuned feedback delays to create sounds. A tuned feedback delay is basically a tuned comb (multi peak/notch) filter. Each Object module can use up to 8 delay stages. The delays stages can also interact with each other in different ways, if desired.

The currently selected Object section (1 or 2) is indicated in the display:



Object principle

Here is an example where white noise is sent from the Exciter straight to an Object section, and where the Object section uses one single delay line:



White noise from the Exciter run straight to an Object section with one active delay line.

As you can see in the picture above, just one single delay line lets through quite a massive amount of overtones (compared to the Modal section described earlier).

The two Object sections have identical parameter configurations, except for the "Input Mix" sources.

Input Mix

→ Select the input signal mix with the Input Mix knob.

If Object 1 is selected, the input is a mix of the Exciter and Modal sections signals. Generally, the signal will contain more overtones the more the Exciter signal is mixed in.

If Object 2 is selected, the input is a mix of the Exciter and Object 1 sections signals.

TrigPos

TrigPos emulates different strike points on the object.

→ Turn the TrigPos knob to set the desired strike position.

→ Turn the RND knob to make the TrigPos values vary randomly from note to note.



Pitch

The Pitch parameter transposes all parameters that affect the pitch of the sound, for example when you play the keyboard. In order for the transposition to work correctly the Pitch parameter should be set to 0 when you play the note C3. A patch that is tuned to C3 should have the Pitch set to 0. If the patch is tuned to C2, the Pitch should be set to -12. Otherwise there will be problems, especially if you have high Dispersion values (see "Dispersion").

→ Drag up/down in the Pitch display to transpose the selected Object section in semitone steps.

All tuned feedback delays will follow the transposition value.

Range: -36 to +12 semitones.

Template

The Template drop-down menu holds various templates - starting points for sound design and exploration. You will also find Copy, Paste and Swap with Clipboard items on this menu. These can be used for transferring settings between Object 1 and Object 2. There is also an Init item for resetting all parameters in the selected Object section to their default values.

→ Click the Template drop-down menu to select one of the preset templates.

The Templates include Bell 1-5, Glass 1-2, Metal 1-4, Skins 1-3, Skins Dark, Skins Untuned, String 1-3, String Low, Synthetic 1-2 and Wood 1-2.

Sometimes you might want to transfer the settings from one Object module to the other. Here's how to do that:

1. Click the Template drop-down menu and select Copy to copy all the settings in the selected Object section.
2. Click the other Object selector button to switch to the other Object section.
3. Click the Template drop-down menu and select Paste to paste the settings. Alternatively, select Swap with Clipboard to paste the current settings and automatically get the destination settings to the clipboard memory instead.

Low Cut

→ Turn the Low Cut knob to remove low frequencies from the signal before it's sent to the mixer.

This is essentially a high-pass filter.

Range: 20 Hz to 2.5 kHz

Object Display

The display shows the delay stages and their settings. You can have up to eight delay stages. The Object Display parameters are described below:

Delay stage On/Off and KBD tracking

→ Set the desired number of active delay stages by clicking in the ON row at the top.

You can also click an ON button and drag left/right to hear the result of removing or adding stages:



→ Click in the KBD row to set how many stages should track the keyboard. Delay stages that don't track the keyboard will produce tones of constant pitch:



! **Note that the delay stages are always consecutive (tied together), i.e. you can not disable a delay stage “in the middle” of other active delay stages. Similarly, you cannot disable KBD tracking “in the middle” of active delay stages.**

Freq

→ **Set the frequencies of the delay stages by dragging up/down in the FREQ displays.**

You can drag the integer and decimal parts of the FREQ display independently.

Range: 0.00-64.00

→ **Hold [Command](Mac)/[Ctrl](Win) and click the integer part of the display to reset the value to “1.00”, or click the decimal part to reset the decimals to “00”.**



• **The FREQ value is the frequency of the delay stage expressed as a factor, where "1.00" is the fundamental. "2.00" means the second harmonic (pitched one octave up), "3.00" is the third harmonic and so on.**

However, since the delay stages often interact, the individual Freq settings do often not translate directly to the pitch of the sound.

! **Note that very high FREQ settings might limit the upper note range so that high notes produce clicks/noise instead of the expected sound.**

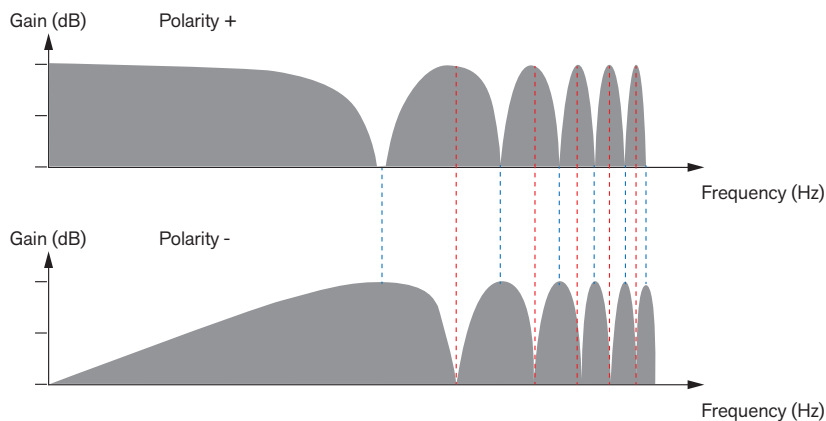
Polarity

→ **Click the Polarity (+/-) button to set the polarity of the comb filter feedback of the delay stages.**

Positive or negative polarity of the feedback can change the sound radically:



The picture below shows the difference between positive (+) and negative (-) polarity settings. As you can see a positive polarity lets through more low frequencies, giving a “bassier” sound. Also, the peaks and notches are inverted between positive and negative polarities:



Positive polarity at the top and negative polarity at the bottom (the dotted lines indicate the peaks and notches).



Gain

→ Drag the Gain sliders up/down to set the level of the tones from the delay stages:



Tuning

The Tuning parameter only controls the delay stages times. Since the pitch of the sound is governed by all filters in the Object section, such as Dispersion, Damping, X-Over frequency, the pitch isn't always changed according to the Tuning value.

→ Drag up/down in the Tuning display to scale the pitches of all delay stages.

The unit here is cents (1/100ths of a semitone) but again, this may not exactly translate to the changes in actual pitch. This setting will be affected when the automatic Tuner function is used, see "Tuner":
Range: +/- 24 semitones in steps of 1/100th of a semitone.



Key Track+

Internally, there is a limit to how short the delays can be, and thus how high pitches can be produced. Depending on the sound, this can lead to high notes becoming too short. If you set a very high FREQ value in a delay stage - and have KBD tracking on - you can't play very high notes on the keyboard before the pitch gets too high. The delay stage is then automatically shut off and the sound becomes short and muted.

To fix this you could turn off KBD tracking on the delay stages that have high FREQ settings, but then the sound will get out of tune (since there is now a fixed delay time which doesn't track the keyboard). To compensate for this you can raise the Key Track+ value to subtract a fixed delay time.

Basically, there is one main scenario when Key Track+ adjustment can be useful:

- If you are playing sounds that don't have KBD tracking on all delay stages, and want to keep the sound in tune.

In the example below we use the Bass Guitar 1 patch from the Bass folder in the Objekt sound library and look at the Object 2 section. Delay stage 1 and 2 have KBD tracking on and delay stage 3 has KBD tracking off - but a high FREQ setting (the 30th harmonic). "Coupling" (see below) is also on, which makes the delay stages interact with each other and affect the pitch:



→ Play a high note (C5 or above) on the keyboard and drag up/down in the Key Track+ display to compensate for high notes being out of tune.



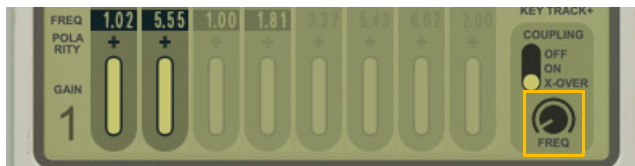
Coupling

- **Set the Coupling switch to define how the delay stages should interact with each other.**

Coupling means that the output of each delay stage feeds back into the other delays. This can affect both the timbre and the pitch. There are three modes:



- **When Coupling is Off, the delay stages are completely separate - the result is a mix of different pitches.**
- **When Coupling is On, the delay stages are fully interacting, with the output of each delay stage fed back to the input of all other delay stages.**
- **In X-Over mode, the delay stages feed back into each other, but the feedback signal goes through a high-pass filter that removes the lower frequencies (as set by the Freq setting below):**



- ! **Note that the Freq knob is only available (active) in X-Over mode. In the other modes the knob is dimmed.**

Collision



Collision emulates the resonating object hitting something and bouncing back.

- **Turn the Amount knob to set when the bouncing should occur.**
- **Turn the Bounce knob to set how much it should bounce.**

Pitch Mod



Pitch Mod emulates the phenomenon where a material gets deformed as you hit it harder and thus generates other frequencies.



The effect is more prominent on flexible materials than on stiffer ones. You could compare a crash cymbal with a ride cymbal, where the crash cymbal is thinner and more flexible and consequently gets more deformed and therefore generates a lot of overtones, even if you hit it with a rubber mallet.

Pitch Mod causes the signal itself to affect the frequencies. This will give strong notes an initial bump in pitch or timbre, depending on the Filter setting.

→ **Set the pitch modulation amount with the Amount knob.**

→ **Set the pitch modulation character with the Filter knob.**

Low values give more of a pitch modulation effect, whereas high values give more of a timbre modulation effect.

Dispersion



Dispersion is when different frequencies travel at different speeds through the object “material”. This means low frequencies are delayed and will be pitched lower, since the frequency spectrum is stretched.

→ **Turn the Freq knob to set the stretch amount of the frequency spectrum.**

The lower the Freq setting, the more pronounced this effect, causing inharmonic, metallic sounds. This also changes the basic pitch of the sound, which might require using the Tuner function (see “Tuner”).

→ **Turn the Mod knob to apply internal dispersion modulation.**

! **Note that this can cause feedback and continuously sustaining sound, so be careful!**

To avoid feedback, turn down the Mod knob (and/or turn up the “Pitch Mod” Amount knob).

→ **Turn the Filter knob to affect the dispersion modulation character.**

The Filter knob affects how much the higher frequencies affect the dispersion modulation.

Damping



Damping applies filtering in the delay feedback loops.

→ **Turn the Low knob to remove low frequencies from the signal.**

→ **Turn the Mid knob to set a frequency where you can apply positive or negative Gain.**

→ **Turn the Gain knob to apply positive or negative gain to the Mid frequency band.**

! **Note that the signal is limited - boosting a mid frequency will lower other frequencies.**

→ **Turn the Hi knob to set at which frequency the high frequencies of the signal should be rolled off.**

→ **Turn the Slope knob to set the steepness of the attenuation curve for the Hi band.**

Lowering Hi and raising the Slope will gradually remove the high frequencies from the sound.



Decay



The Decay parameter sets the overall decay of the tone from all delay stages. The Release Mute setting sets how fast the sound will be silenced when you release a key.

- Turn the Time knob to set the desired overall decay time.
- Turn the Release Mute knob to set how fast the sound should be silenced after you release the key(s).

Tuner



Many parameter changes can affect the pitch of the sound in ways that are not totally predictable. Therefore, Objekt has a built-in Tuner function for correcting this. The Tuner affects a lot of parameters in Objekt, including the Tune parameters in the Object 1/2 sections. Here is how you can use the Tuner:

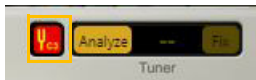
1. **Click the Analyze button.**
Objekt goes silent briefly and a note number is displayed.
 2. **If the displayed note is anything other than a C, the instrument is out of tune. Click the Fix button to automatically adjust the parameters to tune.**
- ! Sometimes, you need to click Fix more than once to get a C note.

When automatic Analyze doesn't work

There are situations when the pitch of a sound is vague, and the Tuner's analysis isn't correct. For example, there may be an overtone that's stronger than the fundamental, or two sections may be pitched differently, or a section might be non-pitched (or doesn't define the pitch of the sound).

First of all, try tuning one section at a time, by turning off the other sections. If the Tuner should show too low a pitch, try removing some bass in the "Exciter EQ".

If you don't get it to work, use your ears and the built-in C3 reference note that you can turn on with the "Pitch Fork" button to the left:



You can then tune manually using the Tuning parameters in the Object 1/2 displays, see "Tuning".

- If you don't get the Tuner to work, try using the Exciter EQ to emphasize the fundamental frequency or to remove bass that might interfere, see "Enhancing Exciter frequencies for better tone definition".
- Another way of enhancing the tone definition is to use the Modal section only for filtering the Exciter signal (but not be part of the signal), see "Using the Modal section only for filtering the signal to Object 1".



Mixer



Here you can activate/deactivate and set the output levels and stereo placements of the different sections using the faders and pan knobs. Object 1 and 2 also have a stereo width setting.

On/Off

→ **Click the LED buttons to activate/deactivate the corresponding section.**

Note that the Exciter section cannot be deactivated (but you can turn its level down with the fader).

The on/off state is also reflected by the LEDs in the Modal/Object sections selectors, see "[Modal/Object sections selectors](#)".

Mix Level

→ **Set the output level of the corresponding section with the Mix Level faders.**

! **Note that the Mix Level controls work per voice. so you could route per-voice modulation sources like Velocity etc. to them in the "[Modulation Matrix](#)" and mix different sections individually for each note.**

Pan

→ **Set the placement in the stereo panorama of the corresponding section with the Pan knobs.**

Width

→ **Set the stereo width of Object 1 and 2 with the Width knobs.**

This creates stereo by panning different parts of the delay lines to the left and right, which gives timing differences.

Randomizer



The Randomizer is a great way to mutate a sound or get a brand new starting point. Here's how you use it:

1. Click the buttons at the bottom to decide which sections should be affected.

Several buttons can be active at the same time, for randomizing multiple sections.

2. Click the Randomize button.

This applies random values to a group of parameters in the selected group(s).

3. Adjust the amount of randomization by dragging the slider below.

4. If you're happy with the result, click OK to keep it.

5. If you don't like it, click the X button to return to the original sound (or click Randomize again to get a new random variation of the original sound).

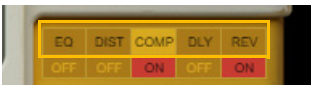


Effects section

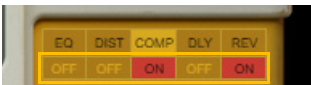


The Effects section features five different effect modules that can be freely reordered by dragging & dropping. Most of the effect parameters are also available as destinations in the Modulation Matrix, see [“Modulation Matrix”](#).

At the top of the Effects section are five Effect buttons. Click any of these to bring up the control panel for the corresponding effect:



Below the Effect buttons are the On/Off buttons for the individual effects. Click these to activate the effects:



Reordering the effects

- To define the order of the effects in the serial connection, click and hold on the desired Effect button and drag to the desired position:



Moving the Compressor effect to another position in the effects chain.

You can reorder the effects at any time.

EQ



This Equalizer has high and low shelving bands with fixed frequencies, plus a parametric mid band. Use it to tailor the sound as needed.



- **Freq**
This determines the center frequency of the EQ, e.g. at which frequency the level should be decreased or increased.
- **Gain**
Specifies how much the level of the selected frequency range should be boosted (positive values) or lowered (negative values).
- **Q**
This governs the width of the affected area around the set center frequency. The higher the value, the narrower the affected frequency range.
- **Lo Gain**
Specifies how much the level of the low band should be boosted (positive values) or lowered (negative values).
- **Hi Gain**
Specifies how much the level of the high band should be boosted (positive values) or lowered (negative values).

Distortion



The Distortion effect features six different types of distortion.

→ **Select distortion type with the switch.**

“Dist” produces a dense, rich analog type of distortion.

“Scream” produces a less bright type of distortion.

“Tube” emulates a tube type of distortion.

“Sine” is a sine shaping distortion.

“S/H” gives the effect of sample rate reduction.

“Ring” is a ring modulator effect.

- **Drive**
Sets the overdrive/feedback level of the selected distortion.
- **Tone**
This is a lowpass filter and sets the tone of the selected distortion.
- **Amount**
Sets the Dry/Wet amount of the distortion.



Compressor



This is a stereo compressor.

- **Attack**

This governs how quickly the compressor will apply its effect when signals rise above the set threshold. If you raise this value, the response will be slower, allowing more of the signal to pass through the compressor unaffected. Typically, this is used for preserving the attacks of the sounds.

- **Release**

When the signal level drops below the set threshold, this determines how long it takes before the compressor lets the sound through unaffected. Set this to short values for intense, “pumping” compressor effects, or to longer values for a smoother change of the dynamics.

- **Threshold**

This is the threshold level above which the compression sets in. Signals with levels above the threshold will be affected, signals below it will not. In practice, this means that the lower the Threshold setting, the more the compression effect.

- **Ratio**

This specifies the amount of gain reduction applied to the signals above the set threshold.

Delay



This is a stereo delay, routed as a send effect.

- **Sync**

Activate Sync to sync the delay time to the main sequencer Tempo.

- **Time**

This sets the time between the delay repeats. If Sync is active (see above), the Time parameter now controls the time divisions.

- **Ping Pong**

Activate Ping Pong to have the delay repeats alternating between left and right in the stereo panorama. The effect is also dependent on the Pan parameter (see below).

- **Pan**

Sets the panning of the delay repeats in the stereo panorama. If Ping Pong is active (see above) the Pan knob controls the panning of the initial delay repeat as well as the total stereo spread of the remaining repeats.



- **Feedback**
The Feedback parameter determines the number of delay repeats.
- **Amount**
Use this parameter to adjust the send level to the Delay effect.
- **If you play a note, have a long delay Feedback and turn down Amount, the echoes will continue. This allows for automated “triggered delay” fx. You can set up the Delay Amount parameter as a Destination in the Modulation Matrix, see “Modulation Matrix”.**

Reverb



This is a stereo reverb, routed as a send effect.

- **Reverb type selector**
Here you can select the desired type of reverb, from Small Room to Large Hall.
- **Decay**
This governs the length of the reverb effect.
- **Damp**
Raising the Damp value cuts off the high frequencies of the reverb, thereby creating a smoother, warmer effect.
- **ER Level**
Turning up the early reflection time will cause the reverb effect to start a little later, giving room for some initial delays.
- **Level**
Use this parameter to adjust the send level to the Reverb effect.
- **If you play a note, have a long delay Decay time and turn down Level, the reverberation will continue. You can also set up the Reverb Level parameter as a Destination in the Modulation Matrix, see “Modulation Matrix”.**

Modulation section



The Modulation section features two separate LFOs, a Curve generators and a Macro section for parameter modulation purposes. The modulators can be used as Sources and modulation Destinations can be freely assigned in the Modulation Matrix, see “Modulation Matrix”.



LFO 1&2



An LFO (Low Frequency Oscillator) is used for generating cyclic modulation. A typical example is to have an LFO modulate the pitch of a signal to produce vibrato, but there are countless other applications for LFOs.

The LFO section features two separate general purpose LFOs, that can be assigned to control selectable parameter(s) in the Modulation Matrix, see [“Modulation Matrix”](#).

- **Select which of the two LFOs you want to edit by clicking one of the LFO 1 and LFO 2 buttons.**
- **Select an LFO waveform by clicking the spin controls to the right of the waveform display, or by dragging up/down in the waveform display:**



Besides the standard waveforms (sine, triangle, pulse, etc.) there are random, slope and stepped waveforms. The shape of the waveforms are shown in the display.

- **Set the LFO frequency with the Rate knob.**
If Beat Sync (see below) is on, the Rate knob controls time divisions instead.
- **Turn the Delay knob to introduce a delay before the LFO modulation kicks in after a note is played.**
Turn clockwise for longer delay times.
- **Click the Beat Sync button to sync the LFO to the main sequencer Tempo.**
The Rate parameter now controls the time divisions.
- **Click the Key Sync button to restart the LFO at every new Note On.**
- **Click the Global button to make the LFO common for all voices (monophonic).**

Curve



There is also a Curve generator available for modulating selectable parameter(s) in the Modulation Matrix, see [“Modulation Matrix”](#). The Curve generator can serve as an additional LFO, a semi-step sequencer or even as an additional envelope.

- **Select the Curve modulator by clicking the Curve button.**

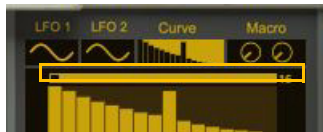


→ To create steps or a curve shape, draw by clicking and dragging in the display:



→ To switch between steps or a curve shape, click the Stepped button below the display.

• Set the number of steps (1-16) by clicking or dragging in the bar at the top of the curve display:



→ Set the speed of the Curve with the Rate knob.

If Beat Sync is on, the Rate value is shown as the length of the entire 16 step cycle. For example, if Rate is 4/4, each of the 16 steps corresponds to a 1/16 note.

→ Click the One Shot button to trig the curve once from the start when you play a note.

This makes it work like an envelope.

→ Click the Bipolar button if you want the values to be bipolar (+/-) instead of unipolar (+ only).

→ Click the Key Sync button to restart the Curve at every new Note On.

→ Click the Global button to make the Curve common for all voices (monophonic).

Macro



There is also a Macro section which lets you name and assign two separate knobs as Sources in the Modulation Matrix, see "[Modulation Matrix](#)". You could then assign these knobs to controls on your MIDI Keyboard/Control Surface.

→ Select the Macro section by clicking the Macro button.

→ Double click the Label 1 or Label 2 text, type in a custom name for your Macro knob and then hit [Enter].

This can be useful if you want to describe in text what the knob should do. Then, you can use the knobs as sources (Macro 1 and Macro 2) in the Modulation Matrix for controlling the Destination parameter(s) of your choice.

→ Click the Bipolar buttons if you want the knobs to send out bipolar (+ and -) values instead of unipolar (+) values.



Modulation Matrix



The Modulation Matrix is used for routing a modulation Source to one or two modulation Destinations each. This creates a very flexible routing system.

The Modulation Matrix in Objekt is derived from the ones in the Europa and Grain devices, so if you are familiar with these, you will quickly find your way around in Objekt.

There are eight “Source → Destination 1 → Destination 2 → Scale” busses, which all can be freely assigned.

A Source parameter can modulate two different Destination parameters per bus (with variable Amount settings). Each bus also has a Scale parameter that affects the relative modulation Amount for both Destinations.

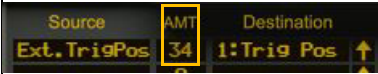
- **Note that it is possible to assign the same source parameter as Source in several busses. This allows you to control more than two Destination parameters from the same Source.**

1. Select the desired Source parameter by clicking in the corresponding Source box and selecting from the list.

The following parameters can be used as modulation Sources:

Parameter	Description																																								
Velocity	This applies modulation according to the Keyboard Velocity values (how hard or soft you strike the MIDI keyboard keys).																																								
Random 1/Random 2	This sends out a continuous random bipolar value each time a new note is played.																																								
Key	This is the currently played key (i.e. keyboard tracking). If a positive Amount value is used and the destination is filter frequency, the filter frequency will track the keyboard, i.e. increase with higher notes.																																								
Key In Octave	The current key played, but 12 different values, one for each note in an octave (regardless of in which octave you play). See the Percussion patches for examples of how to use this.																																								
Black Key	This lets you modulate parameters from the black keys only. For example, you might want to have the black keys play back a percussion sound at a higher pitch (see the Agogo patch in the Percussion folder): <div data-bbox="454 1263 767 1324" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <table border="1"> <thead> <tr> <th>Source</th> <th>AMT</th> <th>Destination</th> </tr> </thead> <tbody> <tr> <td>Black Key</td> <td>25</td> <td>Pitch</td> </tr> </tbody> </table> </div> <p><i>Black keys play back the sound at a higher pitch.</i></p>	Source	AMT	Destination	Black Key	25	Pitch																																		
Source	AMT	Destination																																							
Black Key	25	Pitch																																							
Single Key	This lets you modulate parameters individually from specific notes in the octaves. <div data-bbox="454 1426 767 1498" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <table border="1"> <thead> <tr> <th>Source</th> <th>AMT</th> <th>Destination</th> </tr> </thead> <tbody> <tr> <td>Key C</td> <td>-24</td> <td>1:Pitch</td> </tr> <tr> <td>Key G</td> <td>-38</td> <td>1:Pitch</td> </tr> </tbody> </table> </div> <p><i>Keys C and G modulating the Object 1 Pitch individually.</i></p>	Source	AMT	Destination	Key C	-24	1:Pitch	Key G	-38	1:Pitch																															
Source	AMT	Destination																																							
Key C	-24	1:Pitch																																							
Key G	-38	1:Pitch																																							
Last Voice	This lets you have a modulation source only affect the last voice in the sound, for example if you want to have Pitch Bend or Vibrato only affecting the last note in a chord. Here is an example where Last Voice is used for “scaling” (enabling) the Pitch Wheel: <div data-bbox="454 1657 1275 1774" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <table border="1"> <thead> <tr> <th>Polyphony</th> <th>Source</th> <th>AMT</th> <th>Destination</th> <th>AMT2</th> <th>Destination 2</th> <th>AMT</th> <th>Scale</th> </tr> </thead> <tbody> <tr> <td>8</td> <td>Pitch Wheel</td> <td>14</td> <td>Pitch</td> <td>↑ 0</td> <td></td> <td>↑ 100</td> <td>Last Voice</td> </tr> <tr> <td>0</td> <td></td> <td></td> <td></td> <td>↑ 0</td> <td></td> <td>↑ 0</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>↑ 0</td> <td></td> <td>↑ 0</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>↑ 0</td> <td></td> <td>↑ 0</td> <td></td> </tr> </tbody> </table> </div> <p><i>Pitch Wheel only affects the last voice in the sound.</i></p>	Polyphony	Source	AMT	Destination	AMT2	Destination 2	AMT	Scale	8	Pitch Wheel	14	Pitch	↑ 0		↑ 100	Last Voice	0				↑ 0		↑ 0						↑ 0		↑ 0						↑ 0		↑ 0	
Polyphony	Source	AMT	Destination	AMT2	Destination 2	AMT	Scale																																		
8	Pitch Wheel	14	Pitch	↑ 0		↑ 100	Last Voice																																		
0				↑ 0		↑ 0																																			
				↑ 0		↑ 0																																			
				↑ 0		↑ 0																																			



Parameter	Description
Envelope	This allows you to modulate parameters from the Noise Envelope in the "Exciter Noise section".
LFO, Curve and Macro	This allows you to modulate parameters from "LFO 1&2", "Curve" and the two "Macro" knobs respectively.
Obj 1 and Obj 2 Env Follower	This allows you to modulate parameters from the "invisible" amplitude envelope followers in the Object sections.
Ext. TrigPos	<p>This allows you to modulate parameters from the current stereo position of the External In signal in the Exciter section, see "External Audio In".</p> <p>There is a trig detection on the External Audio input. When it's triggered, the Ext. TrigPos value is latched and the "TrigPos" RND parameter gets a new random value. If you are inputting a continuous audio signal on the External Audio In, the audio might trig a little randomly, which might sound bad/strange if you are modulating the "TrigPos" destination parameter. It can therefore be good to turn down the "TrigPos" RND knob and the Ext. TrigPos AMT value if you are using a continuous audio signal on the External Audio In:</p>  <p>Reducing the Ext. TrigPos modulation amount.</p>
Modulation Wheel	This allows you to modulate parameters from the "Mod" Wheel.
Latched Modulation Wheel	This allows you to modulate parameters based on the current "Mod" Wheel value at a given Note On.
Pitch Wheel	This allows you to modulate parameters from the "Pitch" Bend control.
Breath Controller	This allows you to modulate parameters from the Breath performance controller
Expression	This allows you to modulate parameters from the Expression performance controller
Aftertouch	This allows you to modulate parameters from Keyboard Aftertouch (channel aftertouch)
Sustain Pedal	This allows you to modulate parameters from a connected sustain pedal. Note that continuous sustain data (0-127) is supported - not just on/off.
CV 1/2	This takes the current value on the CV 1/CV 2 inputs on the rear panel and sends to the destination.
Latched CV 1/2	This allows you to modulate parameters based on the current CV 1/CV 2 value at a given Note On.

Modulation Matrix Source parameters

2. Set the Amount for the first Destination by turning the corresponding Amount knob, or by clicking and dragging vertically in the corresponding Amount box.
- ! Note that the Amount range is +/-100. This means that the Amount value can exceed the modulated parameter's range. When this happens, the modulated parameter simply stays at its extreme value until the Amount value gets within the parameter's range again.
3. Select the first Destination parameter by click-holding the grey arrow symbol to the right of the corresponding Destination box.



4. While click-holding, drag to the desired destination parameter on the panel:



Assigning LFO 2 Rate as Destination for the Envelope of the operator in Slot 1.

As you hover over a valid destination control on the panel, the parameter name is automatically displayed in the Destination box in the Modulation Matrix.

5. To assign the currently selected Destination control, release the mouse button.

→ **Alternatively, click the desired Destination box and select the Destination parameter from the list.**

The following parameters can be used as modulation Destinations:

Parameter	Description
Exciter >	
Exciter Impact Trig	This lets you (re)trig the Exciter Impact signal from a desired source, for rhythmical effects.
Exciter Impact Level	This affects the "Level" parameter.
Exciter Impact Pulse Freq	This affects the "Impact Freq" parameter.
Exciter Impact Hardness	This affects the "Hardness" parameter.
Exciter Impact Diffuse Shape	This affects Shape parameter in the "Diffuse" section.
Exciter Impact Diffuse Time	This affects Time parameter in the "Diffuse" section.
Exciter EQ Freq	This affects the Exciter EQ "Freq" parameter.
Exciter EQ Gain	This affects the Exciter EQ "Gain" parameter.
Exciter Out Level	This affects the Exciter "Mix Level" fader.
Exciter Noise Level	This affects the "Level" parameter.
Exciter Noise Rate	This affects the "Rate" parameter.
Exciter Env Trig	This lets you (re)trig the Exciter Noise Envelope from a desired source, for rhythmical effects.
Exciter Env Delay	This affects the "Delay" parameter.
Exciter Env Attack	This affects the Exciter Noise Envelope "A(ttack)" parameter.
Exciter Env Decay	This affects the Exciter Noise Envelope "D(ecay)" parameter.
Exciter Env Sustain	This affects the Exciter Noise Envelope "S(ustain)" parameter.
Exciter Env Release	This affects the Exciter Noise Envelope "R(elease)" parameter.



Parameter	Description
Modal >	
Modal Pitch	This affects the "Pitch" parameter.
Modal Mix Level	This affects the Modal "Mix Level" fader.
Modal Pan	This affects the Modal "Pan" parameter.
Modal Decay	This affects the Time parameter in the "Decay" section.
Modal Rel Mute	This affects the Rel Mute parameter in the "Decay" section.
Modal Pickup Drive	This affects the Drive parameter in the "Pickup" section.
Modal Pickup Symm	This affects the Symmetry parameter in the "Pickup" section.
Modal Freq 1-8	These affect the "Freq" 1-8 parameters.
Modal Gain 1-8	These affect the "Gain" 1-8 parameters.
Object 1 > and Object 2 >	
	The Object 1 and Object 2 sub-menus are identical and both feature the destinations listed below:
Object 1/2 Input Mix	This affects the "Input Mix" parameter.
Object 1/2 Pitch	This affects the "Pitch" parameter.
Object 1/2 Mix Level	This affects the Object 1/2 "Mix Level" fader.
Object 1/2 Decay	This affects the Time parameter in the "Decay" section.
Object 1/2 Rel Mute	This affects the Rel Mute parameter in the "Decay" section.
Object 1/2 Collision Amount	This affects the Amount parameter in the "Collision" section.
Object 1/2 Collision Bounce	This affects the Bounce parameter in the "Collision" section.
Object 1/2 Lo Damp	This affects the Lo Damp parameter in the "Damping" section.
Object 1/2 Hi Damp	This affects the Hi Damp parameter in the "Damping" section.
Object 1/2 Hi Slope	This affects the Slope parameter in the "Damping" section.
Object 1/2 Mid Freq	This affects the Mid Freq parameter in the "Damping" section.
Object 1/2 Mid Gain	This affects the Mid Gain parameter in the "Damping" section.
Object 1/2 Disp Freq	This affects the Freq parameter in the "Dispersion" section.
Object 1/2 Disp Mod	This affects the Mod parameter in the "Dispersion" section.
Object 1/2 Trig Pos	This affects the "TrigPos" parameter.
Object 1/2 X-Freq	This affects the Freq parameter when "Coupling" is set to X-Over.
Object 1/2 Lo Cut	This affects the "Low Cut" parameter.
Object 1/2 PMod Amt	This affects the Amount parameter in the "Pitch Mod" section.
Object 1/2 Width	This affects the "Width" parameter.
Object 1/2 Pan	This affects the "Pan" parameter.
Object 1/2 Freq 1-8	These affect the "Freq" 1-8 parameters.
Object 1/2 Gain 1-8	These affect the "Gain" 1-8 parameters.
Effects >	
Effects Reverb Decay	This affects the Decay parameter in the "Reverb" section.
Effects Reverb Level	This affects the Level parameter in the "Reverb" section.
Effects Delay Time	This affects the Time parameter in the "Delay" section.
Effects Delay Feedback	This affects the Feedback parameter in the "Delay" section.
Effects Delay Amount	This affects the Amount parameter in the "Delay" section.
Effects Delay Pan	This affects the Pan parameter in the "Delay" section.
Effects Dist Drive	This affects the Drive parameter in the "Distortion" section.



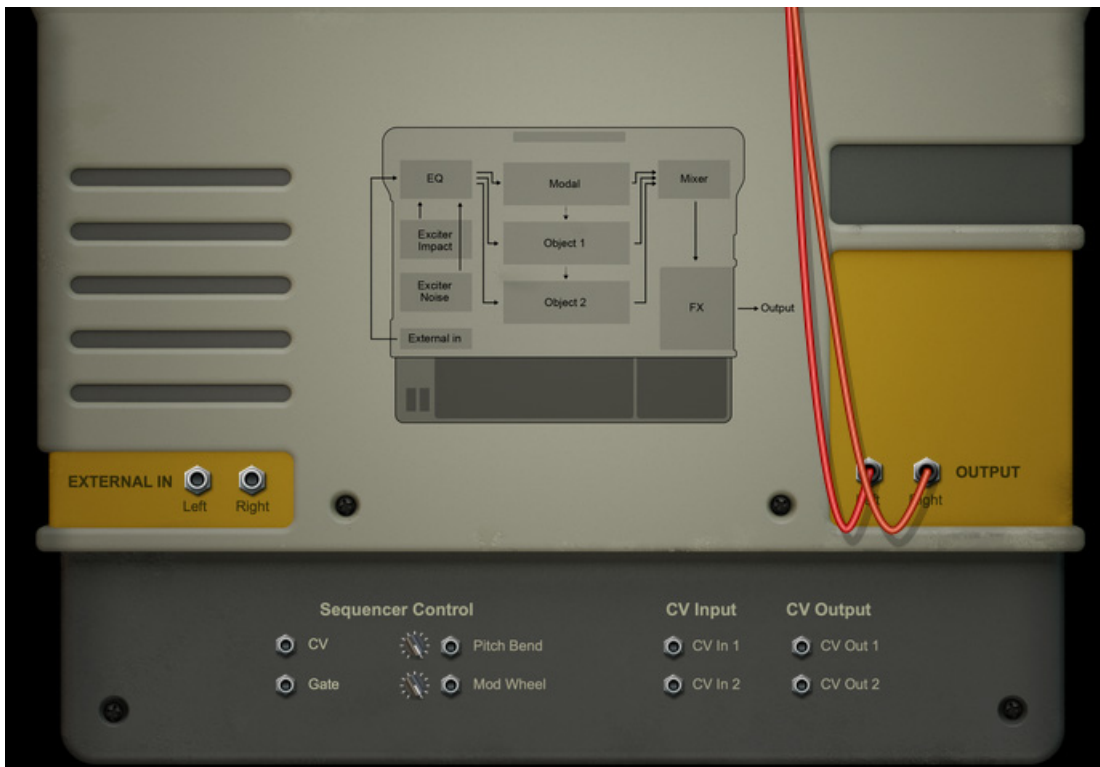
Parameter	Description
Effects Dist Tone	This affects the Tone parameter in the "Distortion" section.
Effects Dist Amount	This affects the Amount parameter in the "Distortion" section.
Effects Comp Release	This affects the Release parameter in the "Compressor" section.
Effects Comp Ratio	This affects the Ratio parameter in the "Compressor" section.
Effects EQ Frequency	This affects the Freq parameter in the "EQ" section.
Effects EQ Gain	This affects the Gain parameter in the "EQ" section.
Pitch	This affects the global pitch of the instrument.
Portamento Rate	This affects the "Portamento" Rate parameter.
LFO 1/2 Rate	This affects the Rate parameter of LFO 1/2 in the "LFO 1&2" section.
Curve Rate	This affects the Rate parameter in the "Curve" section.
CV Out 1/2	This sends out the source modulation value(s) on the CV 1/2 Output on the rear panel.

Modulation Matrix Destination parameters.

- 6. Set the Amount for the second Destination (if desired) by turning the corresponding Amount knob, or by clicking and dragging vertically in the Amount box for the second destination.**
- 7. If desired, select a second Destination parameter by click-holding the grey arrow symbol to the right of the corresponding Destination box, and dragging to the desired control on the panel.**
- 8. If desired, click the Scale box and select a Scale parameter.**
The available Scale parameters are the same as the Source parameters, see "Modulation Matrix Source parameters".
- 9. Turn the Scale Amount knob, or click the Amount box to the left of the Scale box and move the mouse pointer up or down to set a Scale Amount value.**
Both positive and negative Scale Amount values can be set (+/- 100%). If you, for example, are using the Mod Wheel as Scale parameter and don't want any modulation when the Mod Wheel is set to zero, set the Scale Amount parameter to 100%. Then, there will be no effect when the Mod wheel is set to zero, and full modulation when the Mod Wheel is all the way up.
 - **How much modulation will be applied when the Scale parameter is set to maximum is governed by the to Destination Amount parameter(s).**
 - **How much the Scale parameter controls the modulation is set with the Scale Amount parameter.**
 - **To clear an assigned Source, Destination or Scale parameter, hold down [Ctrl](Win) or [Cmd](Mac) and click the Source/Destination/Scale box. Alternatively, click the Source/Destination/Scale box and select "Off" from the list.**
 - **To reset an Amount value to 0, hold down [Ctrl](Win) or [Cmd](Mac) and click the desired Amount box or knob.**
 - **To clear an entire modulation assignment (a whole row), click the circular X button to the right of the corresponding Scale box.**



Rear panel connections



! Remember that CV connections are NOT stored in the Objekt patches! If you want to store CV connections between devices, put them in a Combinator device and save the Combi patch.

External In

Here you can patch in external audio signals to be used in the Exciter section, see [“External Audio In”](#).

Sequencer Control inputs

The Sequencer Control CV and Gate inputs allow you to play Objekt from another CV/Gate device (typically a Matrix or an RPG-8). The signal to the CV input controls the note pitch, while the signal to the Gate input delivers note on/off along with velocity. There are also inputs with attenuation knobs for modulating the Pitch Bend and Mod Wheel parameters.

CV Inputs and CV Outputs

Signals patched to the CV Inputs can be used as modulation Source signals via the Modulation Matrix (see [“Modulation Matrix”](#)). The CV Outputs can be used for controlling external devices that have CV inputs. The CV Outputs are available as modulation Destinations in the Modulation Matrix.

Master Out

These are the main audio outputs.



Tips & Tricks

Enhancing Exciter frequencies for better tone definition

If you have a little weak frequency definition in your sound - for example a weak fundamental frequency - you can use the Exciter EQ to boost this frequency. You can then modulate the Freq parameter of the Exciter EQ in the Mod Matrix, so that it tracks the keyboard:



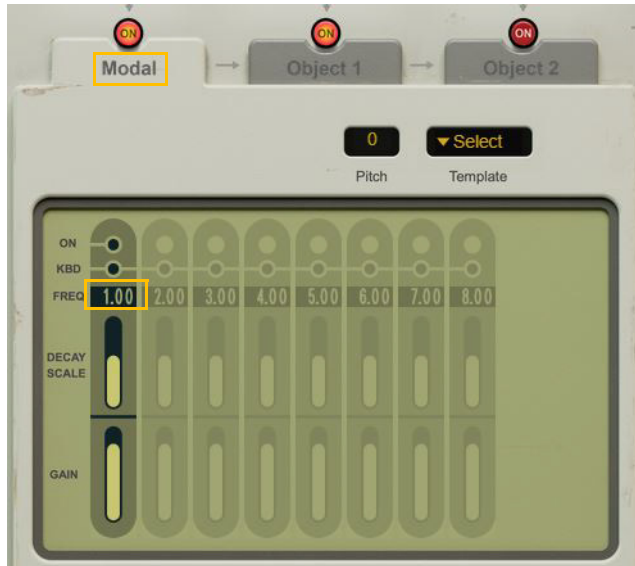
- 1. Set the Exciter EQ Freq knob so that it gets as close to a C note as possible.**
Use the Tuner at the top right of the panel to play back a C3 note that you could adjust the Freq knob to.
 - 2. Turn up the Exciter EQ Reso knob to get a smaller EQ band (to isolate the set frequency better).**
 - 3. Turn up the Exciter EQ Gain knob to amplify the set frequency.**
 - 4. In the Mod Matrix, select Key as Source and the Exciter EQ Frequency (Ex.Eq Freq) as Destination.**
Set the Modulation amount (AMT) to 100 for a 1:1 keyboard tracking of the EQ Frequency.
- Another way of enhancing the tone definition is to use the Modal section only for filtering the Exciter signal (but not be part of the signal), see **“Using the Modal section only for filtering the signal to Object 1”** below.



Using the Modal section only for filtering the signal to Object 1

Sometimes it could be useful to use the Modal section only for filtering the signal to Object 1, without the Modal section being part of the resulting signal. For example, you might want to emphasize certain frequencies of the Exciter signal to get a better definition of the tone.

1. Tune one or several Modal filter bands by adjusting the desired Freq settings:



2. Select the Object 1 section and turn the Input Mix knob all the way to “Modal” to send only the Modal signal to Object 1. Also, turn down the Modal Mix Level fader to 0, and raise the Object 1 Mix Level fader to hear the resulting signal:



Using low Freq values in the Object section(s) to generate delay/reverb type of effects

Using very low frequency settings in the Object sections will make the tone less prominent and will instead generate a reverb/delay type of effect. In this example we are using one of the Templates in the Modal section and then set two of Object 1's delay line frequencies close to 0. (You might also have to turn down the Pitch in the Object section to get the desired result):



- To get the same reverb/delay effect over the entire key range, switch off KBD (Keyboard Tracking) for the “low frequency” delay lines.
- Turn up the Decay Time to get the reverb/delay effect ringing out.
- Turn up the Width for the Object section in the Mixer for a nice wide effect.



Using the Noise Envelope for shaping Gains and Mix Levels

The Exciter Noise Envelope can be used for shaping other parameters in Objekt besides the noise level. In this example we use the factory patch “Bassonic” in the “Brass & Wind” folder to illustrate this:



- In the Mod Matrix the Envelope (Exciter Noise Envelope) is used as a Source for modulating the Gain 1 and Gain 4 parameters in the Modal section (M:Gain1 and M:Gain4). The Gain modulations are also scaled by the Mod Wheel.
- The Envelope is also used as a Source for modulating Mix Level 1 and Mix Level 2, i.e. the Object 1 and Object 2 levels in the Mixer (1:Level and 2:Level).

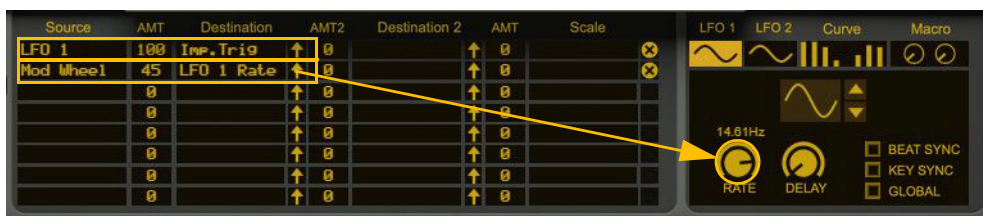


Creating rhythmic effects by retriggering the Exciter Impact from the Curve or LFO

You could create rhythmic patterns/events by retriggering the Exciter Impact from e.g the Curve or LFOs in the Mod Matrix. This could be used for generating drum rolls or for creating simple rhythmic patterns. In the example below a stepped Curve triggers the Impact Trig to generate a rhythmic pattern:



- The Impact is triggered every time the modulation value goes from 0 to a positive value.**
 If you want the stepped Curve to trig several times throughout the loop you'll have to set the value just before a trig to 0. The Curve step values also control the Level Velocity and Hardness Velocity parameters of the Exciter Impact signal.
- If you want to create a drum roll effect, use a (fast) LFO as modulation Source in the Mod Matrix.**
 You could also modulate the LFO Rate from e.g. the Mod Wheel, as in this example:



Using the External In to create effects with variations

A nice way of using the External In function is to connect e.g. a Dr Octo Rex to the External Inputs, and use the External Trig Position as Source in the Mod Matrix for modulating various Objekt parameters based on the stereo panorama of the Dr Octo Rex signal.

1. Connect the audio outputs of a Dr Octo Rex device to the External In of Objekt:



2. Set the Key Mode in Objekt to “Mono”.

This ensures that Objekt can be used as an effect and doesn't need any Note On to produce audio.



3. In the Mod Matrix, assign External Trig Position (Ext.TrigPos) as Source and the desired parameter(s) to be modulated as Destination(s).

4. In Dr Octo Rex, adjust the Pan parameter for the slices so that the panning varies throughout the Rex loop.

This will give nice modulation variations, since the panning affects the External Trig Position parameter in Objekt.

