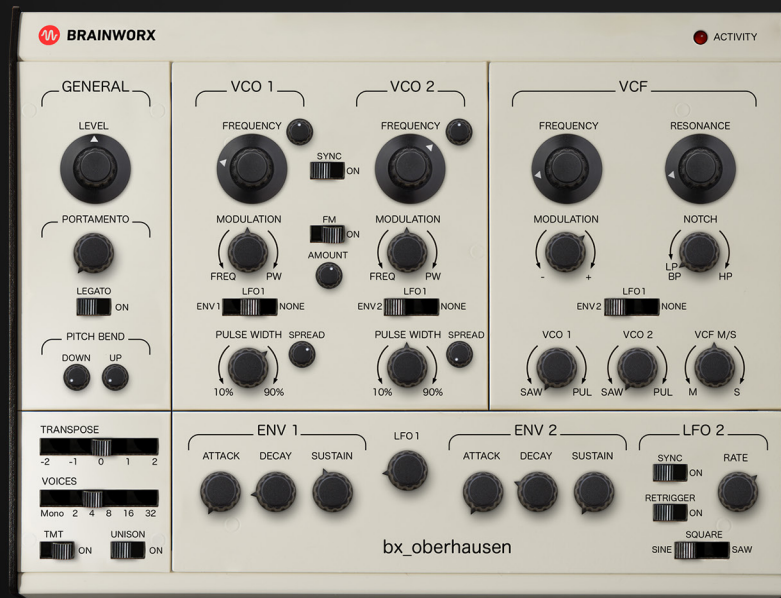


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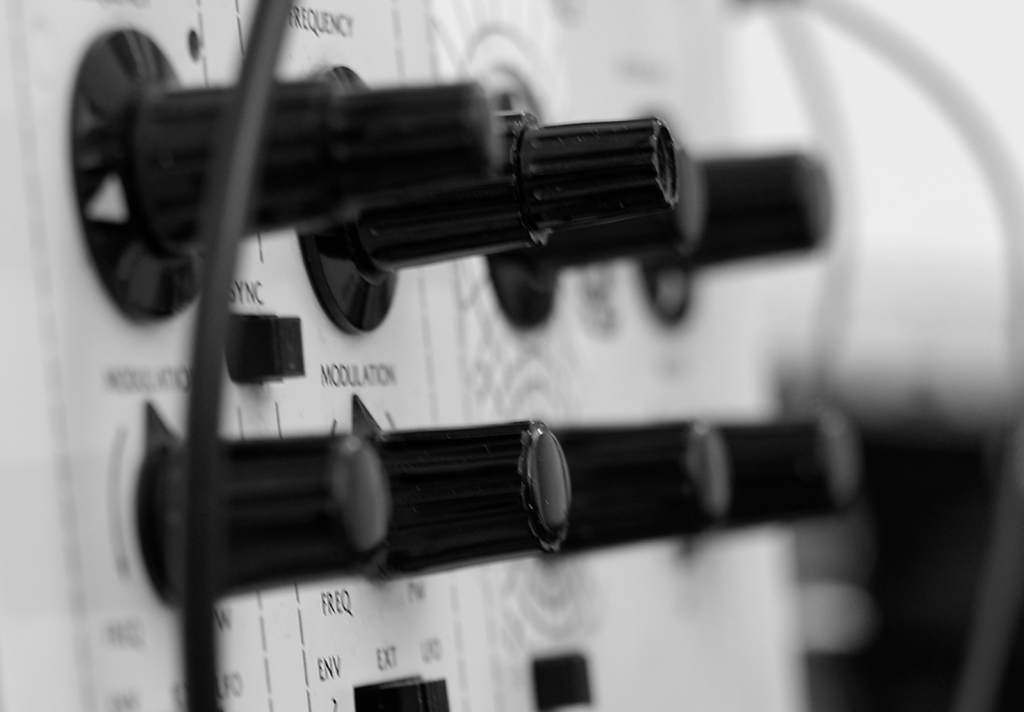
Developed by Brainworx Audio and distributed by Plugin Alliance



BRAINWORX

Legal Disclaimer

bx_oberhausen was developed by Brainworx Audio GmbH based on its own modeling techniques. No other party has endorsed or sponsored bx_oberhausen in any manner, or licensed any intellectual property for use in the product.



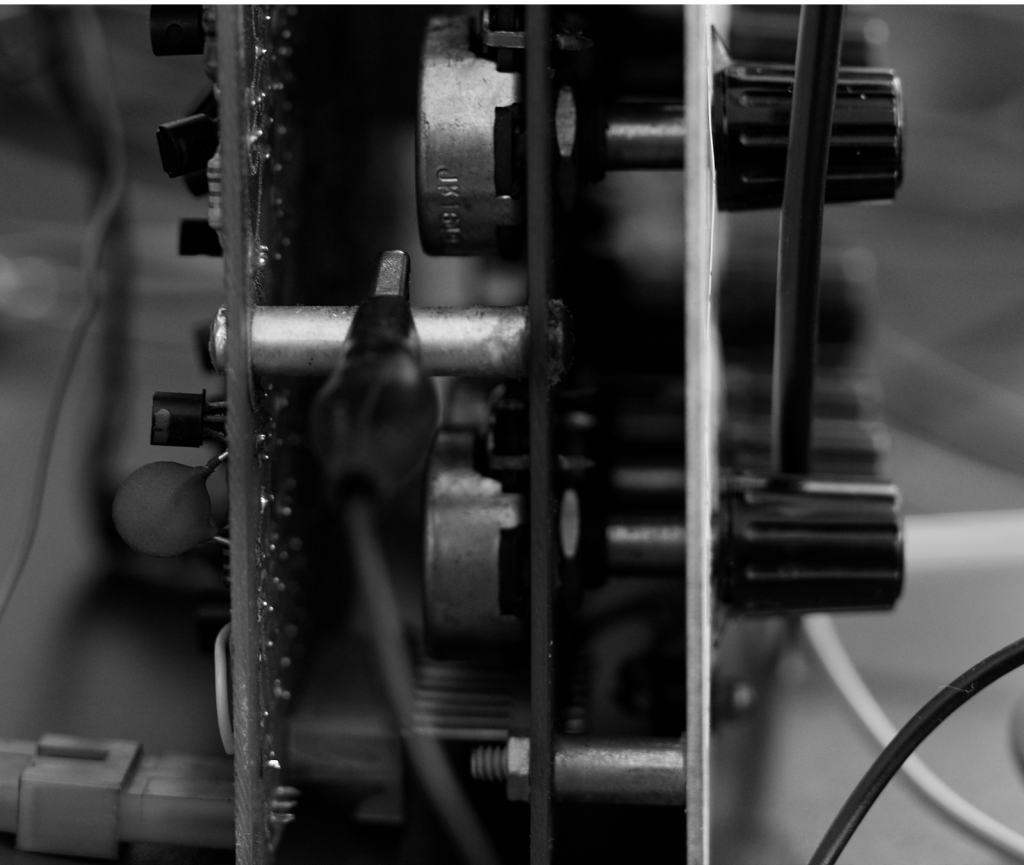
Over the last 10 years Brainworx has built a reputation for making faithful software reproductions of original analog hardware. Our portfolio holds many classic compressors, EQs and mastering tools, which enjoy a good reputation within the pro audio community. Many guitarists use our models of guitar and bass amps on Plugin-Alliance and for the UAD platform from Universal Audio.

To us it is a logical step to apply the knowledge and experience we have developed during the past years to a product range that is equally close to our hearts. After all, the analog circuits of classical analog synthesizers are not too different from those of analog sound processors.

We think that our unique approach and the technologies we have developed during the past 10 years will add something to our new line of virtual instruments that gives you unparalleled authenticity and an analog feeling that makes our instruments stand out.

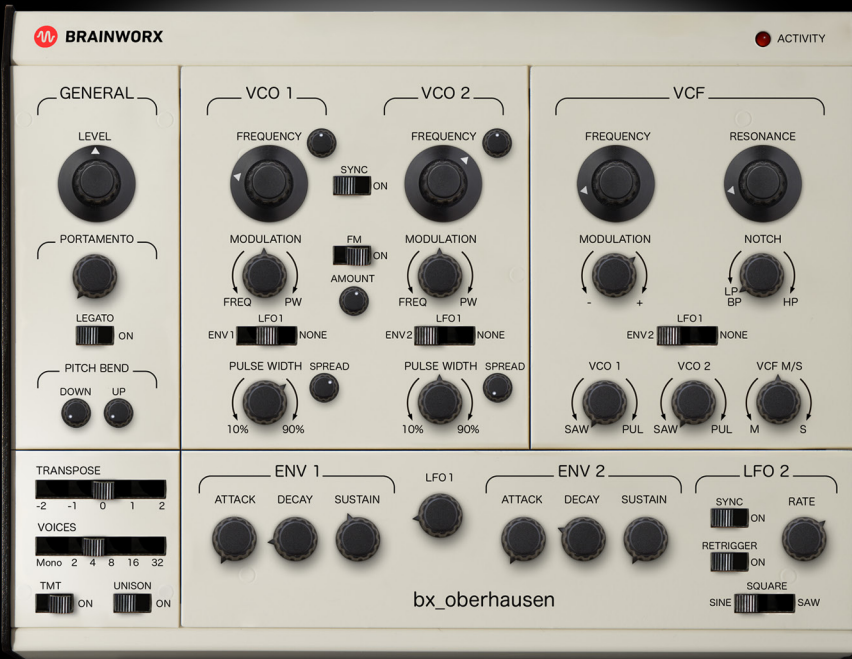
bx_oberhausen is a model inspired by great iconic synthesizers of the 70s and accurately modeled after original analog circuits. It features a simple, classic signal chain of two oscillators and one state-variable filter. But don't be fooled by this simplicity – once you dive into the additions we have made, like TMT, M/S processing, FM and an extensive modulation section you will quickly realize how versatile this synthesizer really is.

Since we have a huge well-proven arsenal of effects and effect algorithms, we decided to add miniature versions of some of the best sounding ones to bx_oberhausen, giving you a range of effects you will actually want to use.



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Main Section

Page 3



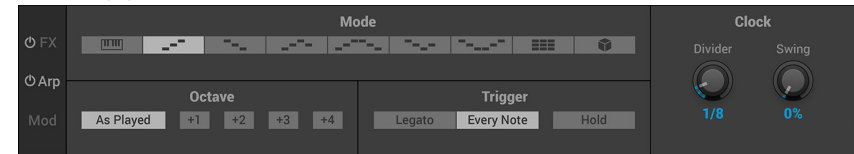
Effects Section

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Arpeggiator

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Modulation Section

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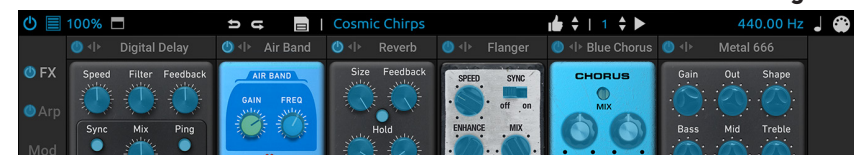
Preset Management

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Types	Sub-Types	Modes Author Bank	Results	Show	Search
Brass	Brass Ensemble	Synthetic	Arp Traveller		
Sound Effects	French Horn	FM	Attack Chopper		
Drums	Synthetic Brass	Percussive	Autobahn		
Soundscapes	Machines	Sequence/Loop	Bandage		
Piano/Keys	Nature	Arpeggiated	Parasites		
				Bank	Factory

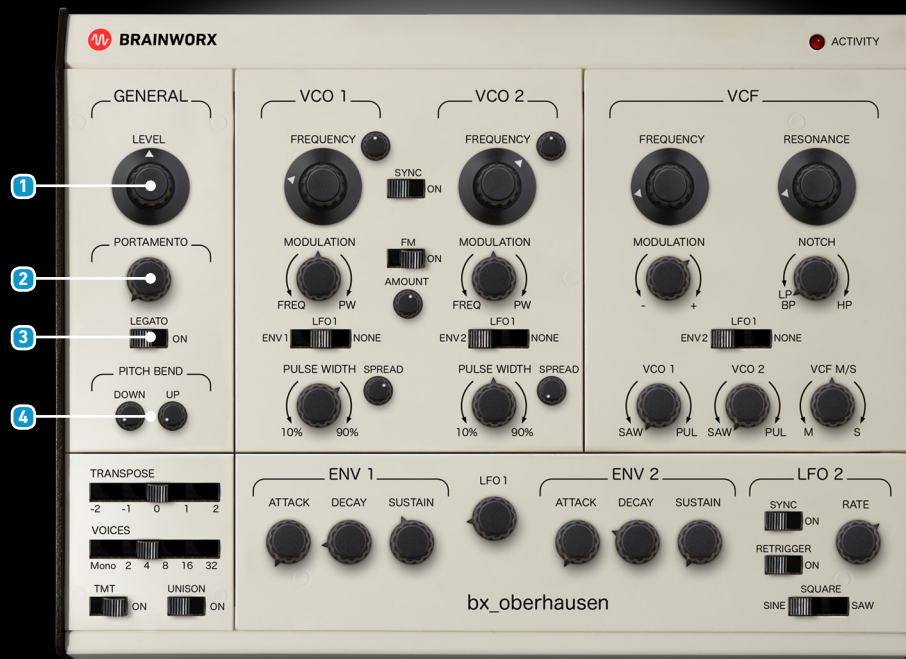
MIDI Learn and Toolbar

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Main Section

General Section

1 Level

This adjusts the overall output level of the plugin. You might have to adjust this sometimes for several reasons:

Switching between monophonic and polyphonic settings will likely produce different levels in volume. Another occasion may arise when turning the Resonance dial up in the filter section – manually or via modulation. This can produce quite high peaks in output level.

We intentionally kept this behavior as it is typical for the hardware.

2 Portamento

Adjusts the time needed to glide between notes. Portamento is disabled when set to 0.

3 Legato

When enabled, portamento is only applied when 2 (or more) keys are pressed at the same time. Pressing only one key at a time will not trigger a glide.

4 Pitch Bend

The two controls allow adjustment of the upward and downward ranges of your keyboard's pitch wheel. Please note that the pitch wheel is always assigned to pitch bend, assignments that you may do using the Modulation Section are always additional. You can however set the up and down ranges to 0 to disable pitch bend and use the pitch wheel as a modulation source only.

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1 Transpose

Use this switch to quickly transpose the oscillators up to ± 2 octaves.

2 Voices

Adjust how many voices can be generated simultaneously.

When used with unison enabled, this gives you a richer, fatter sound and when used without unison you can play the bx_oberhausen polyphonically, meaning that if a voice is already playing, another voice will be triggered when playing a new note.

Please note that if you are using a modern PC or Mac hardware it's perfectly possible to run multiple instances of the synthesizer with each playing 32 voices. If you are on older hardware or have a very busy DAW session, you may have to reduce the voice count.

3 TMT

TMT is Brainworx' patent-pending Tolerance Modeling Technology, originally found in the bx_console line of plugins. It takes the real-world tolerances of audio components found in audio circuits into account, and offers voices of the synthesizer which have realistic variances in frequency, time constants, etc. The result is a digital synthesizer that sounds as analog as possible.

For more information please check www.brainworx.audio.

4 Unison

When enabled each note is played by all voices. This gives you a fatter, analog sound. Adjust the number of voices played using the Voice parameter. Try this in conjunction with TMT. Please note that when adding

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more voices the sound will usually get louder, to avoid the necessity to turn down the volume with each added voice, bx_oberhausen reduces volume automatically when you add voices and raises it when you use less voices.

TMT and Voices

Back in the days of the iconic synthesizers, circuits were built from discrete components and required a lot of space and power. As a result, most synthesizers of that era were monophonic. An approach taken by some manufacturers was to allow daisy chaining several monophonic synths and controlling them via a central keyboard and sometimes even a central control instance for oscillators and filters.

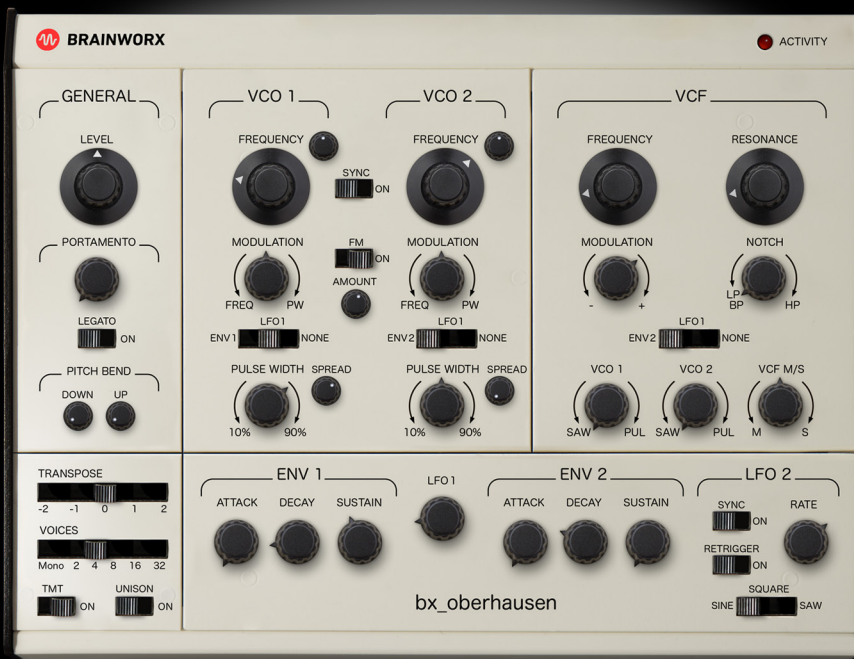
The unique combination of Brainworx' TMT and setting the bx_oberhausen to more than one voice allows you to recreate precisely this scenario. Think of each voice as being its own synthesizer with slightly different electrical components. When played together (either polyphonically or with unison mode enabled) these slightly differing voices generate a rich, colorful and vivid sound that other synthesizer plugins are just not capable of (re)producing.

The huge advantage of a modern-day plugin is of course that you can disable these variations and the resulting effects by merely disabling TMT with a flick of the switch.

Please note that all callouts show the values for voice 1 if TMT is enabled. The values for other voices will differ slightly.

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M/S Processing

The M/S Processing in bx_oberhausen consists of two parts: The stereo width (spread) and the M/S Filter control.

Each oscillator has a setting for adjusting how wide the signal is spread – in technical terms this means how much of the signal is in the side (S) band.

The M/S knob in the filter section then determines which signal passes through the filter:

Turning the M/S knob all the way to the left sends the mid signal (M) completely through the filter, while the side signal (S) bypasses the filter completely.

Turning the knob clockwise from this position gradually sends more side signal to through the filter and bypasses less. In the 12 o'clock position the entire M and S signals pass through the filter as they would with a regular (non-M/S) VCF. This is the default setting.

Moving counter clockwise from the 12 o'clock position will gradually send less mid signal through the filter and more mid signal will bypass the filter. When dialled all the way to the right, the mid signal will completely bypass the filter, while the side signal passes through it 100%.

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Modulations

There are two ways to assign modulations in bx_oberhausen:

One is via the switches on the main UI, the other is via the modulation section.

Please note that the modulations which are controlled via the main UI cannot be controlled via the modulation section.

Any modulations generated via the Modulation Section are applied in addition to those set via the main UI. This means that if you modulate the same destination parameter from two or more modulation sources the effect of those modulations will be added to each other. This may result in unexpected behavior, but can of course also be used for generating of vivid and changing soundscapes.

Oscillator Section

The bx_oberhausen features two oscillators, both capable of generating saw and pulse waveforms. Since both oscillators VCO1 and VCO2 feature the same controls, they are described only once here.

1 VCO Frequency

VCO frequency in semitones

2 VCO Finetune

VCO frequency fine tuning in cents up to ± 1 semitone.

In case you would like to tune bx_oberhausen using smaller steps than cents and semitones, please have a look at the Global Tune parameter in the plugin toolbar on top of the plugin.

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1 Modulation

This knob has two functions depending on its setting:

Turn left to control how much the modulation source (see below) influences the frequency of the VCO or turn right to control how much the modulation source influences the pulse width.

Note:

Modulating the pulse width will not have any effect on sawtooth waves.

2 VCO Level

The Saw/Pulse levels of both Oscillators can be adjusted with the VCO1 and VCO2 knobs in the VCF section. (see. VCF Section). This is an either/or-setting, so the 12 o'clock position on this control means that the oscillator is not outputting any sound, it does not mix saw and pulse oscillators.

3 Modulation Source

Selects the modulation source for a VCO

Settings for VCO1: ENV1 / LFO1 / NONE

Settings for VCO2: ENV2 / LFO1 / NONE

Please note that the modulation set by this parameter is additional to whatever you do in the Modulation Section and will not be mirrored there.

4 Pulse Width

Sets the width of the pulse wave. Please note: As the pulse generation circuit is faithfully modeled to resemble vintage hardware, the 50% setting does not exactly result in a square wave.

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1 Spread

This adjusts the stereo width of each oscillator separately. Together with the VCF M/S setting (see VCF section) this can be used to create stunning sounds and effects utilizing the full stereo field.

2 Sync

When set to „ON“ the cycle of VCO2 is reset each time VCO1 finishes a cycle.

3 FM

When enabled VCO1 is used to modulate the frequency of VCO2 resulting in the typical sound of an FM (Frequency Modulation) synth.

4 Amount (FM)

Controls the amount with which the VCO2 frequency is modulated by VCO1. Low settings result in a slight change of VCO2 frequency. Make sure you play with the frequency parameters of both VCOs to understand the full range of possible sounds with this function.

Filter Section (VCF)

5 Frequency

Controls the initial cutoff frequency. The range (37Hz - 24.350Hz) is a faithful reproduction of typical state variable filters in hardware synthesizers.

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1 Resonance

Amplification of frequencies near the cutoff frequency. As with the hardware originals this filter allows for quite high resonances resulting in higher output levels. Make sure you adjust the overall output volume accordingly.

2 Modulation

Determines how much the modulation source influences the filter cutoff frequency. When centered, the modulation is disabled, turning the knob to the left results in a reduction of the cutoff frequency depending on the modulation source, turning it right will raise the cutoff frequency according to the modulation source.

3 Modulation Source

This switch selects the modulation source for the VCF. Possible settings are ENV2/ LFO1/ NONE.

Please note that the modulation set by this parameter is additional to whatever you do in the Modulation Section and will not be mirrored there.

4 Filter Mode

- When turned to the leftmost position a bandpass filter is enabled.
- When turning clockwise, at a setting of "100%/0%" a LP filter is enabled.
- When at "50%/50%" the VCF acts as a notch filter.
- When at "0%/100%" the result is a pure HP filter.

These filter settings are very characteristic to the state-variable sound. Not only does it offer a LP, BP and HP, but it allows to continuously move seamlessly between a LP and a HP!

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1 VC01 Level

Determines the signal sent from VCO1 to VCF:

This is an either-/or-setting, so the 12 o'clock position on this control means that the oscillator is not outputting any sound, it does not mix saw and pulse oscillators.

2 VC02 Level

Determines the signal sent from VCO2 to VCF:

This is an either-/or-setting, so the 12 o'clock position on this control means that the oscillator is not outputting any sound, it does not mix saw and pulse oscillators.

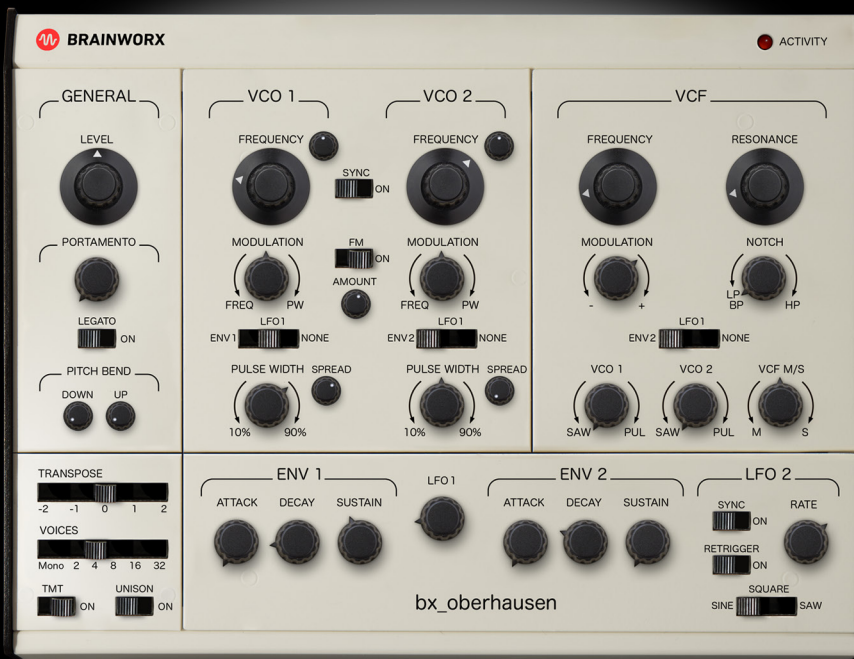
3 VCF M/S

The M/S knob in the filter section then determines which signal passes through the filter:

- Turning the M/S knob all the way to the left sends the mid signal (M) completely through the filter, while the side signal (S) bypasses the filter completely.
- Turning the knob clockwise from this position gradually sends more side signal through the filter and bypasses less.
- In the 12 o'clock position the entire M and S signals pass through the filter as they would with a regular (non-M/S) VCF. This is the default setting.
- Moving clockwise from the 12 o'clock position will gradually send less mid signal through the filter and more mid signal will bypass the filter.
- When dialled all the way to the right, the mid signal will completely bypass the filter, while the side signal passes through it 100%.

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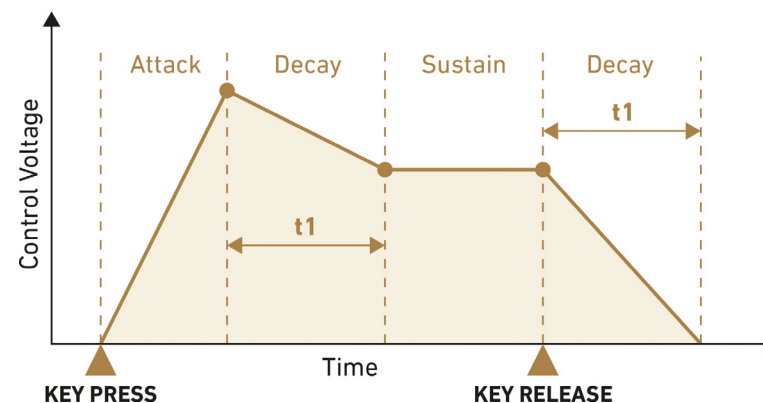


Envelope Section

There are two envelope generators in the bx_oberhausen. ENV1 is used to control the amplitude envelope of VCO1 and VCO2 while ENV2 can be used for controlling various functions via dedicated switches on the main user interface and via the Modulation Matrix.

You most likely are familiar with the phases into which the envelope curve is usually divided. The bx_oberhausen slightly differs from the usual ADSR model. The image below depicts the envelope curve which is used for both ENV1 and ENV2.

Most notably, the time it takes for a signal to drop to zero once a key is released is not determined by a separate Release (R) parameter, but the time of the Decay (D) setting is used. This results in both decay phases taking the same time and thus a different slope.



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Technical Background

The (attack and) decay times shown in the callout is what's known as the 5-tau-time. Charging and discharging a capacitor are exponential, asymptotic processes. The time constant tau is a characteristic of this process for any given circuit consisting of a capacitor and a resistor, it is the product of resistance (R) and capacitance (C). Due to the exponential nature of the process, after a time of 1*tau, the capacitor is charged to approximately 63%, while it takes a time of 5*tau to charge up to 99.3%.

In the original hardware, there is a switching diode at the output of ENV1 in the path to the VCA which has a typical diode voltage of 0.6V. When the voltage goes below this value, the VCA is switched off and there is no sound at the output. Starting with a maximum charge voltage of 13.6V as in the original hardware, The capacitor discharges to 0.6V in a time of 3.12 tau ($U(t) = U_0 \cdot \exp(-t/\tau)$). This is the reason why the release time you hear when starting from 13.6V (0dB) sustain voltage is only 0.62 (5/3.12) times the time you set. The decay and release times are the same (the same RC-circuit controls both, so tau is the same), but the circuitry that follows ENV1 leads to a different audible result. ENV2 does not have a diode following its circuit, so this caveat only applies to ENV1 and the VCA.

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1 Attack

Sets the amount of time the envelope signal needs to reach maximum.

ENV1 ranges from 4.36ms - 7.36s

ENV2 ranges from 4.10ms - 7.57s

2 Decay

Sets the time during which the envelope signal falls until it reaches the SUSTAIN level. If a key is released before the sustain level is reached, the envelope continues to 0 with the same time.

ENV1 ranges from 5ms - 26.5s

ENV2 ranges from 5ms - 21.5s

3 Sustain

Sets the signal level at which the signal remains after completing the (first) decay phase.

ENV1 ranges from -34.3dB - 0dB

ENV2 ranges from -36.03dB - 0dB

4 LFO1

Sets the speed of the Low Frequency Oscillator (LFO) 1. The Oscillator can be assigned to modulate different destinations via the main UI or the Modulation Section. LFO1 is affected by TMT. When TMT is enabled each voice has its own LFO1 with slightly different properties – just like a hardware would have.

Ranges from 0.07Hz – 53.9Hz.

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LF02

This LFO has some more features than LFO1 and is not affected by TMT. This allows for a very clean modulation.

1 Sync

Enables host tempo synchronization.

2 Retrigger

Determines whether a key press retriggers LFO2. If enabled, LFO2 phase is reset when a voice is retriggered. In monophonic mode this happens when not playing legato. When playing polyphonically this happens when a voice is newly triggered.

3 Rate

The rate parameter sets the speed at which the LFO2 oscillates. If the Sync switch is set to „ON“ the frequency can be adjusted in relation to the host tempo.

Ranges from 0.05Hz to 50Hz (when not synched to host)

Ranges from 4/1 to 1/32 triplets (when synched to host)

4 Waveform

Selects the waveform for LFO2

Possible selections are: SINE / SQUARE / SAW

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Effects Section

Having a huge portfolio of different audio processors, we decided to give you smaller versions of some of the best of these effects.

The effects section can be globally enabled and disabled by clicking the power button next to “FX”.

Please note that this will bypass all effects regardless of their individual state and that this is not saved within a preset. In other words, by disabling the effects section, it will stay disabled even when you browse presets. This helps you in case you want to use an external chain of effects.

The signal flow through the effects section is left to right and the order of the effects is variable. By simply clicking the effect name and dragging it into a different spot, you can alter the signal flow to your liking.



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1 Digital Delay

Modelled after a classic bucket brigade delay this is a rich addition to your sound.

You can sync the delay to your host if desired, this setting ranges from 1/32 to 2/1 including triplets (T) and dotted notes (D). The filter is a low pass when the knob is turned counter-clockwise from the center position and a high pass when turned clockwise.

You can choose between ping-pong style delay or a regular delay.

2 Mäg AIR BAND®

The iconic filter found in products as the Mäg EQ2, EQ4 or the MAGNUM-K compressor can help you add some extra Air into your sound.

Frequency: 2.5kHz, 5kHz, 10kHz, 15kHz, 20kHz, 40kHz

3 Reverb

Fitting the style of bx_oberhausen this is a classic reverb offering you anything from bathroom to cathedral.

Play around with room size and feedback to find the amount of reverb which fits your sound.

The Damping parameter allows you to dial in the harsh, cold sounds as well as soft and lush ambiences.

The hold function will keep the current reverb level for an almost infinite time. This allows for creating huge ambiences.

Make sure you activate the hold function at the moment you want to freeze the reverb state (not before you play). It is probably helpful to assign the hold function to a MIDI input like a button or pedal.

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1 Flanger

Modeled after the sound of classic Flanger pedals, this gives the bx_oberhausen an additional set of possibilities.

Speed can be dialed in both synchronized with your host tempo and free running. Enhance deepens the effect of the flanger.

2 Blue Chorus

Another Brainworx classic giving you the typical sound of a chorus stomp box.

3 Metal666

Don't let the subtle nature of this amp simulation fool you. It may start gently when Gain and Out are dialed in low, but the beast will be unleashed the further you turn both knobs towards 11 (or 10).

If you turn up both Gain and Out to give your sound that extra growl, please make sure you reduce the level in the main UI in order to avoid overloading your channel.

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Arpeggiator

The Arpeggiator can be switched on and off via the power symbol.

1 Arp Mode

The Modes are: As Played, Up, Down, Up & Down (without repeating the last note), Up & Down (repeating the last note), Down & Up (without repeat), Down & Up (with repeat), Chord and Random.

2 Octave

Select Octaves relative to the keys that are pressed. If more than one octave is selected, all selected octaves are played before repeating the pattern. Note that at least one setting has to be active.

3 Trigger

Legato: adding or releasing a note will not retrigger the Arpeggiator, while other notes are still held down.

Every Note: adding or releasing a note will always retrigger the Arpeggiator.

Hold: When enabled, all notes are held active – even after you release a key. In this way, more and more notes are added if you keep playing.

Tip: Try assigning your Sustain Pedal to the Hold function.

4 Clock

Divider: Selects the speed of the arpeggiator relative to the tempo in your host. Includes triplets (T) and dotted notes (D).

Swing: Adjustable swing factor for the Arpeggiator.

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Modulation Section

The modulation section does not have a general on/off switch. Instead, modulations can be enabled and disabled individually by clicking on the number above the modulation slot.

1 Modulation Sources

For each modulation you can choose between the following modulation sources:

Modulation Wheel, Pitch Bend, ENV1, ENV2, LFO1, LFO2, Velocity, Aftertouch, Keyfollow

Please note that LFO1 is different for each voice when TMT is enabled. This results in slight drift over time, which can result in a great vivid sound like you would experience with hardware. If this is just too much for what you are trying to achieve, consider using LFO2 or turning off TMT.

2 Modulation Curves

In order to give you more flexibility there are several Modulation Curves to choose from:

Linear, Parabolic, Squareroot, Sigmoid, Cubic
Make sure you give them a try as they will help you to find optimize the results when working with different source/destination pairs.

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1 Modulation Amount

Ranges from -100% to +100% and allows you to control how much the source influences the destination.

2 Modulation Destination

Select the parameter which you want to be influenced.

Choices are:

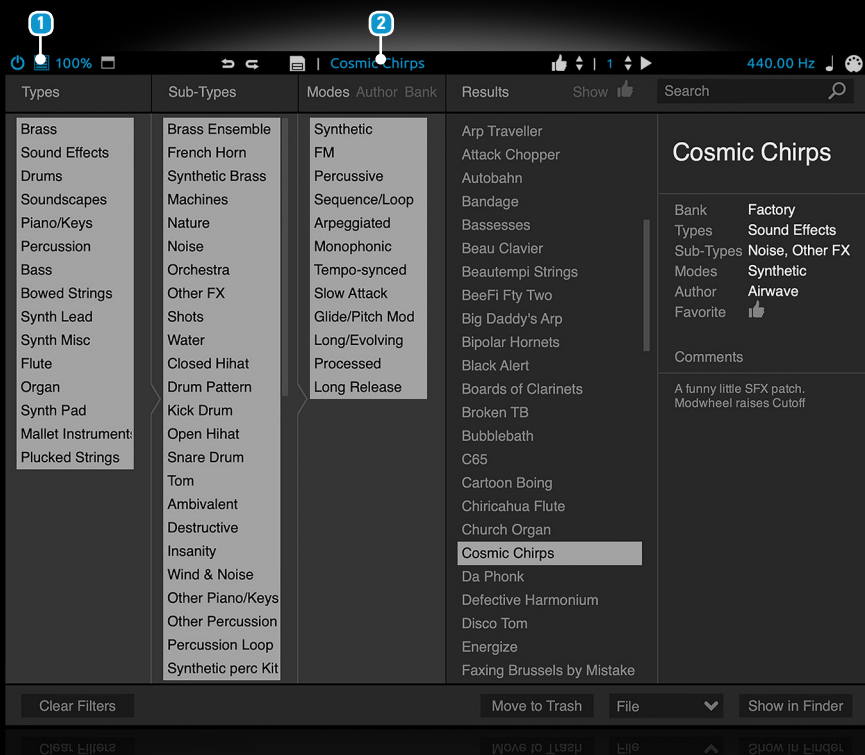
VCO 1/2 Frequency, VCO 1/2 Detune, VCO 1/2 Pulsewidth, VCO 1/2 Level, VCF Frequency, VCF Resonance, VCF Type, VCF M/S, LFO 1/2 Frequency, ENV 1/2 Attack, ENV 1/2 Decay, ENV 1/2 Sustain and Vibrato (VCO 1+2)

Please note that the Vibrato destination can be used for generating a vibrato effect on both VCOs e.g. by using the Modulation Wheel as modulation source.

LF02 is used to generate the vibrato. The LF02 Rate determines the speed while the modulation source in combination with the modulation amount determines the intensity of the vibrato effect.

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Preset Management

The bx_oberhausen preset management system is a file-based system. You can import and export presets as a single file per preset. This allows for an easy exchange of presets between users.

1 Preset Menu

The Preset Menu allows you to filter by Types, Subtypes, Modes, Authors and Banks. The Results column always shows you the list of matching presets for your selection. Use the “Show Thumbs Up” button to only show your favorites.

The column on the right-hand side shows you all the details of the selected preset at a glance. You can also quickly make changes to the preset details in this column.

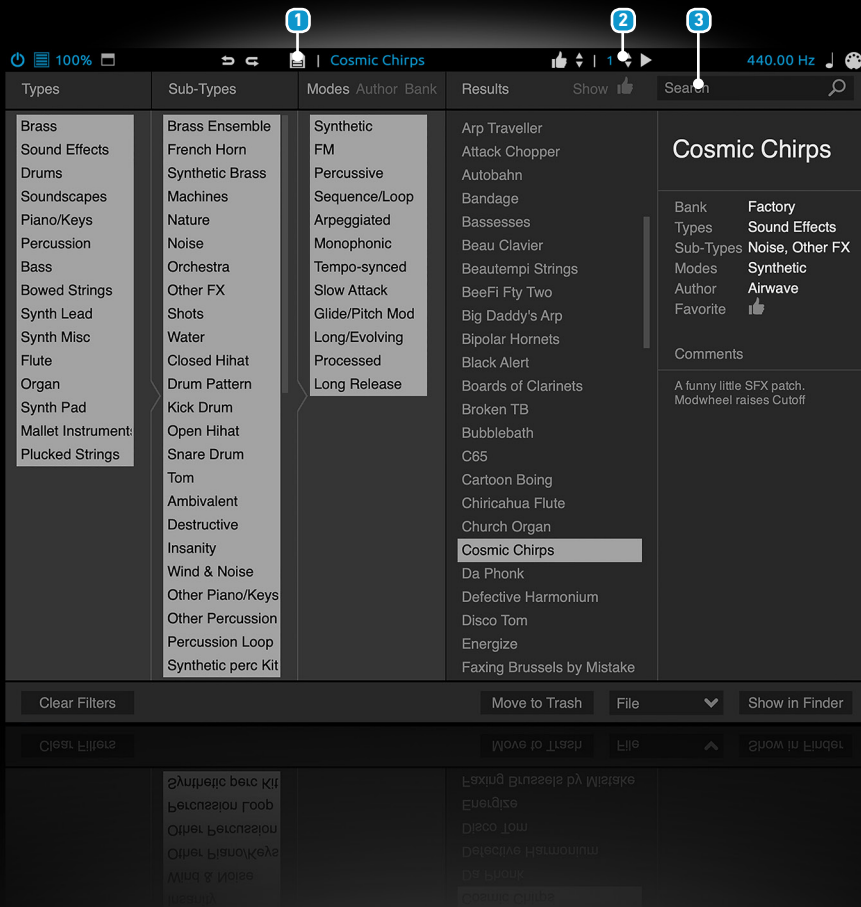
2 Preset Dropdown

The preset dropdown menu shows you several menu items. Each item holds a list of presets filtered by specific criteria. The “Current Filter” category lists all presets matching the criteria set in the Preset Browser.

On the right beside the menu is the “Thumbs Up” icon, which indicates your favorites. You can toggle “favorite” status by clicking on the icon. Next to this are up/down arrows for quickly jumping to the next preset in the category list you have chosen. So, if you for example choose a preset in the “Bass” category, the up/down arrows jump from one preset in this category to the next.

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1 Save / Overwrite Preset

Clicking on this button allows you to choose between overwriting or saving the current preset as a new preset. Saving a new preset opens a dialog giving you the possibility to fill in fields like author, type, bank etc. Please Note: It is possible to overwrite factory presets.

2 Preset Autoplayer

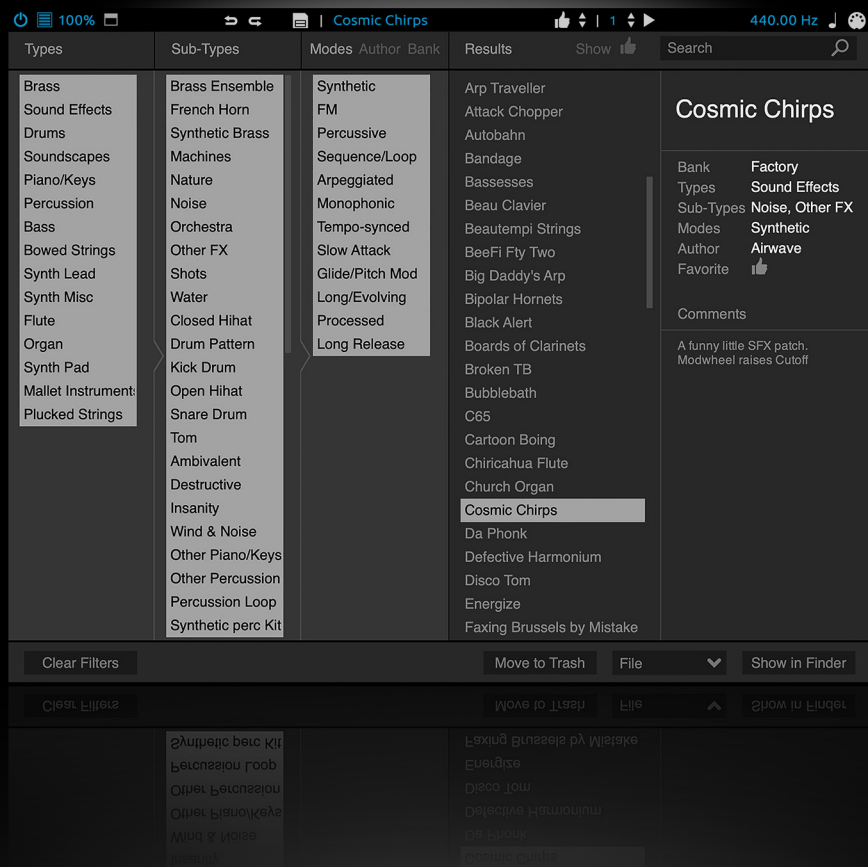
The Autoplayer allows you to set a number of bars and when you hit play, it uses each preset for the number of bars selected and then jumps to the next preset in the current category list. So, if you are looking for a nice pad, dial in the number of bars you would like to hear, select a pad from the "Synth Pad" category and hit play. This will jump from one pad to the next allowing you to audition presets without having to leave the keyboard. Use a matching loop in your DAW to audition presets in context automatically.

3 Search

Start typing and your results will immediately be filtered. The search goes across all fields (Types, Author, Bank,...), not only the preset names. This makes it a very powerful function for finding presets quickly.

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Parameter Locking

By right clicking any parameter on the bx_oberhausen it can be toggled into a locked state. This is displayed using a lock symbol for the chosen parameter.

Once locked, a parameter will remain set even throughout preset changes. So, once you have found a nice setting for a section of the synth you can lock it and browse the presets without changing this section. This will give you many new ideas for sounds and opens endless possibilities.

NKS compatibility

bx_oberhausen is fully NKS compatible.

Internally, bx_oberhausen uses the papreset format which is similar, but not exactly the same as the NKS file format. This is why presets need to be converted to be used in the other format. The Factory bank is already available for both preset systems. If you want to convert your own presets (or altered factory presets), just use the Export NKSF/Import NKSF functions found in the Preset Browser in the File menu.

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MIDI Learn

1 MIDI Learn Mode

By clicking on the MIDI Learn mode button in the top right corner, you can assign CC messages from your hardware controller to bx_oberhausen's controls. In this mode, a color overlay on each assignable control shows its MIDI assignment status. Unassigned controls are colored in blue, assigned controls are colored in green and the currently selected control is colored in grey. Clicking the MIDI Learn button again switches off the MIDI Learn mode.

MIDI mappings can be stored in two ways. They are saved within a preset and can additionally be saved as a file.

2 Assigning

To assign a MIDI CC to a control, select the control by clicking it. A small overlay window showing the parameter name appears. The next received CC message will be assigned to this control. The CC number is displayed below the parameter name together with a trashcan icon. Clicking on the trashcan icon will unassign the CC from the selected control. When you select another control, the control you just assigned will be shown in green, so you don't lose track of your assignments.

3 Resetting

Besides the trashcan icon, you can use the "Reset" button at the top of the synth GUI to unassign all midi CCs in one click.

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1 Reading

Use the “Read” button to load a previously saved controller assignment.

2 Storing

You can use the “Store” button to save the controller assignment in an .xml file. This is particularly useful if you use different hardware controllers, or if your controller has a limited set of knobs and faders and you want to focus on different parameters of bx_oberhausen in different scenarios.

In addition to saving a mapping as a file, they are always saved within a preset.

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A word on CPU usage

We have modelled the electronic circuit boards in a way which makes the bx_oberhausen a very accurate reproduction of the iconic, analog sound of the original iconic synthesizers. The technology we use to enable us to reach this level of accuracy produces what we think is the most “analog” sound which can be achieved using a plugin. This is vastly different from other technologies like sampling.

This is why a plugin like the bx_oberhausen (and any plugin aiming at a faithful reproduction) will need hardware resources (CPU, Memory). We have made sure that any somewhat modern hardware is able to run several instances of bx_oberhausen. If you run into resource problems, we recommend you lower the voice count – don’t let the simplicity of the interface fool you: when using 32 voices the bx_oberhausen calculates no less than 128(!) oscillators. And in case you are running at more than 48kHz sample rate, consider lowering it to 48kHz or 44.1kHz.

bx_oberhausen

Plugin Manual



Top Toolbar

1 Foldout

The foldout button extends or retracts the additional sections like Effects, Modulation and Arpeggiator.

2 Undo/Redo

You can undo and redo changes you made to the controls of the bx_oberhausen plugin at any time. The Undo / Redo will work for as many as 32 steps. This makes experimenting and tweaking knobs easy. If you don't like what you did... just undo it.

3 Global Tune

Adjust the global tuning of bx_oberhausen. The shown frequency corresponds to the note A4. Use this to adjust the tuning of bx_oberhausen to match other instruments.

4 Panic

Clicking this button will immediately silence bx_oberhausen and turn all notes off.

bx_oberhausen

Plugin Manual



Preset Credits

Factory Patches by [Plugginguru.com](https://www.plugginguru.com)

- John "Skippy" Lehmkuhl
- Laurent "Airwave" Véronnez



Further Patches by:

- Dan Alvarez
- Julius Dobos, www.forgottenfuturemusic.com / Creative Shop Music
- Andre Frauenstein, polysaw
- Nate Raubenheimer, Protoculture / Shadow Chronicles / Marula Music
- Ryan Farish, www.ryanfarish.com
- Ugly Drums, LDTRX/Faces Records & MCDE
- Daniel Rabe
- Andreas Schröder
- Christian Diehl



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