TWANGSTRÖM

SPRING REVERBERATOR

USER GUIDE

Version 1.0.2

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U-HE - HECKMANN AUDIO GMBH - BERLIN

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Introduction

Installation

Go to www.u-he.com/twangstrom, download the installer for your system (Mac or PC) and unzip the compressed file. Open the “Twangstrom” folder, start the installer and follow instructions. The only demo restriction is a mild crackling sound at irregular intervals after about two minutes of use, which disappears after entering a valid serial number. For more information including our terms of use, please refer to the “ReadMe” file that comes with the installer. Twangström uses the following directories by default (note that paths do not use the umlaut “ö”):

Windows

Presets (local)	*C:\Users\YOU\Documents\u-he\Twangstrom.data\Presets\Twangstrom*
Presets (user)	*C:\Users\YOU\Documents\u-he\Twangstrom.data\UserPresets\Twangstrom*
Preferences	*C:\Users\YOU\Documents\u-he\Twangstrom.data\Support* (*.txt files)

macOS

Presets (local)	*MacHD/Library/Audio/Presets/u-he/Twangstrom/*
Presets (user)	*MacHD/Users/YOU/Library/Audio/Presets/u-he/Twangstrom/*
Preferences	*MacHD/Users/YOU/Library/Application Support/u-he/com.u-he.Twangstrom...*

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For downloads, news articles and support, go to the u-he website
For lively discussions about u-he products, go to the u-he forum at KVR
For friendship and informal news updates, go to the u-he facebook page
For u-he presets (commercial and free), go to the u-he patch library
For video tutorials and more, go to the u-he youtube channel

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The Twangström Story

As a highly flexible and springy box-of-tricks, Twangström didn't jump out of nowhere! It grew out of the reverb unit in our **Bazille** modular FM/PD synth. So many Bazille users asked whether we could turn it into a standalone plug-in that we simply couldn't resist…

Twangström emulates a hand-picked selection of the most popular units you will find in classic guitar and instrument amplifiers. It recreates the odd character of real springs. The sparse echoic pattern and the upward 'chirp' create a special texture that preserves the rhythmic structure yet remains 'washy'. Its warm, metallic timbre is reminiscent of the early days of Rock & Roll, Surf music or Reggae/Dub. Whatever your tastes, Twangström certainly delivers a *blast from the past!*

As a faithful emulation of a **mechanical** device, Twangström needs to be handled well. Many of the technical parameters are adjustable in real time, and these can be controlled via MIDI and/or the built-in LFO and envelope generator. Complete with a multimode resonant filter, Twangström is a unique and powerful tool that can deliver highly unusual, evolving textures… especially when the signal is being tossed around using the modulation matrix!

The Reverb Tank

Often referred to as a 'tank', spring-reverberation units typically comprise two or three metal springs suspended in a long metal case and excited by electromagnetic transducers: The principle is similar to that of loudspeakers, with a spring instead of a membrane. Sound waves travel along the spring to the opposite end, where another transducer converts the mechanical energy back into an electronic signal. Although a lot of the energy is reflected at both ends, the system-inherent mechanical damping ensures that the reverberation effect fades out naturally.

Several springs often share a transducer pair. In such systems, the transducer houses each spring's cylindrical end-stop magnets, distributed evenly within the air gap (and enclosed by the laminated core, a stack of thin magnetic iron plates). Sharing a transducer pair minimizes mechanical and electric complexity, but the signals can only be treated as a whole.

Units that are capable of operating in stereo (like Twangström) require multiple transducers, and are therefore quite rare. Some stereo systems even used two complete tanks for this purpose.

Transmission springs follow a principle physicists call the "spring-mass system", and you might recall classroom experiments in which a weight was attached to a hanging spring, making it oscillate at a specific frequency. Apart from the external mass, the physical properties of the spring (material, length, wire gauge, number & diameter of coils) have a significant effect on the vibration and audio transmission. The longer the spring, the lower the frequency at which it oscillates. Longer springs also decay more slowly than shorter ones, as more windings can accommodate more kinetic energy.

Typically, multiple springs are chosen as differing delay times create more dense reverb. Length ratios based on prime numbers also help by strictly avoiding any repetitive echo patterns.

In a reverberation tank, the rigid suspension mounts at both ends act as a constant mass, thus damping the spring's energy. However, some energy is transferred to the other parts of the unit. In a multi-spring arrangement, all springs share a common mounting plate, so vibration becomes an interactive process. As a result, springs interchange their wave fronts and the sound becomes more 'washy' with each reflection.

If there were no mechanical coupling, a minimum (static) density could be achieved by choosing suitable delay times, but there would be no buildup of echoic complexity. In real tanks a certain degree of coupling is always present, so we made it switchable in Twangström.

In some units the echo-density buildup has another cause: the division of each spring into two shorter segments. For instance, at first glance the popular *Accutronics Type 4* tank appears to be two springs, but it is actually four: Each sub-system is a pair of springs with a small joint in the centre. What happens there is pretty much the same as what happens at the suspension end of normal systems: Waves are partially reflected while most of the wavefront is passed on to the next spring. These joints seldom divide the two springs perfectly, and this fact helps spread the echos around, making the reverb tail more diffuse.

The Rights and Wrongs of Spring

No other reverb type sounds quite like a spring. Not even a plate, and for one simple reason: the speed of sound! Investigating the cause might not be that easy, and perhaps you should read up on *rotational transverse waves*… but it's probably more than enough to know that a wavefront's **low-frequency** partials excite more coils than do the high frequencies, hence the latter travel for much longer through the length of each spring without losing as much energy…

This has two interesting effects: First, impulses create a "chirpy" or "splashy" component, which sounds a bit like dropping something into a bathtub. Although often compared to plate reverbs, springs sound very different – in fact the behaviour of frequencies over time is the inverse.

Secondly, the higher propagation time of treble signals tricks us into thinking that a spring always has a "dark" quality. Sure, mechanical damping and loss effects through the transducers play a role, ensuring that spring tanks rarely carry significant content over 5kHz, but the way we perceive sound according to *arrival of frequency components* is important, too. Especially when trying to judge whether it sounds "metallic" or "organic". Funny how these guys swing between those properties so freely, depending on the source audio. And it gets even funnier if you…

… **shake it up**!

The stage is plunged in darkness just before the show. The guitarist walks on, trips over some cables and falls into the amp. From the audience's perspective, the unholy racket emanating from the abused spring tank is pure drama! If you're more into the subtle side of performance comedy, try using the "Twang" feature: Same bang, but also works over MIDI (as opposed to guitarists).

The springs inside a real tank usually sit on a bed attached to the outer casing via short, rigid springs. Designed to have no effect on the sound, the suspension system is only meant to stop extraneous vibration from exciting the interior of the tank. That usually works fine, but beyond a certain point (here: our stumbling guitarist), things can get out of control. The suspension can't quite cope with the forces. The springs smash into each other, and multiple collisions create a chaotic, shattering noise.

Tip: In Twangström, you can use this not only for the occasional burst of noise, but by applying just a little continuous "Twang" modulation you can make the reverb sound more lively.

Operation

Values are adjusted by clicking and dragging vertically. For fine control, hold down a SHIFT key beforehand. Alternatively, you can hover over any control and roll your mouse wheel. Double-clicking on any knob will reset its value to a sensible default.

To guarantee that the value of a parameter doesn't change whenever you switch presets, use the **Lock** function. Right-click on any control and select the last entry (often the only entry) from the context menu. Note that a locked parameter can still be adjusted manually.

Control Bar

Along the top, either side of the data display, the **Control Bar** hosts a number of global elements:

BYPASS

Connects the input directly to the output so that the audio signal is not processed. Although the status of the BYPASS button is not saved with each preset, it can differ per instance.

Undo / Redo

The pair of curved arrows let you step backwards or forwards through your edit 'history'. Note: Undo even works if you happen to select a new preset by mistake before saving your edits.

Data Display

The display field in the centre normally shows the name of the preset. While a parameter is being edited it shows the name and value of that parameter. Simply moving the mouse pointer ("hovering") over a control also displays its value.

You can also load presets here: Click on the small arrows to step through them or click on the centre of the data display to open a drop-down list (for the current folder only). Of course Twangström also features a complete browser – see the Preset Browser chapter.

MIDI Indicator

A small MIDI activity indicator flashes whenever Twangström receives MIDI messages. For information about how to route MIDI into effect plug-ins such as Twangström, please refer to the documentation of your host application.

KEY CTRL

Key Control is an experimental feature. Work in progress!

Activate, then click a control or navigate using your cursor keys. Type a value, confirm with Return. For negative values, type minus (-). Increment/decrement via plus (+) and minus (-), hold a Shift key for finer steps.

Reset to the default via Backspace. The system copy/paste and undo/redo shortcuts also work. Video walkthrough: https://www.kvraudio.com/forum/viewtopic.php?t=611856.

PRESETS

Opens the browser (see the Preset Browser chapter)

SAVE

Opens a dialog box in which you can enter some helpful text before finally storing the preset with the 'Apply' button. If you can't see your newly saved preset in the currently selected folder, check the status of the preference Save Presets To.

Right-click on the SAVE button beforehand to specify the format. The standard is *.h2p*, which has the advantage of being cross-platform compatible. The *.h2p extended* format is the same but also lets you add comments to each line. If you loaded the VST version of Twangström you will also see the option *.nksfx* at the bottom of the list – see the NKS chapter.

u-he badge

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Configuration

Clicking on the **cogwheel** icon at the top right opens the configuration pages where you can set up MIDI remote control and specify global preferences (e.g. GUI size). See the Configuration chapter for details.

Main Panel

Input Parameters

INPUT

-24.00dB to +24.00dB. Like a real spring reverb unit, Twangström's "circuitry" is sensitive to input levels: Adjust INPUT like you would adjust your instrument volume before an effect. The green saturation indicator turns red whenever clipping occurs. See also OUTPUT below.

DRIVE

This parameter sets the amount of saturation applied to the signal before it is sent through the springs. DRIVE emulates dual-stage analogue soft-clipping circuitry similar to guitar overdrive pedals. The amount of added saturation/overdrive is displayed by the red LED next to the DRIVE knob. Between the two stages is a tone-control network…

TONE

The tone network resides within the drive stage, so the two controls are interactive. TONE is basically a tilt filter like the single knob on old car radios. At minimum, bass frequencies are enhanced while upper mids and treble are dampened (at maximum, the effect is the opposite). Positions between 12 and 3 o'clock help retain clarity for most audio sources.

Please keep in mind that the tone network is unable to compensate for the natural treble loss caused by the reverb tank, so 'treble' here means roughly 1 to 4kHz. The same applies to the bass enhancement: the tank's output transducers will naturally limit any low-end ‘swing’, so 'bass' here means boosting or cutting frequencies around 100 to 150Hz.

Filter Parameters

Twangström includes a simple yet effective 12dB per octave multimode filter. This is great for sound-design, as the combination of dynamic filtering and spring reverb lets you create tonalities that go way beyond traditional “Surf guitar” etc..

ROUTING

The filter can be applied either before (PRE) or after (POST) the reverb tank. Its location within the signal path becomes more important when settings deviate from a flat frequency response.

Although the filter always defines the overall bandwidth of the reverb tank, its routing plays a significant role whenever filter parameters are adjusted or modulated.

BLEND

Whereas most filters offer distinct operation modes e.g. lowpass or highpass, this one can blend between lowpass and highpass as well as notch or bandpass (BP), with soft transitions in between. Its only restriction is that the middle position must be either notch or bandpass. Select the blend by clicking on the orange label above the knob.

FREQUENCY

This knob controls the all-important **cutoff** frequency. As with many other u-he products, the unit displayed corresponds to MIDI notes, hence the knob follows a logarithmic scale.

STEREO

This knob sets a frequency offset (measured in MIDI notes) between the left and right channels. This way, filtering can be stereophonic for more drastic or interesting effects – especially when filter parameters are automated or modulated internally (see the modulation matrix below).

RESONANCE

Filter quality aka 'Q'. For LP (lowpass) or HP (highpass): the higher the resonance, the narrower the area around the cutoff frequency, resulting in a sharper tone at that frequency. For NOTCH the reverse is true: Because increasing the resonance *narrows* the notch around the cutoff frequency, more prominent notches are achieved by setting RESONANCE *lower*.

Tank Controls

The elements in the upper half of the central display plus the DECAY, TENSION, DENSITY, COUPLING and BRIGHT controls are used to set up the behaviour of the reverb tank.

Twangström reverb is “physical modelling”. As opposed to plug-ins based on impulse responses (IR), which have limited expression and control, our approach mimics the *physics* of mechanical reverberation. By simulating the wavefront travelling through a medium we can include all the nice (as well as the not-so-nice) aspects of excitation, reflection, dispersion, interference and other audio properties. Twangström does not mimic the sonic result, but simulates the physical device. This means that all dimensions of the device are controllable in realtime, on a per-sample-basis – which all boils down to quite some power at your fingertips!

We modelled three different reverb units by analysing the most prominent tanks in guitar amplifier history. The available parameters revolve around each model’s unique base delay configuration and typical sonic fingerprint, but the characteristics can be enhanced further.

The following tank types are available (click on the name):

Type

Click on the field at the top to select one of the following:

2 Springs – Type 4	Loosely based on the mechanical properties of a large dual-spring tank like those in Hammond organs and Fender Twin amps. Pairs of springs are hooked together in the middle to make the effect more complex. This is the sound most people associate with spring reverb – a distinct splashy character with perceivable echos.
3 Springs – Type 8	Inspired by the shorter tanks found in some Marshall amps. The springs are not split. Dense, rather mid-centric, with less of an echoic “boing”.
3 Springs – Type 9	A hybrid of the other two types: Long, with three split springs. Sounds open, with more echos, better behaved overall.

SHAKE (the central ring)

Hitting your computer won't make Twangström shatter, so we added an element you can "twang" with the mouse. If you modulate *Tank* / *Shake* even slightly, everything comes to life. For instance, try modulating Shake with the envelope so that transients excite the springs.

DECAY

This sets the amount of 'damping' the underlying model applies to the process. A dampened spring attenuates reflections at both ends, hindering the signal from being reflected back into the spring. The sound disappears faster, starting with the high frequencies. High Decay values result in little dampening and vice versa: So if you want a longer reverb tail, crank this up!

TENSION

The tension of a spring affects the time it takes for a sound to traverse it completely, and also affects the timbre. The springs in a real tank have a fixed tension determined by physical properties such as the thickness of the wire, its coil diameter and length. The Tension control in Twangström goes from "very sloppy" to "super-tight", and this completely changes the sound. Turn it down for less tension / longer echo times, which makes things bigger. Turn up for smaller acoustic spaces, with increased resonance and a more "tense" character.

Note: To the right of each spring you will see the delay time and corresponding pitch (as MIDI note and cent offset) – watch those values change as you adjust the Tension. If you would like to simulate the **echo patterns** of classic amp hardware tanks, try setting Tension to -33%, as the result is close to the popular 33ms, 37ms and 41ms delay times (for Type 4 and Type 8).

DENSITY

A tank's spring can consist of two shorter springs connected by a joint (Type 4 and Type 9), or single springs only (Type 8). Both variants allow reverb buildup by smearing a signal's impulse response over time, but the buildup is faster in systems with joints.

Springs allow low frequencies to travel faster than high frequencies. This effect propagates as the springs continue spreading echoes around. The Density knob determines how pronounced this *dispersion* is in each spring. It also controls echoic "smear".

COUPLING

While density is a parameter entirely *within* a spring or series of springs, Coupling connects them (as a single unit) to the outside world.

Coupling in the OFF position prevents each spring system from affecting its environment. As a result, the sound you hear is just the sum of its components, at equal levels.

Coupling in the ON position makes the springs exchange signals at the ends: part of the energy arriving at one end is not reflected, but is passed on to the suspension mount and from there to another system (or several, in the case of multi-spring tanks). At the same time, noises from outside are picked up. There is a permanent give-and-take of kinetic energy. This has the effect of quickly spreading echoes that were previously uncorrelated, rapidly increasing the density of the reverb tail. It becomes a wash of sound much faster than if it were switched off. While this behaviour can be desirable for many reverb applications, some situations explicitly call for an echoic pattern. We could have boldly labeled the switch positions DUB and EDM, but we prefer to encourage unbiased usage!

BRIGHT

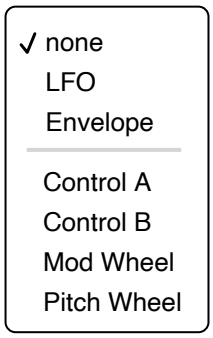
By default, Twangström downsamples the tank part to a fraction of the project's sampling rate, and processes the springs at a rate of 11-12kHz. In most cases, this is more than enough to provide a convincing reverberation effect, and it is relatively light on the CPU. Most real-world tanks don't have extensive treble contents either, and many of them cut off the audio quite abruptly above 4-5kHz, so Twangström is generally in good company here.

However, real tanks can reveal more “sparkle” above 5kHz, and these frequencies can be audible even at low amplitude (e.g. -25dB). So whenever you want some extra sparkle, switch BRIGHT on and Twangström will double the tank’s internal sampling rate (normally 22-24kHz). This may provide a more detailed, brighter top end, but please remember that it comes at a price: the CPU load will increase by about 30% per instance of the plug-in.

Amp Modulation

The bottom of the central display lets you modulate the level of either input to the reverb tank, or its output. Note that this is different from modulating MIX, which would also affect the dry signal.

SOURCE



Click on the darker field to open a menu. As well as Twangström’s own LFO and envelope, the list includes the MIDI keyboard sources *modulation wheel, pitch wheel* and two user-definable “MIDI CC” sources called Control A and Control B (see the Preferences).

TARGET

Whether the amplitude modulation is applied to the input or the output of the reverb tank.

DEPTH

Bipolar amount control for amp modulation (i.e. you can set negative values).

Output Parameters

WIDTH

Real-world spring tanks usually have 1 input and 1 output: The send & receive transducer pair typically treats all spring systems as a single mechanical entity, resulting in a monaural signal.

Twangström works a bit differently here: we simulate each spring system together with its own, dedicated pair of transducers. This means that we can keep the individual sources and their reverberated images separate.

Setting Width to 0 means that all signals are summed to mono, while 100% means fully stereo. The latter is dependent on the tank type:

2 Springs – Type 4	spring 1 fully left, spring 2 fully right
3 Springs – Type 8/9	springs 1 and 3 fully left/right, spring 2 in the centre

Why does the knob go up to 150%? Width above 100% further enhances the stereo field. In this section, Twangström uses M/S (mid/side) processing, and by weighting the mid & side signals differently, it can create a wider perceived image than normal stereophonic. Mind you, this doesn't work in all cases: often the audio and the settings benefit greatly from the widening effect, but sometimes it might even cause some discomfort. On the other hand: isn't this whole deal about leaving the “lush, transparent audio” comfort zone?

Mono or intermediate settings often have a great impact on complete mixes when several instances of the plug-in create different spaces for each track, especially in conjunction with the DAW pan / balance controls.

MIX

This knob sets the final ratio of dry/unprocessed vs. wet/reverberated signal. 100% means fully wet, and this is where you might set it whenever Twangström is used on an AUX track. Should you instead decide to put it on a track's insert slot, adjust MIX to taste. Often very low values can already create pleasant ambient effects, especially with percussive signals or particularly sensitive sources such as clean guitar.

Spring reverberation is one of the more “invasive” effects types, and it can be rather dominant when sculpturing sounds. Its unique character is simultaneously a blessing and a curse – the latter when you are trying to make tracks blend.

For this reason, fine-tuning, the MIX behaviour is non-linear: fine adjustments at either end of the range are not as drastic as they would be with linear scaling.

OUTPUT

This sets the final output gain, which includes the mix setting and everything along the way. You should keep an eye on the overload LED: Whenever that indicator blinks, the Soft Clip button is your friend…

SOFT CLIP

This engages a soft-clipping stage at the final output, gently rounding off peaks that would otherwise exceed 0dB. If used sparingly you can treat it as a *set-and-forget* switch. Of course there’s nothing stopping you from “misusing” this feature, and cranking up the output gain can certainly deliver some massively fat saturation!

Lower Panel

The whole of the lower panel is dedicated to modulating the parameters described above. It's all about mangling the audio in wild and (hopefully) beautiful ways!

Envelope (ENV)

Twangström constantly tracks the input signal levels and creates a corresponding control signal which is available in the modulation matrix as well as the amp modulation section.

SOURCE

IN	The regular input signal.
EXT	An external (sidechain) signal provided by the host application. Feeding extra sidechain signals into plug-ins is handled differently by each specific host – please consult the appropriate documentation.
OUT	The processed signal is fed back from Twangström's output, which allows for more complex textures and more interactive modulation.

MODE

EF	Simple envelope follower. The ATTACK and DECAY knobs control smoothness.
AD	Attack / Decay. Once the source level surpasses the THRESHOLD (see below), it rises to maximum at the rate set by ATTACK (see below), after which it falls back down to 0 at the rate set by DECAY (see below).
AR	Attack / Release. Once the source level exceeds the THRESHOLD it rises to maximum at the rate set by ATTACK, and is sustained there until the source drops below the THRESHOLD, when it falls back down to 0 at the rate set by RELEASE.
CYC	Effectively a 2-stage LFO. Like AD, but continues to cycle through the ATTACK and DECAY until the source level drops below the THRESHOLD, whereupon it falls back down to 0 at the rate set by DECAY.

THRESHOLD

Does not appear in EF mode. This determines the level at which “everything happens”. Watch the LED bar to the right of the knob: When the source level hits the threshold, the green LED indicates that the circuit is triggering. If nothing is happening, try lowering the Threshold.

ATTACK

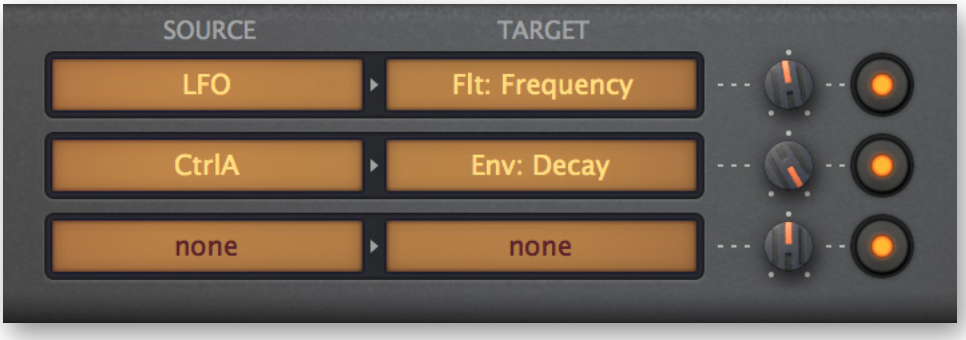
The time the envelope needs to rise from 0 to maximum. Higher values mean longer times.

DECAY / RELEASE

This knob sets the time the envelope needs to fall from maximum to 0. The actual behaviour (and the label itself) depends on the selected MODE – see above.

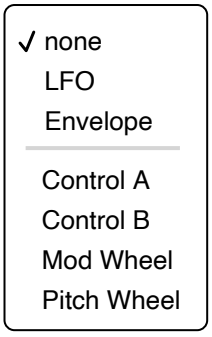
Modulation Matrix

Apart from the hard-wired *amplitude modulation* mentioned above, Twangström has three general purpose modulation slots for any kind of realtime control of internal parameters.



SOURCE

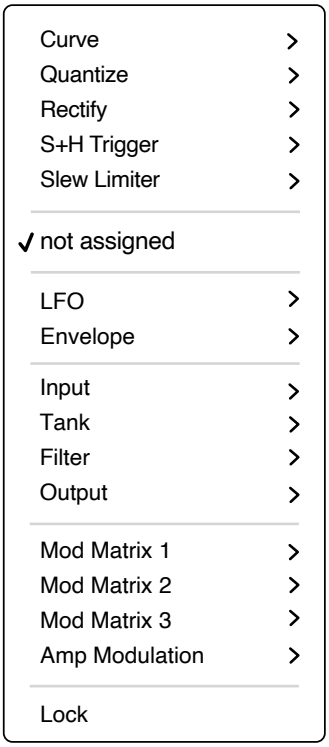
The left selector specifies a modulation source: Click (either left or right) to open the menu:



As well as Twangström’s own LFO and envelope, the list includes the MIDI keyboard sources *modulation wheel, pitch wheel* and two user-definable “MIDI CC” sources called *Control A* and *Control B* (see the Preferences).

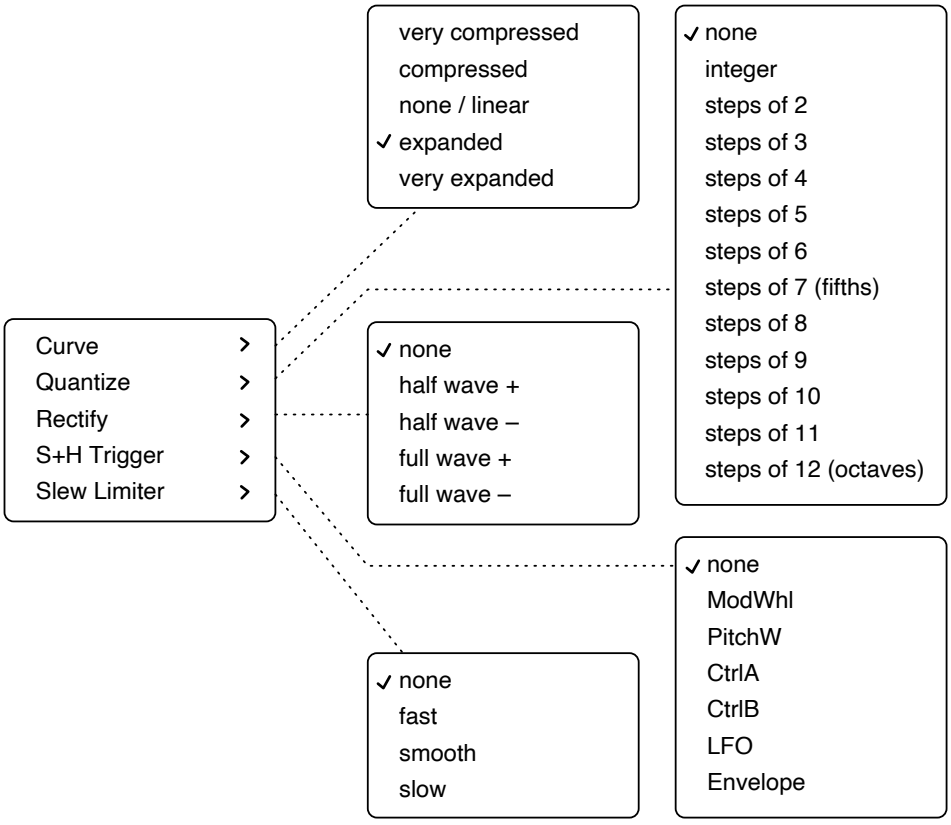
TARGET

The easiest way to make an assignment is via “drag & drop” from a target selector to any of the knobs (or even the Twang control). Alternatively, right-click on a target selector to open a menu containing all possible target parameters sorted into submenus:



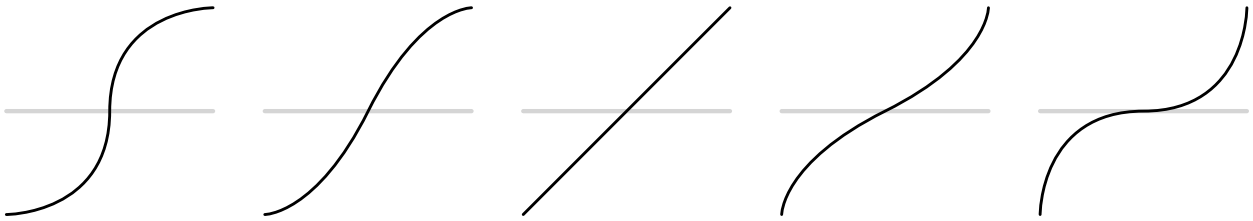
Slot Modifiers

At the top of the target selector **menu** are five functions which can be used to modify the shape of the modulation signal, individually for each slot. For fearless experimentation only!



Curve

These options map the source onto an s-curve, like a waveshaper for modulation signals. A bipolar ramp, for instance from the LFO, could be transformed into one of these curves:



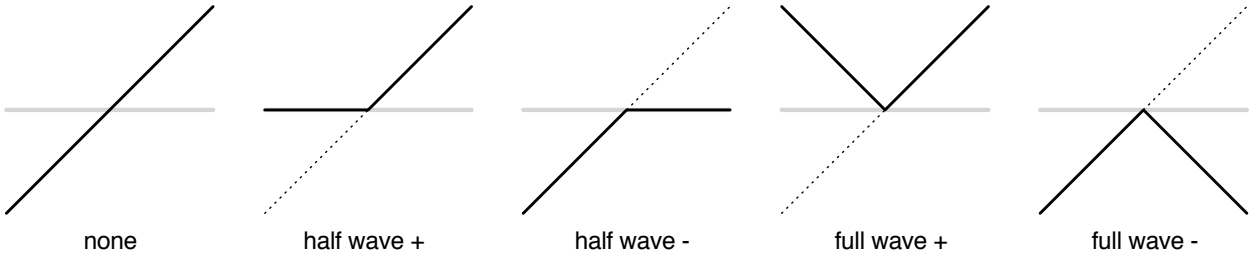
Unipolar modulation sources such as the envelope or modulation wheel only use the top half of the curve. For instance, if you want the mod wheel to have a very subtle effect when only pushed a little but still deliver the full effect when pushed all the way, choose *very expanded*.

Quantize

After applying a curve, the modulating signal can then be forced to adopt discrete values. The *integer* setting makes the modulation typically steppy, while the *steps of 12* setting transforms bipolar sources into maximum 5 values (unipolar = maximum 3) including zero. Note that quantization is applied to the source signal before the modulation depth, so a lower modulation depth value will often mean fewer steps: If you quantize the LFO to steps of 12, there will be no modulation at all unless you turn the depth up to at least 25!

Rectify

Either half-wave or full-wave rectification, in positive as well as negative versions.



This example shows how a bipolar ramp wave would appear after rectification. Tip: Applying full wave rectification to a triangle (e.g. from the LFO) effectively doubles its rate.

none	no rectification
half wave +	removes negative values
half wave -	removes positive values
full wave +	folds negative values up
full wave -	folds positive values down

S+H Trigger

Whenever the signal you select here crosses zero in the positive direction, the modulation source will be sampled and held i.e. stepped.

Slew Limiter

The Slew Limiter smoothes out any sharp changes in the input signal. The options are *fast*, *smooth* or *slow*.

Modulation Depth (unlabeled)

The amount of modulation. This knob is bipolar ("centre zero") – negative settings multiply the source with a value between 0 and -1.

Active (unlabeled)

Modulation assignments are set active by default. Press this button to temporarily disengage the modulation assignment, thus saving you from having to turn the Depth down every time you want to check the effect of modulation.

Low Frequency Oscillator (LFO)

TIME BASE

The basic 'speed mode', this parameter offers absolute i.e. non-synchronized times measured in seconds (0.1s, 1s or 10s) as well as a long list of values synchronized to the song tempo as specified by the host application. These include dotted times (50% longer) as well as triplets (3 in the space of 2). Modified by the RATE control.

WAVEFORM

Selects the shape of the LFO: Sine, triangle, saw up (ramp), saw down, square high-low, square low-high, stepped random (rand hold), and smooth random (rand glide).

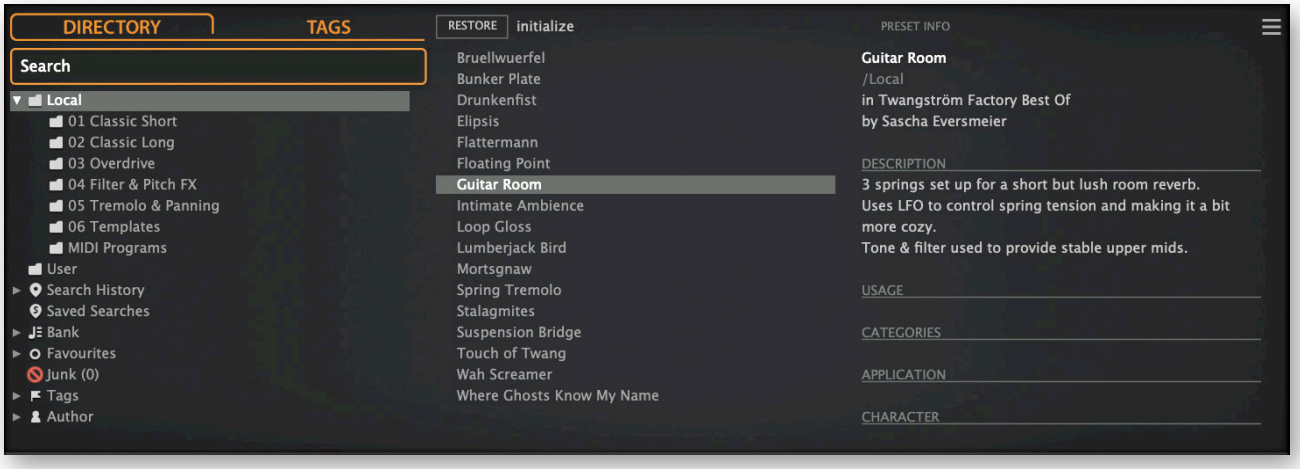
RATE

Shifts LFO speed relative to the Time Base.

Preset Browser

As mentioned elsewhere you can load presets by clicking on the data display, or step through them by clicking on the arrow symbols. However, Twangström also includes a preset browser…

Click on the PRESETS button and select the DIRECTORY tab to open this view:



Folders appear on the left, presets are listed in the centre and information about the currently loaded preset will appear on the right (PRESET INFO: the path, author, description etc.. won't appear until a preset is selected).

The 'Local' root contains a selection of presets copied from the 6 categorized folders. After loading one of them by clicking on its name, you can step through the others using your computer's cursor keys. If no presets appear in the central area, click on 'Local' or one of its subfolders. If you don't see a 'PRESET INFO' label on the right, click on the [≡] button (top right) and select *Show Preset Info*.

that's all you really need to know!

If you do decide to dig deeper, Twangström's browser offers many interesting features including a powerful search engine. For complete details, read the rest of this chapter.

Default preset

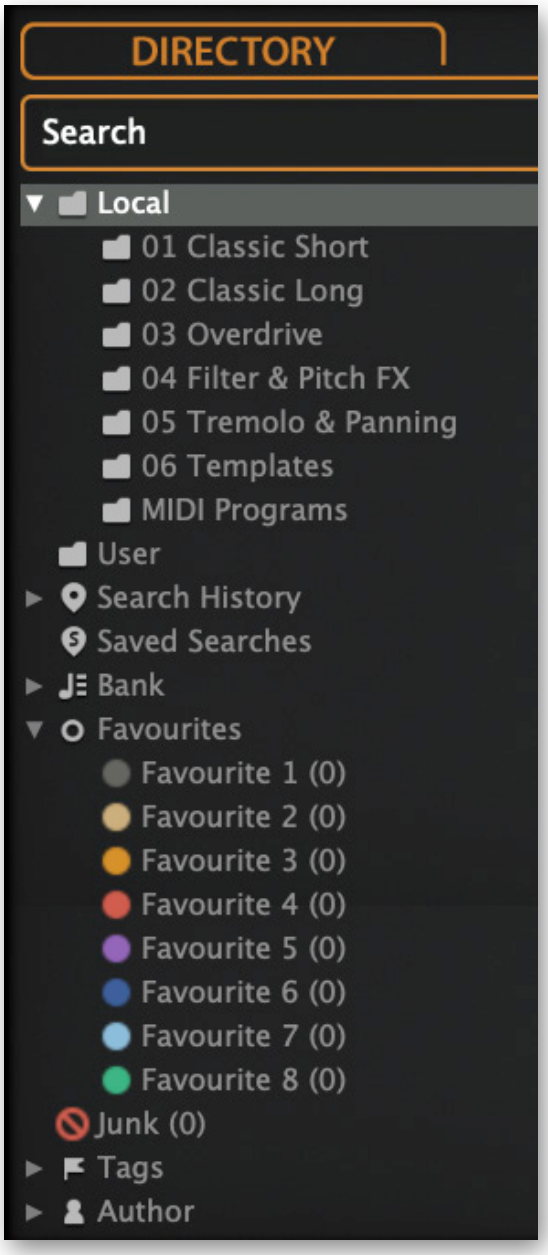
When a new instance of Twangström starts it checks whether the 'Local' root directory contains a preset called simply 'default', which is then loaded instead of the standard one. If you would like to change the default preset, make sure that the *Local* folder is selected and [SAVE] the one you want under the name "default". Note: Even if it exists, 'default' won't appear in the browser.

If a fresh instance of Twangström is not loading your new default preset, it probably landed in the 'User' folder instead of 'Local' – see the preference Save Presets To.

Directory Panel

If the DIRECTORY tab is selected you will see the following folders:

Local



Twangström's factory presets are sorted into subfolders within 'Local'. It's worth finding out where the 'Local' folder resides on your computer: Right-click on 'Local' and select the function *Open in Finder / Explorer*. Tip: It is best not to touch the contents of the 'Local' folder, but to put your own creations as well as any 3rd party soundsets in the 'User' folder.

MIDI Programs

The 'Local' root also contains a folder called 'MIDI Programs' which is normally empty. When the first instance of Twangström starts, all presets (up to 128) in this folder are loaded into memory so they can be selected via MIDI "Program Change". Note: Some hosts route all received MIDI data directly into effect plug-ins by default, while others expect you to set this up yourself. For information on how to do this, please refer to the documentation of your host / DAW.

As the presets in MIDI Programs are accessed in alphabetical order it is best to rename them, prefixing each one with an index. For instance "000 rest-of-name" to "127 rest-of-name".

Unlike regular presets, MIDI Programs cannot be added, removed etc. on the fly. Any changes are only updated after the host has been restarted.

MIDI Programs can contain up to 127 sub-folders (of 128 presets each), switchable via MIDI 'Bank Select' (CC#0) before the Program Change message. 'MIDI Programs' is bank 0 and any sub-folders are addressed in alphabetical order starting with bank 1.

Whenever Twangström receives a MIDI Program Change message, it will display the bank and program numbers to the left of the preset name (e.g. "0:0" for the first preset in the first bank). In certain hosts, however, the first bank / preset is designated "1" instead of the correct "0".

To avoid another possible source of confusion, please make sure that there are no *junked* presets in the MIDI Programs folder: All files there are addressed, even those that are hidden!

User

The best address for your own creations as well as presets from other sources. You can either select ‘User’ immediately before saving, or set a global preference ensuring that it will always be saved to this folder (or a sub-folder) – see the preference Save Presets To.

To view in a system window, right-click on ‘User’ and select *Open in Finder / Explorer*.

Smart Folders

The other top-level folders don’t actually contain files, but the results of querying a database. The content is therefore dynamic; it will change whenever the underlying data changes.

> You can drag & drop any smart folder content onto e.g. ‘User’ or the desktop (see External Drag & Drop) to create folders containing real copies of those presets!

Search History

Click on this folder to display the results of past searches (maximum 10). If you want the search results to be more permanent, right-click and select *Save Search...* – see below. To remove all searches from the list, right-click on the ‘Search History’ folder and select *Clear*.

Saved Searches

This folder contains searches that have been saved via right click from the Search History. To remove individual saved searches, right-click on the search and select *Delete*.

Banks

These smart folders reference metadata about preset origin – the version of the factory or third party library with which the preset was installed. See Preset Info a few pages down. Banks are predefined for factory presets.

You can create your own banks: Drag & drop one or more presets onto the ‘Bank’ folder then enter a suitable name into the dialogue box.

To remove Bank attributes from selected presets, either drag & drop them onto the ‘no Bank’ folder you will see at the bottom of the Bank list, or right-click on the Bank and select *Remove Presets from Bank*. Empty Banks will disappear.

Favourites

8 smart folders, one for each Favourite colour (1-8). See Presets context menu a few pages down. Only one Favourite colour/number can be set per preset. Presets dropped onto one of the ‘Favourites’ folders will be marked as such.

The Favourite status can be removed from all presets of one particular colour / index by right-clicking on the ‘Favourite’ folder and selecting *Remove All Favourite (n) Marks*.

Junk

A smart folder pointing to all junked presets. See Presets context menu. Presets dropped here will disappear from the rest of the browser unless made visible (via *Show Junk* in the Presets context menu). Like Favourites, Junk can be ex-/imported (as *Junk.uhe-fav*). See External Drag & Drop.

Tags

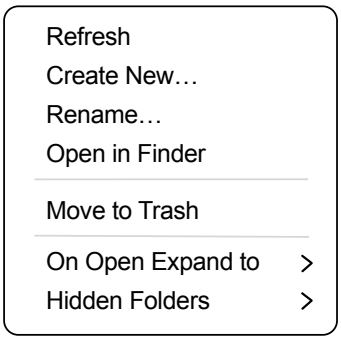
Smart folders for each *Category*, *Application* and *Character* tag. Presets dropped onto these folders will inherit the corresponding tag. Presets dropped onto the ‘Untagged’ smart folder will have all *Category*, *Application* and *Character* tags removed.

Author

Smart folders for each preset author. Tip: Instead of signing each of your creations individually you could sign just one of them then select and drag & drop them all onto your own author folder. As the process cannot be undone, please use this feature with caution! Right click on an Author to rename globally.

Directory Context Menu

Right-clicking on any folder within ‘Local’ or ‘User’ will open a menu:



Refresh

Update the browser contents (necessary for Windows users after altering any files in Explorer).

Create New…

Insert an empty subdirectory.

Rename…

Edit a folder’s name.

Open in Finder / Explorer

Open a system window for the selected folder. Hold option (Mac) or ctrl (Windows) to switch this to *Show in Finder* / *Explorer*, which highlights the folder instead of opening it.

On Open Expand to

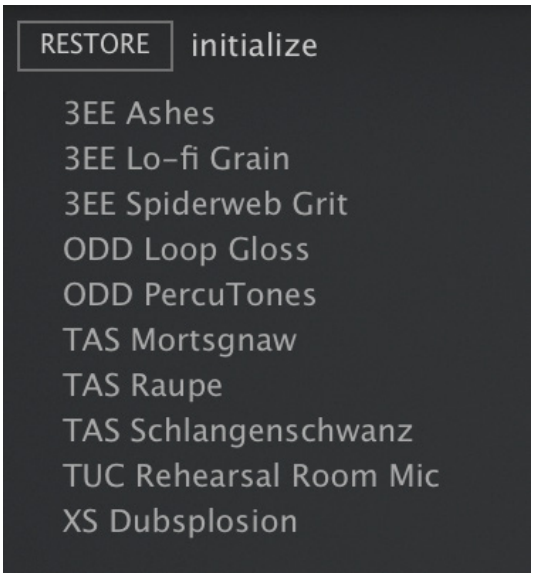
These options determine how deeply the browser will open subdirectories whenever the GUI is reopened or Refresh is called.

Hidden Folders

Select any smart folders you don't wish to see.

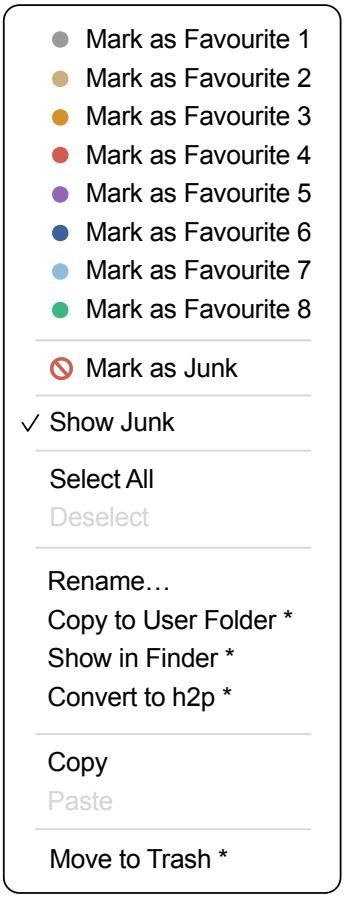
Presets Panel

The central, unlabelled area of the browser is where you click to load presets…



Presets Context Menu

Right-click to open a menu containing functions that can be applied to individual presets.



Mark as Favourite

Choose one of 8 Favourite marks. The selected entry will be replaced with *Unmark as Favourite*. You can remove the Favourite status from all presets of one particular colour by right-clicking on the 'Favourite n' smart folder and selecting Remove All Favourite (n) Marks. Note: As presets are referenced by name as well as their relative location, they will not retain their Favourite status when moved using Finder (Mac) / Explorer (Win) functions.

Mark as Junk / Show Junk

Instead of deleting unloved presets, mark them as 'junk' so that they disappear from the browser. Activate *Show Junk* to display junked files instead, marking them with a STOP symbol.

Select All, Deselect

See 'Multiple selection' on the next page.

Rename

Change the name of a preset using this function.

Duplicate / Copy to User Folder

This entry depends on the status of the preference Save Presets To and whether the source presets are in the Local or User folder. Selected presets are copied with an index appended to the name (like the Auto Versioning preference).

Show in Finder / Explorer

Opens a system window for the right-clicked file. In smart folders only, holding down an option key (Mac) or ctrl key (Windows) replaces this entry with *Show in Browser*, which shows the currently selected file in its original location within Twangstrom's browser.

Convert to native / h2p / h2p extended / nksfx

Converts the selected preset(s) to the format previously selected via right-click on the SAVE button. The nksfx option is only available in the VST version – see the NKS chapter.

Copy / Paste

Clipboard functions. Individual or multiple presets can be copied then pasted elsewhere, even between Twangström's browser and system windows (Finder, Explorer).

Move to Trash / Recycle Bin

This function moves all selected preset(s) to the system trash. Caution: This also works on files in smart folders i.e. the originals will land in the system trash.

Restore

While in the browser you can audition as many presets as you like without losing track of the one that was previously loaded: Clicking RESTORE will always get you back to where you started.

Multiple Selection

A block of adjacent presets can be selected via *shift+click*, and individual presets can be added to the selection via *cmd+click* (Mac) / *alt+click* (Windows). Presets can be moved to a different folder via *drag & drop*. To deselect, either click on a deselected preset or choose *Deselect* from the context menu.

Drag & Drop

You can drag and drop single or multiple files from the preset panel onto any folders in the directory panel. Files dragged onto regular folders will be moved unless you hold opt (macOS) or ctrl (Windows), in which case they will be copied instead. Files dropped onto smart folders will adopt the attribute of that folder: For instance, you can set the Author or Favourite status of several presets at once.

External Drag & Drop

To manage your preset library externally you can drag presets and folders between Twangstrom's browser and your desktop (or any system window). On the Mac most Finder operations will automatically update the browser. Updating might not be immediate when using multiple formats or multiple host applications, but all it usually takes is a click on the GUI or in the directory tree (sets focus to the clicked instance of Twangstrom). On Windows systems, a manual *Refresh* (see Directory context menu) will be required before changes to the contents of the browser appear.

Another little helper: If you drag a Twangstrom preset from e.g. your desktop and drop it onto the Data Display, that preset will be loaded (but not automatically saved).

Exporting smart folders

Drag any smart folder onto the desktop to create a new folder containing those presets. Drag an entry from your Search History, or the Category 'Filter', Favourites or one of the Authors.

Exporting favourite / junk status

You can export Favourite status, all at once or individually: Shift+click and drag the 'Favourites' folder onto the desktop to create a file called *Favourites.uhe-fav*. Similar for sub-folders: If you shift+click and drag e.g. 'Favourites 5', this will create a file called Favourite 5.uhe-fav.

The same method also works for Junk status, creating a file called *Junk.uhe-fav*. Such files can be imported into Twangstrom's browser on a different computer (for instance), via drag & drop onto or anywhere within the Favourites folder, or to the Junk folder.

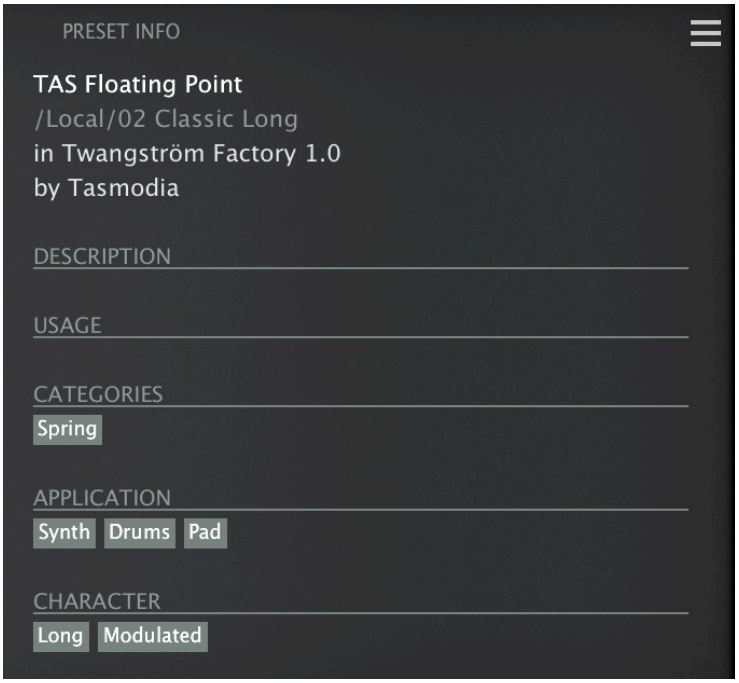
Note that importing *.uhe-fav* files from another computer will only work 100% correctly if all preset names and locations are identical on both computers!

Note for Windows users

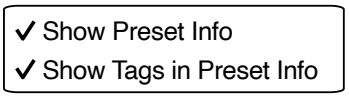
According to Microsoft, drag & drop will only work between applications with the same rights (i.e. both admin or both normal) for security reasons. If the host was started using the "run as admin" option, drag & drop functionality will be limited: You can still drag objects between plug-ins, or from the plugin into system windows e.g. your desktop. However, attempts to drag & drop anything into the plugin from outside the host will fail. This applies to presets, folders, favourites, *.uhe-soundset* files or indeed anything that can be dropped onto the plug-in GUI.

Preset Info Panel

The panel to the right displays information about the selected preset:



If you can't see this panel, click on the button in the top right corner and tick *Show Preset Info*.



Below the preset name you should see its path (from /Local or /User), the Bank and the Author (which also appear as Smart Folders).

DESCRIPTION and USAGE text is entered immediately before saving a patch. CATEGORIES, APPLICATION and CHARACTER are the tags for the current preset. You can remove or add tags directly – see 'Tagging via PRESET INFO' a few pages down.

If you prefer to see less information, hide the tags only or the entire PRESET INFO panel.

Installing Presets

Any extra presets we distribute ourselves will be available in *.uhe-soundset* format. Third parties are also encouraged to use this package format for their own commercial presets (for details please contact our support team).

Standard Method

To install, drag & drop the *.uhe-soundset* file into Twangstrom – anywhere will work. The soundset should appear in the 'User' folder. If a soundset with the same name already exists there, any modified files will be backed up and the location of the backup file will be displayed.

Alternative Method

Soundsets in .uhe-soundset format can also be installed by clicking on the u-he badge, selecting *Install Soundset...* in the menu and navigating to the *.uhe-soundset* file. This option is especially useful for Linux, as the browser version for that platform does not support drag & drop.

Regular Folders

Folders containing Twangstrom presets can be manually copied or moved into the 'User' folder. You might have to refresh the browser (see Directory context menu) before they appear there. A refresh is generally necessary in Windows but not in macOS.

Note: As *.uhe-soundset* files are basically ZIP-compressed folders, you can rename them i.e. replace the long file extension with 'zip', then extract the presets and documentation.

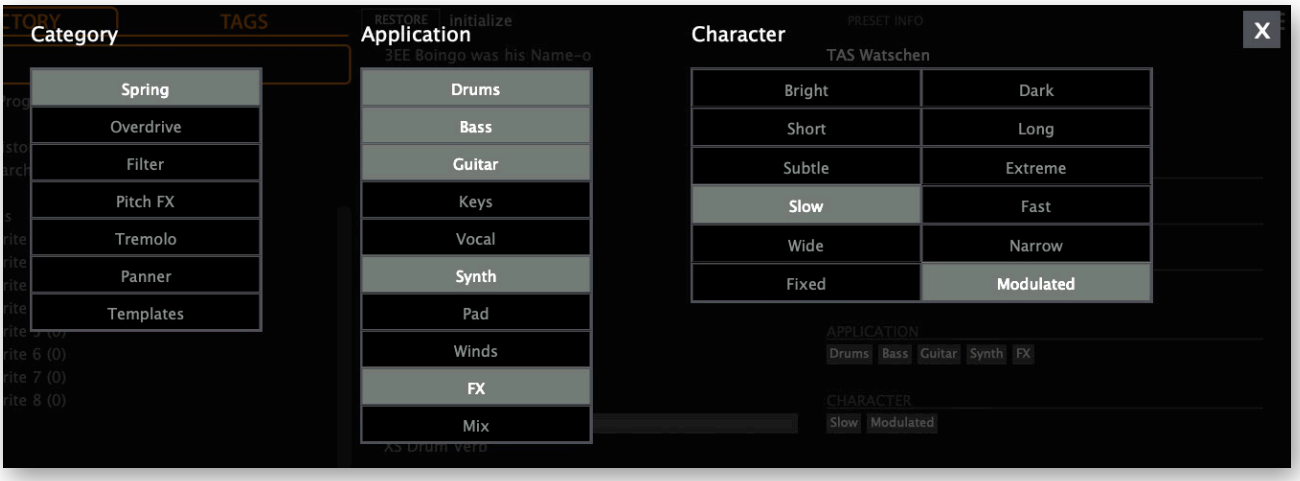
Preset Tagging

“Tags” are bits of metadata, information you can add to presets so that they can be found according to certain attributes.

> **IMPORTANT**
>
> Tags are updated automatically – clicking on the [SAVE] button isn’t required! The main advantage is that presets don’t have to be saved every time you edit a tag. The main caveat is that **you should only edit tags after saving your preset**.
>
> For instance, if you decide to edit tags while creating a 2nd version of an existing preset, please remember that you are actually changing the tags in the original preset!

The Tagging Window

Right-click on the [SAVE] button and select *Tag this preset*:



In Twangström, the *Category* tags describe a preset according to the type of effect, *Application* tags describe typical usage, and *Character* tags are pairs of more or less opposite attributes from which you can choose just one.

Tagging via PRESET INFO

In the PRESET INFO panel, right-click on CATEGORIES, APPLICATION or CHARACTER and select or unselect tags from the menu. Tip: If you right-click on an existing tag, the first option in the menu becomes *Remove Tag...*

The function *Create Search from Tags* looks for presets with all the same tags.

Tagging via the Tags smart folder

You can tag presets by drag & drop onto one of the *Tags* smart folders. To remove all tags, drag presets onto the ‘Tags/Untagged/‘ smart folder.

Search Functions

Search By Tags

In the preset browser, click on the [TAGS] tab. The buttons let you set up search criteria according to existing tags with just a few mouse clicks.

There are four sets of buttons: The first three correspond to the tags in the tagging window (see the previous page), while the bottom row lets you find any presets tagged as *Favourites*. Clicking on the [^] icon to the right of each label hides the options for that set of tags.

Practically…

Click on the [DIRECTORY] tab, right-click on the 'Search History' folder and select *Clear*. Double-click on 'Local' to restrict the scope to that folder (presets in the 'User' folder will not appear in the results). The selected path appears below the Search field. To exit, click on the [^] symbol.

Click on the [TAGS] tab and select the [Filter] and [Pitch FX] categories. Presets tagged with either will appear in the presets panel.

Click on the DIRECTORY tab again: "#Filter #Modulation:Pitch FX" appears in the Search field as well as in 'Search History'. Adventurous souls can try editing the contents of the Search field now – the results will be updated accordingly.

Note: Unlike selecting multiple Categories tags, which expands the scope of the search, selecting Application, Character or Favourites tags restricts the scope i.e. you will probably get fewer hits.

Search by Text

The Search field lets you find presets according to a string of text. Here's an easy example: If you remember that the preset you're looking for has the word "space" in either its name or the description, simply enter "space" into the Search field and hit [Return].

The search routine normally looks into the preset name, the author, the DESCRIPTION and USAGE (see the PRESET INFO panel). Searches are not case-sensitive, and quotes are not required unless you need to include spaces between multiple words.

Search Path

To restrict the search to a particular path, double click on a folder. The path will appear below the Search field. The [^] button to the left moves the search path up one level, while the [X] button to the right resets the search path to the default (i.e. all Twangström presets). Alternatively, you can navigate directly to any higher level by right-clicking on the search path.

Try it: Enter three or four characters then hit Return. For instance, "sta" will find all files containing the text string "sta" (e.g. "instant" or "custard"). Entering "star wars" (including the quotes!) would find e.g. "Battlestar Warship", if such a preset existed.

Scope

You can limit the scope of the search to just the preset name or specific parts of PRESET INFO by using *name* (preset name), *author*, *desc* (*description*) or *use* (*usage*) followed by a colon. For instance, "author:the" finds all presets by sound designers whose author names contain "the". Similarly, "desc:space" will find all presets with the word "space" in the description.

Logic

These logical operators can be used between text strings, but not between tags:

AND requires that presets contain both words. It can be written explicitly or simply left out. For example, "star AND wars" or "star wars" will find presets that contain both "star" and "wars".

OR means that presets can contain just one of the words… or both. For example, "star OR wars" will find presets that contain "star" as well as presets that contain "wars".

NOT excludes presets containing the specified word. To find all presets that do contain "star" but don't contain "wars", enter "star NOT wars".

Including Tags in Text Searches

Tags can be entered into the Search field if preceded by a '#'. For example, "name:int #Filter" will find all presets with "int" as part of the name that are also tagged with the [Filter] category.

In the current version of the browser, text items must appear before any tags. For technical reasons, tags appear in the form #type:category (the *type* is invisible in the TAGS panel).

Configuration

The cogwheel at the top right is your entrance to the global configuration pages. You can adjust the window size and brightness as well as Twangström parameters via MIDI remote control…

Click on the cogwheel and select Close [X], MIDI Learn [L], MIDI Table [≡] or Preferences [tools].

MIDI Remote Control

For instructions on how to route MIDI into effect plug-ins, please refer to the documentation of your host application.

Note that MIDI assignments are truly global. They apply not only to all instances of Twangström in the current project, but to ALL instances in ALL your projects!

MIDI Learn

L

This page lets you assign MIDI CC ('control change') to individual parameters. The CC data can be generated by hardware knobs / sliders or by tracks in the host application. To open the MIDI Learn page, click on the [L] button. It should look something like this:

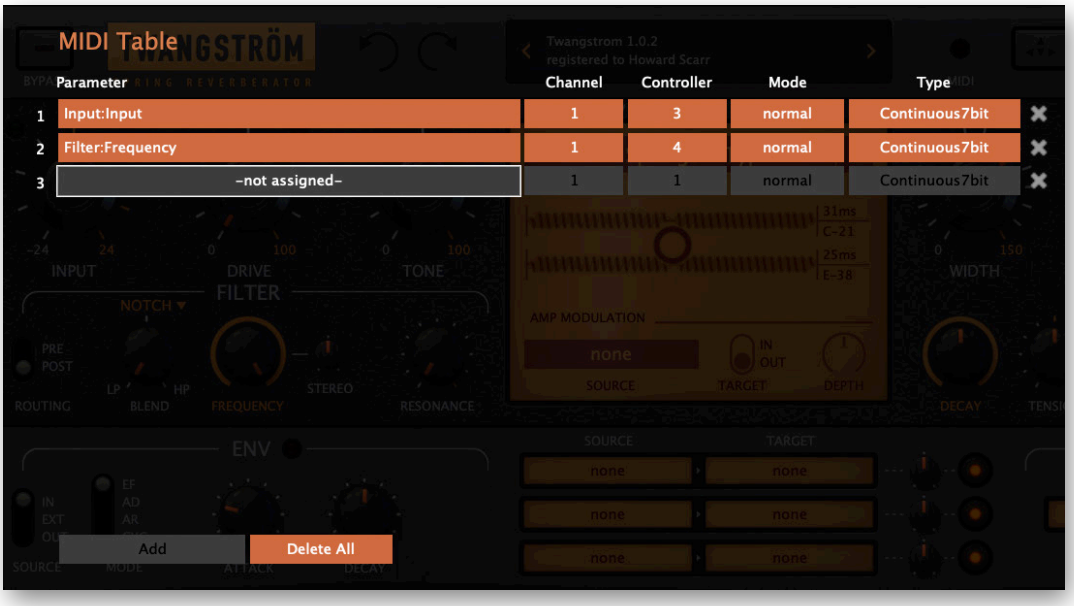
This window shows all MIDI-learnable elements as selectable outlines. Those that are already assigned will appear filled (like INPUT in the above image), and the currently active control i.e. the one ready to be MIDI-learned is highlighted (like DRIVE here).

Try it: Click on e.g. the filter FREQUENCY knob then send Twangström some MIDI CC data: Wiggle a knob or slider on your MIDI controller to complete the assignment.

If you don't want to keep the new CC connection, double-click on the knob to remove it.

MIDI Table

The MIDI Table page lets you review and edit the MIDI assignments created using MIDI Learn (see the previous page).



The **Parameter** field shows the assigned target. Click to select a different one.

At the bottom of the list is an experimental feature: Select *Last Clicked Control*, enter the number of an unused controller and exit the configuration pages. The most recently clicked knob or switch will now respond to that CC. The *Fine* option is similar, but with a significantly reduced range.

Channel and **Controller** specify the MIDI channel (1 to 16) and CC number (0-127).

Mode specifies the range and/or resolution of values...

normal	full range, continuous
integer	full range, whole numbers only
fine	0.01 steps between the two integers closest to the current value

Type specifies the kind of hardware used (the most common is *Continuous7-bit*)

Encoder 127	'relative mode' endless rotary controls that repeatedly send the CC value 1 when turned in the positive direction, or 127 (interpreted as -1) when turned in the negative direction
Encoder 64	'relative mode' endless rotary controls that repeatedly send the CC value 65 when turned up, or 63 when turned down
Continuous7bit	7-bit MIDI CC (normal resolution, common)
Continuous14bit	14-bit MIDI CC (high resolution, rare)

Adding more assignments

You can either MIDI-learn them as described on the previous page, or click on the [Add] button at the bottom of the window then select Parameter, Channel etc. from the options lists.

Removing assignments

Individual assignments can be removed by clicking on the small [x] to the right of each line. To remove all assignments at once, click on the [Delete All] button at the bottom of the window.

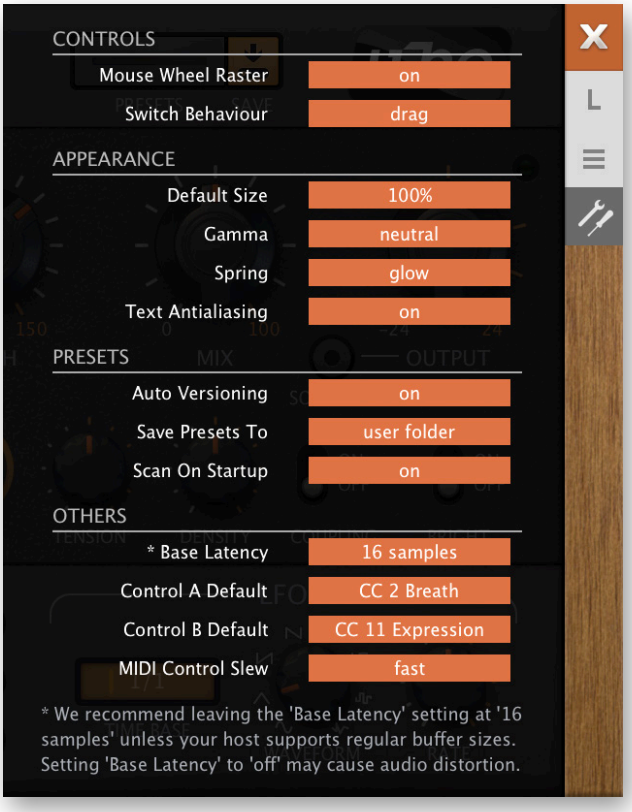
Per Instance Control

The panel on the right offers local versions of the Control A / B default Preferences:

To set a different CC either click and select an entry from the (rather long) menu, or hover over the field and roll your mouse wheel. [**Set as Default**] copies these settings to the global Preferences...

Preferences

Click on the 'tools' button to open the 'Preferences' page, where you can set several global defaults to suit your mouse and monitor:



Controls

Mouse Wheel Raster

If your mouse wheel is rastered (you can feel it clicking slightly as you roll the wheel), set this to ***on*** so that each click increments / decrements in sensible value steps.

Switch Behaviour

The ‘drag’ option lets you drag switches up/down while ‘toggle’ lets you click anywhere on the 2-way switches. In these modes you can also switch over by clicking directly on the position you want. The ‘iterate’ option steps to the next position down, but clicking directly on a position no longer works in this mode.

Note: Like the knobs, switches respond to rolling the mouse wheel – no clicks required!

Appearance

Default Size

Sets the default GUI size for each new instance. You can temporarily change the GUI size without entering the Preferences – simply right-click in the background.

Gamma

Determines GUI brightness.

Spring

Affects the spring animation: *eco*, *fast* or *glow* (in order of CPU usage).

Text Antialiasing

Switches the smoothing of labels and values on / off. Only in special cases will switching it off improve readability.

Presets

Auto-Versioning

If ‘on’, an index is automatically appended to the name and incremented each time it is saved. Saving ‘Space’ 3 times in a row would give you 3 files: ‘Space’, ‘Space 2’ and ‘Space 3’.

Save Presets To

Choose the ‘user folder’ option if you want all saved presets to land in the *User* folder instead of the currently selected one.

Scan On Startup

Determines whether the preset library should be scanned and the database recreated when the first instance of Twangström is started, e.g. when you reopen a project.

Others

Base Latency

If you are sure that your audio system – hardware and software – uses buffers that are a multiple of 16 samples in size (refer to the respective documentation), you can safely disable this. Otherwise leave it set to the default '16 samples' to prevent crackles.

Note that the new Base Latency only takes effect when the host allows, e.g. on playback or after the sample rate is switched. Reloading Twangström will always update Base Latency.

See the info box on the next page.

Control A Default / Control B Default

Apart from the modulation wheel, the list of modulation sources in all u-he plug-ins included two extra fixed MIDI controls: Breath (CC#02) and Xpress (CC#11). While retaining backwards compatibility, we have replaced those with the user-definable *Control A* and *Control B* sources. Note: The Per Instance settings in the MIDI Table panel override these global versions, making them useful for performance control over multiple instances of Twangstrom at the same time.

MIDI Control Slew

Determines the strength of parameter smoothing for all performance controls – pitch bend, modulation wheel, Control A/B and Pressure. With *MIDI Control Slew* set to 'off', Twangström is more responsive to modulation wheel data (for instance), but the result of rapid modulation can sound rather grainy. The default 'Fast' setting is a good compromise between speed and smoothness. The 'Slow' option is adaptive: Whenever incoming control data jumps instantly between values that are further apart, no slew is applied.

MORE ABOUT BUFFERS

Internally, Twangström processes audio in chunks of n x 16 samples. The 'block processing' method reduces the CPU load and memory usage of all our plug-ins.

For example. if the number of samples to be processed is 41, Twangström will process the first 32 and keep the remaining 9 in a buffer (16 samples is enough). Those 9 samples are then processed at the start of the next call... and so on. The extra buffer is only necessary if the host application or audio driver processes 'unusual' audio buffer sizes. Many hosts process buffers of 64, 128, 256 or 512 samples (all multiples of 16), in which case you could try switching off Base Latency so that Twangström can work latency-free.

NKS

Twangström supports Native Instruments **NKSFX** format so that it can be integrated into the Komplete Kontrol software or Maschine environments. Twangstrom's factory presets are optionally also installed as tagged .nksfx files. A few pages of performance controls mapped to common parameters are automatically generated and saved together with each .nksfx preset.

Saving as .nksfx is only possible in the VST version

Mac owners can use – temporarily if necessary – any host application that supports VST

Saving in NKS format

While the *native*, *h2p* and *h2p extended* options cause Twangström to save presets into the currently selected preset directory, *.nksfx* files go directly into the preset location used for Komplete Kontrol or Maschine, so they do not appear in Twangström's preset browser. To make them visible in Komplete Kontrol, open its preferences and rescan the preset locations.

Batch conversion

First, right-click the [save] button and set the target format to nksfx. Via cmd-click (Mac) or alt-click (Win), select all presets in the current folder you want to convert, then right-click any of the selected presets and choose convert to nksfx. Note: The original files are not affected.

What to do if Twangström doesn't show up in Komplete Kontrol / Maschine.

First of all, make sure your NKS software is up to date: Komplete Kontrol V1.5+ or Maschine V2.4 are the minimum requirements for u-he. In Windows, Komplete Kontrol must know the Vstplugins folder containing Twangström: Open Komplete Kontrol preferences, go to Locations and add your Vstplugins directory if necessary, hit Rescan and check whether Twangström appears. Maybe the NKS preset folder is empty? If so, please reinstall Twangström with the correct VST path and the NKS-option checked. Here are the preset folder locations:

Mac *Macintosh HD/Library/Application Support/u-he/Twangstrom/NKS/Twangstrom/*
Win *C:\Users\YOU\Documents\u-he\Twangstrom.data\NKS\Twangstrom*

Perhaps the XML-File is missing from this location:

Mac *Macintosh HD/Library/Application Support/Native Instruments/Service Center/u-he-Twangstrom.xml*

Win *C:\Program Files\Common Files\Native Instruments\Service Center\u-he-Twangstrom.xml*

A re-install with the NKS-option checked should also remedy this issue.

What to do if Komplete Kontrol / Maschine is unable to load Twangström

Either Twangström wasn't installed as VST, or it wasn't installed with the correct path. The default VST path is fixed in MacOSX, but in Windows it can be freely assigned during installation:

Mac *Macintosh HD/Library/Audio/Plug-Ins/VST/u-he/*
Win *<User VST Folder> / (path for the VST plug-in set during installation)*

If Twangström's VST plug-in cannot be found in one of these locations, run the installer again making sure that you set the correct path and have activated 'VST' as installation option.