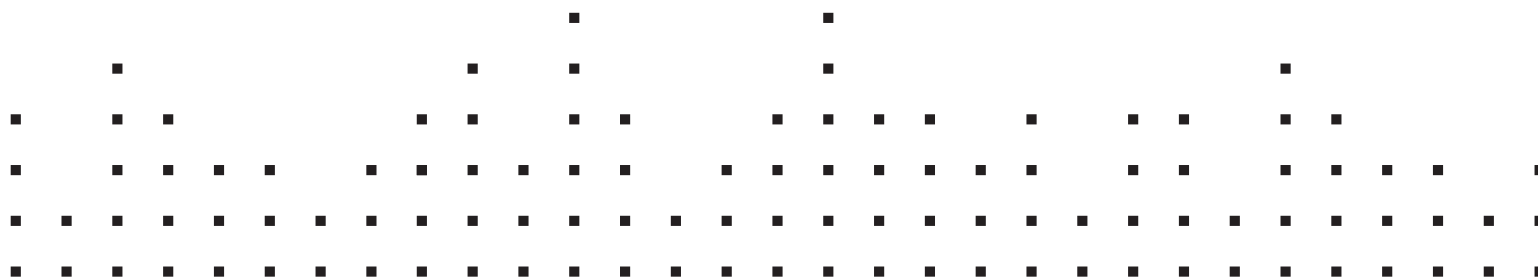




KONTAKT FACTORY LIBRARY

LIBRARY SCRIPTS



The information in this document is subject to change without notice and does not represent a commitment on the part of Native Instruments GmbH. The software described by this document is subject to a License Agreement and may not be copied to other media. No part of this publication may be copied, reproduced or otherwise transmitted or recorded, for any purpose, without prior written permission by Native Instruments GmbH, hereinafter referred to as Native Instruments. All product and company names are [™] or [®] trademarks of their respective owners.

Manual written by Paul Maurer

Document Version: 2.0 (08/2011)

Product Version: 5.0 (09/2011)

Special thanks to the Beta Test Team, who were invaluable not just in tracking down bugs, but in making this a better product.

Germany

Native Instruments GmbH
Schlesische Str. 29-30
D-10997 Berlin
Germany
www.native-instruments.de

USA

Native Instruments North America, Inc.
6725 Sunset Boulevard
5th Floor
Los Angeles, CA 90028
USA
www.native-instruments.com



© Native Instruments GmbH, 2011. All rights reserved.

Table Of Content

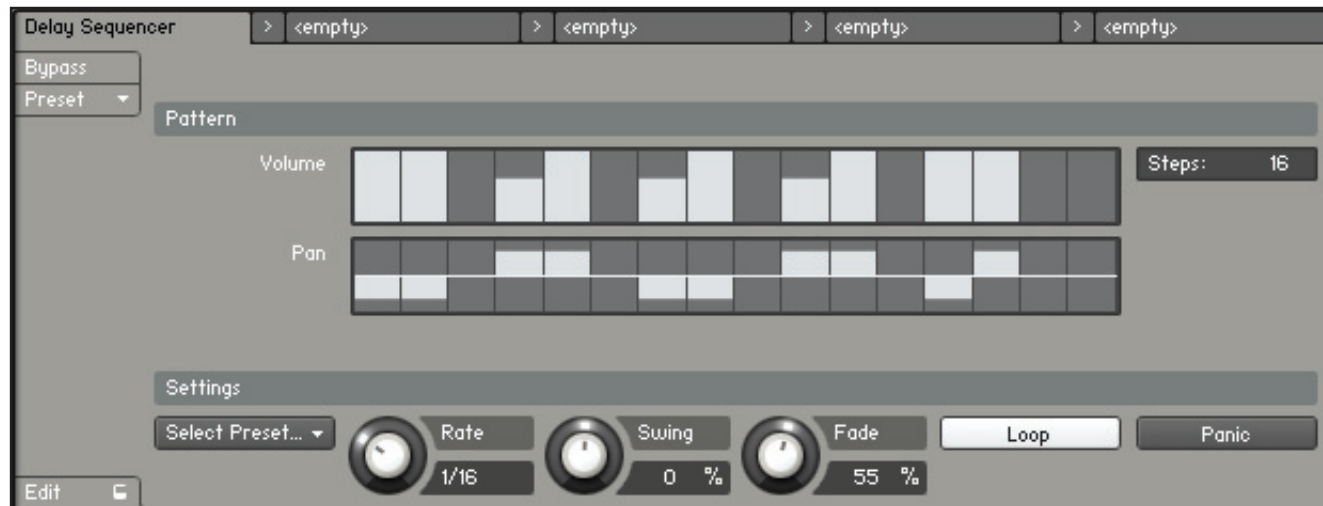
1	Effects	7
1.1	Delay Sequencer	7
1.2	Midi Echo	8
1.3	Unison X.....	10
2	Harmonize	11
2.1	Chord	11
2.2	Chord – Tonal.....	11
2.3	Harmonize	12
2.4	Harmonize – Tonal	13
2.5	Interval.....	14
2.6	Interval – Tonal	14
2.7	Invert Pitch.....	15
2.8	ReChord	15
3	Instrument Specific	16
3.1	Drum Articulations	16
3.2	Dynamic Key Switches	17
3.3	Harp Glissando	18
3.3.1	Performing Glissandi.....	18
3.3.2	Performing Bisbigliandi.....	20
3.4	Harp Pedals	21
3.5	Piano Pedals.....	22
4	Performance	23
4.1	Chord Splitter	23
4.2	Constrain to Scale.....	23
4.3	Humanizer	24

4.4	Input Quantize.....	25
4.5	Legato Velocity	25
4.6	MIDI Latch	26
4.7	Transpose.....	26
4.8	Unisono – Portamento	27
5	Randomize & Change	28
5.1	Change Duration	28
5.2	Change Pitch	29
5.3	Change Velocity.....	30
5.4	Randomize Pitch	31
5.5	Randomize Velocity.....	31
6	Sequencing	32
6.1	Arpeggiator	32
6.2	Drum Computer	33
6.3	Poly Step.....	35
6.4	Retrigger	36
6.5	Session Recorder.....	37
7	Transform.....	38
7.1	Note Numbers to CC	38
7.2	Note Range to CC.....	39
8	Tuning.....	40
8.1	Dynamic Pure Tuning.....	40
8.2	Microtuning.....	42
8.3	Notes per Octave	42
8.4	Over-Undertones	43
8.5	Quarter Tone	43

9	Utilities	44
9.1	6 MIDI Controllers	44
9.2	Limit Key Range	45
9.3	MIDI Monitor	45
9.4	Show Key Switches	46
10	Appendix	47
10.1	Tuning Tables	47
10.1.1	Pure Tunings	47
10.1.2	Pythagorean Tunings	49
10.1.3	Meantone temperaments	51
10.1.4	Well-temperaments	53
10.2	Scale Types	54

1 Effects

1.1 Delay Sequencer



Delay Sequencer allows you to sequence the timing, decay, and pan of a delay effect. The Samples are retriggered to produce this delay, and you can set many delay properties. This script works best with shorter sounds.

Volume Table: This is where the delay pattern is entered. The first delay is always set to maximum, as this represents the first time the sample is played. Subsequent delay hits can have varying degrees of strength, according to your likings.

Pan Table: Pan values are entered here, with 100% left at the bottom and 100% right at the top. A separate pan value can be assigned to each delay hit.

Steps: This indicates the number of steps in the delay before repeating the sequence.

Select Preset...: Select a factory preset with this menu, as well as randomize and reset the values for the delay pattern and panning.

Rate: This sets the rate of the delays, synchronized to the beat shown.

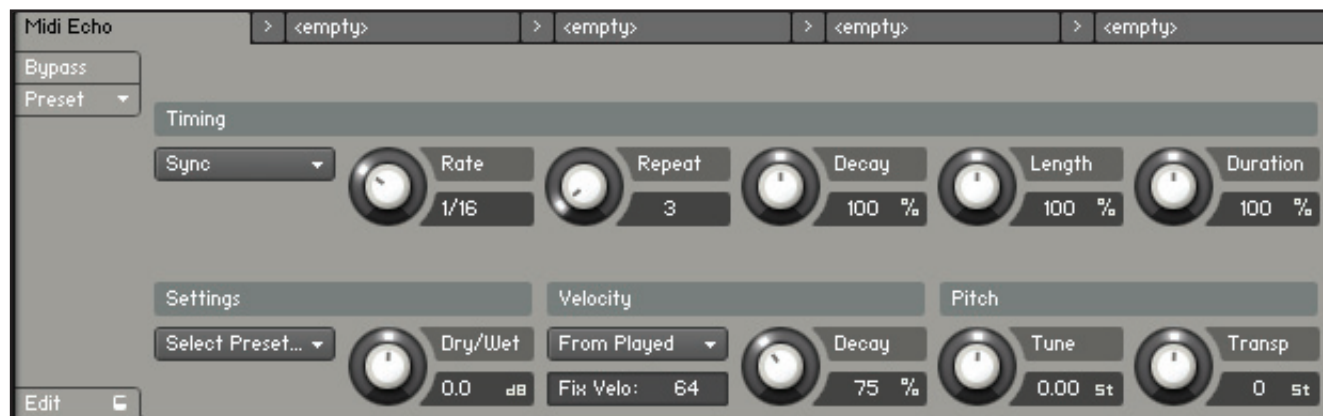
Swing: This offsets the delay hits with a swing feeling.

Fade: This adjusts the speed at which the delay hits will decay. Lower values will fade out the delay faster, while higher ones will fade it out slower.

Loop: When this is turned on, the delay continues to play until it is inaudible. When it is off, the delay sequence plays one time and then stops.

Panic: Click this button to stop all delays.

1.2 Midi Echo



Midi Echo delays and manipulates incoming MIDI notes. Please note that for some of these parameters to work, the Instrument itself must be programmed accordingly, e.g. if you want the echoed notes to decay, velocity must be routed to volume, otherwise the effect will not be heard. Similarly, if notes are transposed, there must be Zones in the new range in order to hear the effect.

Sync/Free: With this menu, you can select if the delay should be synchronized to a fraction of the beat or set in milliseconds.

Rate: This sets the rate of the delay, either in fractions of the beat or milliseconds, depending on whether *Sync* or *Free* is selected.

Repeat: Sets the number of echoes (up to 100).

Timing Decay: Scales the delay time from the first to the last echoed note.

Length: This sets the length of the echoed notes as a percentage of the original note length.

Duration: This sets the duration scale of each echoed note. Values above 100% cause the echoes to gradually become longer, where values below 100% shorten them.

Select Preset...: Select a factory preset with this menu.

Dry/Wet: This knob sets the level of the original and echoed notes. Turning the knob to the left turns the level of the original note down, while turning it to the right lowers the echoed note level.

Velocity menu: Select how the velocity of echoed notes is processed:

- *From Played:* The Decay parameter relates to the originally played note.
- *From Fixed:* The Decay parameter acts on the velocity set in the Fixed Velo field below.
- *To Fixed:* The echoed notes will decay to the velocity set in the Fixed Velo field below.

Velocity Decay: This sets the velocity scale of each echoed note. Values above 100% cause the echoes to gradually become louder, where values below 100% cause them to gradually become softer.

Tune: The tuning (in cents) of each echoed note will change depending on the setting of this knob. Positive values tune each echoed note up, and negative values tune them down.

Transpose: Each echoed note will be transposed by this amount, set in semitones.

1.3 Unison X



Unison X adds additional voices to an Instrument, with variable detune and stereo spread parameters. It is similar to the unison function found on many synthesizers.

Voices: This sets the total number of voices for each note.

Detune: This sets the amount of detuning of the additional voices.

Spread: This sets the amount of stereo panorama spread among the voices.

2 Harmonize

2.1 Chord



Chord harmonizes incoming MIDI notes to the specified chord. Use the knob to select among the chords.

2.2 Chord – Tonal



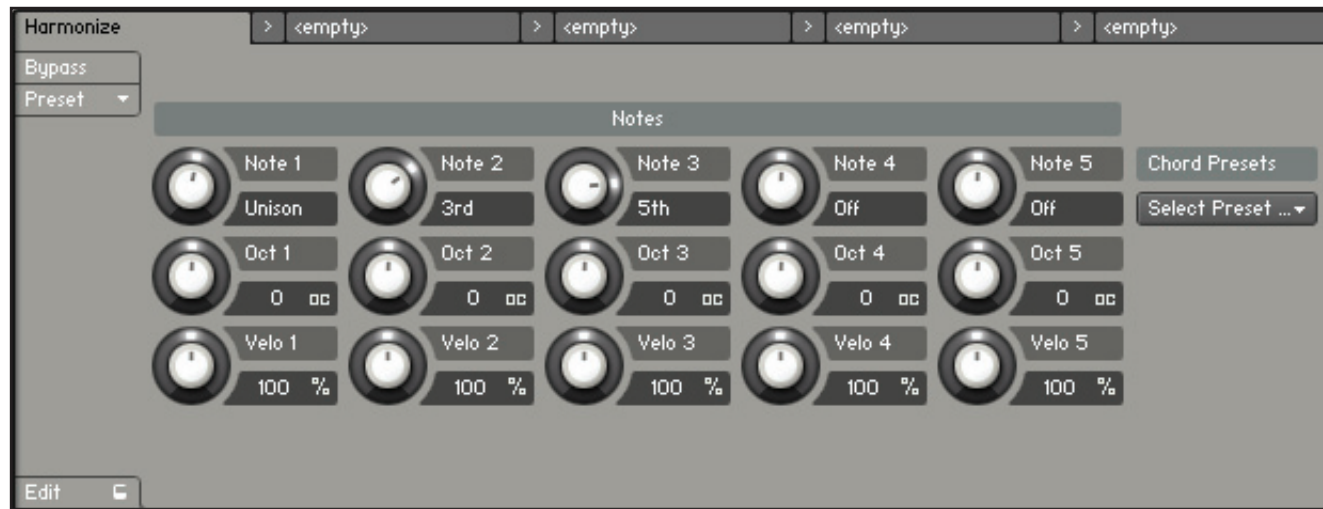
Chord – Tonal harmonizes incoming MIDI notes to the specified scale degrees corresponding to the selected Key and Scale.

Chord: Chooses a chord preset. The numbers represent the scale degrees of a standard scale.

Key: This is the root key of the selected scale. If the played note is not within the selected scale, then it plays the next highest note with the corresponding chord.

Scale: All notes will be harmonized to the selected scale or mode chosen with this knob. If this is set to *Off*, then the selected chord will play with fixed intervals.

2.3 Harmonize



Harmonize adds additional harmonies to incoming MIDI notes. Up to 5 notes can play with each incoming MIDI note. All intervals are absolute and do not relate to a specific key or scale.

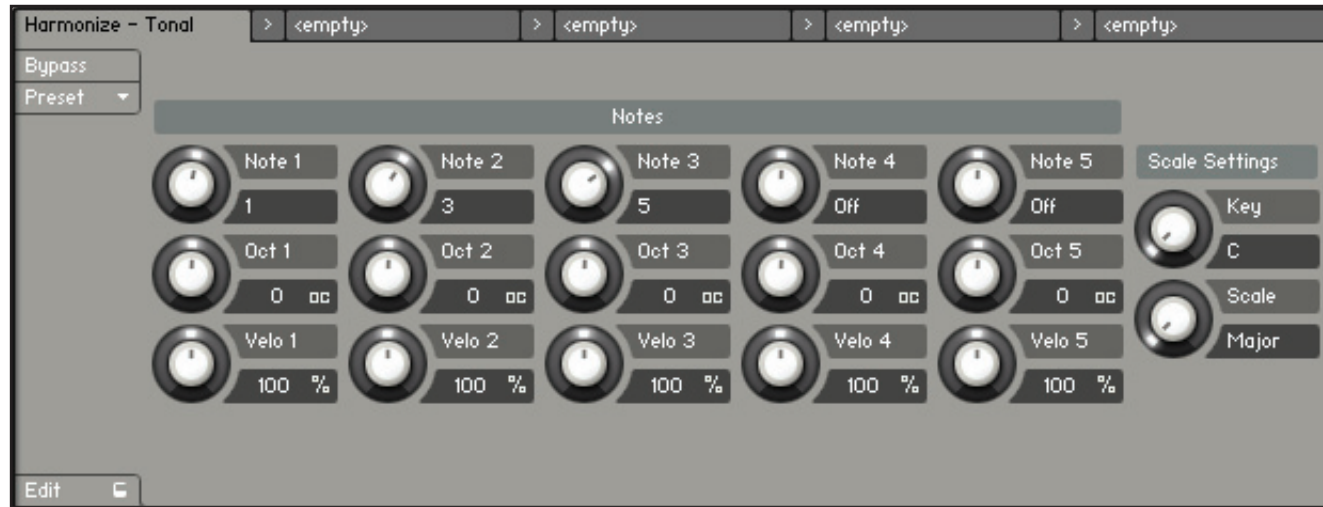
Note 1–5: Use these knobs to select the harmonized interval for each note. If the knob is set to *Off*, then no additional note will play.

Oct 1–5: After an interval is selected, one can add or subtract up to 10 octaves to the interval (the note cannot exceed the boundaries of MIDI note values however).

Velo 1–5: These knobs set the velocity of the harmonized tones as a percentage of the incoming velocity.

Select Preset...: Use this menu to select preset chords.

2.4 Harmonize – Tonal



Harmonize – Tonal adds additional harmonies to incoming MIDI notes in relation to a specified key and scale. Up to 5 notes can play with each incoming MIDI note.

Note 1–5: Use these knobs to select the harmonized interval for each note. If the knob is set to *Off*, then no additional note will play.

Oct 1–5: After an interval is selected, one can add or subtract up to 10 octaves to the interval (the note cannot exceed the boundaries of MIDI note values however).

Velo 1–5: These knobs set the velocity of the harmonized tones as a percentage of the incoming velocity.

Key: The root note of the harmonized scale is selected here.

Scale: The scale for tonal harmonization is set here.

2.5 Interval



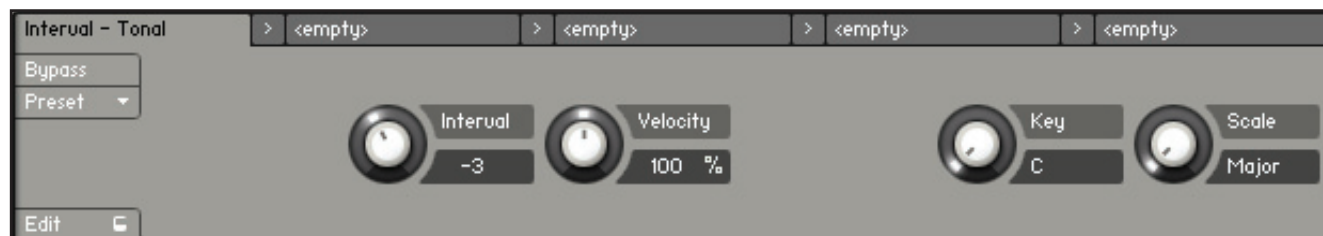
Interval allows you to select an additional note which plays with every incoming MIDI note.

Interval: Select the interval of the additional note compared to the original note.

Octave: Select the octave offset of the additional note.

Velocity: Set the velocity of the additional note as a percentage of the incoming velocity.

2.6 Interval – Tonal



Interval – Tonal allows you to select an additional harmonized note which plays with every incoming MIDI note.

Interval: Select the interval of the additional note in scale degrees compared to the original note.

Velocity: Set the velocity of the additional note as a percentage of the incoming velocity.

Key: Choose the root key of the scale.

Scale: Choose the scale for tonal harmonization.

2.7 Invert Pitch

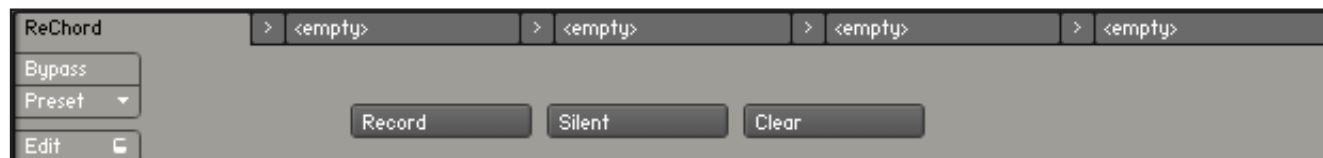


Invert Pitch will invert the pitch of incoming MIDI notes relative to a given axis note.

Axis: This is the note around which incoming MIDI notes will be inverted. Notes below the axis will be mirrored above the axis, and vice versa.

Play Original: When activated, the incoming midi note will be played as well (i.e. the incoming note will be harmonized with the inverted note). When deactivated, only the inverted note will be played.

2.8 ReChord



ReChord, sometimes referred to as **Chord Memory**, lets you input a chord and quickly play it across the keyboard.

Record: Turn this on to start recording the tone positions. Turning it off stops the recording.

Silent: When this is on and the Record button is also on, the chord notes are not played.

Clear: This clears all of the memorized chord tones.

3 Instrument Specific

3.1 Drum Articulations



Drum Articulations is a script which simulates the sounds of certain articulations typically played with drums and percussion, such as flams, drags and rolls, and some additional special effects and a humanizer.

Articulation Menu: Select the drum articulation for the selected note with this menu.

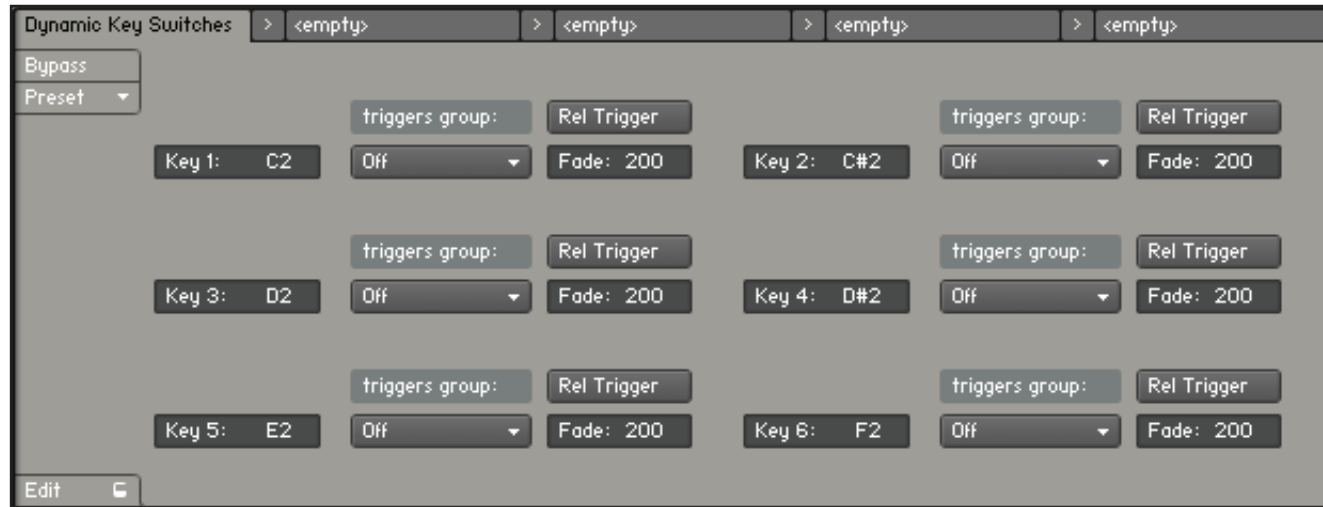


This selects the MIDI note for which the selected articulation is applied.

Set by MIDI: Turning this on will display the settings for the MIDI note played with your MIDI input device.

Parameters 1–4: These knobs are used to adjust the parameters for the selected articulation. With every articulation, these knobs do something different. When *n/a* appears, the knob does nothing for the selected articulation.

3.2 Dynamic Key Switches



Dynamic Key Switches allows different keyswitches in an Instrument to seamlessly transition from one articulation to another. Keyswitch notes and corresponding Groups are set, along with the crossfade time from one articulation to the other.

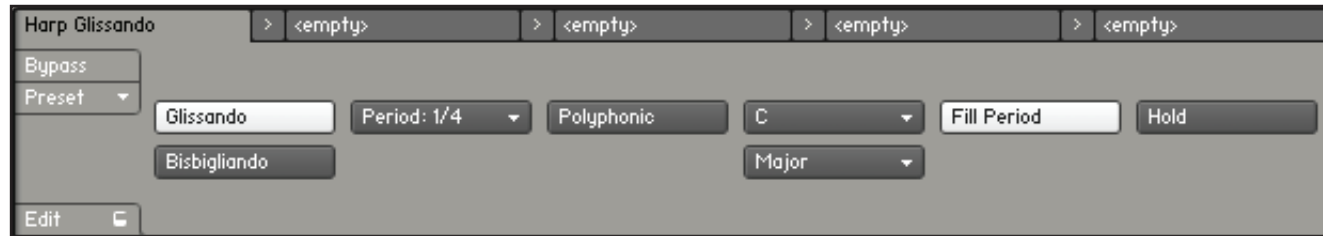
Key 1–6: Set the MIDI note which the dynamic keyswitch will be triggered.

Group Menu 1–6: Choose the Groups which are activated with the selected keyswitch assignments.

Fade: Set the time in milliseconds for the crossfade between the articulations.

Rel Trigger: When activated, releasing the dynamic keyswitch will trigger the static keyswitch again.

3.3 Harp Glissando



Harp Glissando enables you to play very realistic sounding glissandi and bisbigliandi. In addition to a harp, you can apply this script to any Instrument you like, for example classical guitar or acoustic piano. The bisbigliando effect can also be used in conjunction with a marimba to create a mallet tremolo.

Glissando: This activates the glissando effect.

Bisbigliando: This activates the bisbigliando effect. (When both buttons are off, the Instrument plays normally.)

3.3.1 Performing Glissandi

When Glissando is activated, play two notes, one note after each other (e.g. an octave) on the keyboard, you'll hear a glissando.

The main principle is that by hitting two keys after each other on the keyboard, you specify the outer range of the glissando. The velocity values of the glissando are calculated from the two velocity values of the boundary notes; try it out by playing (and holding) C3 loud and then playing (and holding) C4 softly: the glissando from C3 to C4 will be played diminuendo.

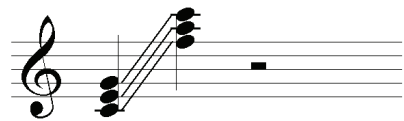
The speed of the glissando can be set in two ways:

- When **Fill Period** is activated, the glissando will always fill the time interval specified in the **Timing menu** sitting next to the Glissando button, so when the outer range of the glissando is larger, the glissando will be played faster. At the bottom of the Timing menu, the *Beat Division* setting lets you specify the time interval in beats, whereas the *Absolute (sec)* setting allows you to specify an absolute time interval in milliseconds independent of the host tempo.

- When Fill Period is deactivated, the time interval between the notes of the glissando depends on the chosen glissando boundaries, so when you play C3 – G3 the time interval between the notes is not the same as when you play C3 – C4. You can then adjust the glissando’s speed with the **Rate** knob.

When **Hold** is selected, you can release the keys after you’ve triggered a glissando and immediately trigger a new glissando. With this option you can imitate the harpist playing glissandi with two hands. Additionally, you can specify the duration of the notes in seconds and milliseconds with the **Sec** parameter.

Polyphonic: This option enables you to play “polyphonic” glissandi, e.g. to hear this:



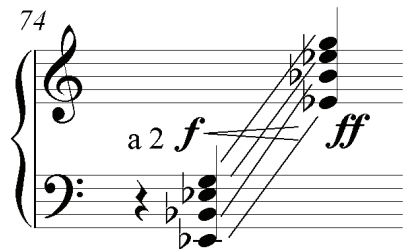
you would play this:



First you play the interval or the chord to set the lower boundary, and shortly thereafter you play the note to set the upper boundary and to trigger the glissando.

In Polyphonic mode any interval or chord which does not exceed a major tenth will be interpreted as the interval or chord forming the starting interval or chord of the polyphonic glissando. This is due to the fact that a harp player’s hand can encompass approximately a major tenth.

So this passage from the third movement of Bartok’s Concerto for Orchestra can be performed using the Harp Glissando:



Select Scale: Set the root key and the scale of the glissando. If you play a note outside of the chosen scale, the glissando is not triggered. You can however choose *Chromatic* as the scale type to always trigger a glissando.

3.3.2 Performing Bisbigliandi

Bisbigliando (It. whispering) refers to a playing technique on the harp where a chord or note is rapidly repeated, usually at a low volume.

Let's say you want to perform the following:



Click on Bisbigliando and play the following:



The first note, interval or chord you play sets the “first set of note(s)” of the bisbigliando, the note(s) you play shortly after determine the “second set of note(s)” of the bisbigliando.

Hence if you want to perform the following:

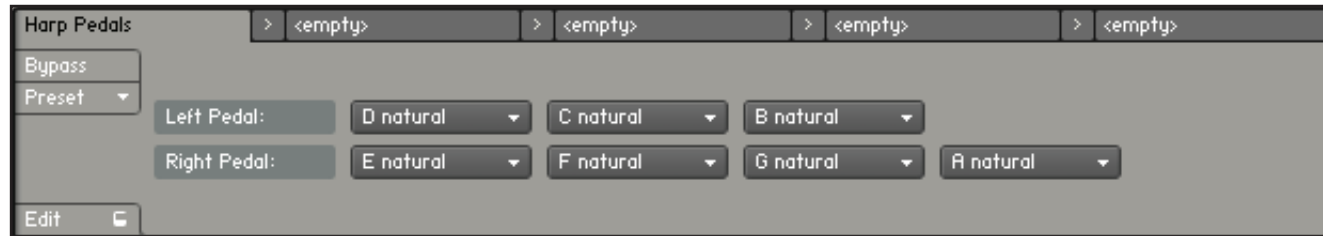


play this:



You can set the speed of the bisbigliando with the **Rate** knob.

3.4 Harp Pedals



Harp Pedals can make the white keys on the keyboard match the strings of a harp. Each pop-up menu corresponds to one pedal of a harp. You can choose the setting of each pedal; so choosing *D sharp* will generate a D sharp whenever a D is played. All black keys are ignored.

(Background: The harp as a stringed instrument only has seven strings per octave and is “originally” tuned in C flat major. Each string is connected to a pedal, which has three states and for example tunes each C flat of the harp to either a C natural or a C sharp.)

3.5 Piano Pedals



Piano Pedals emulates the three pedals found on a grand piano. Of course, this script can also be applied to other Instruments.

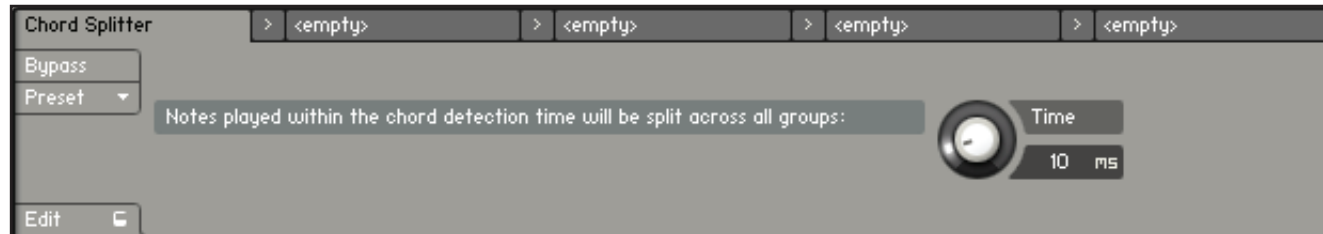
The left pedal, also called *Una Corda*, is referred to as the “soft pedal” in MIDI implementations. When pressing the pedal on an acoustic piano, the hammers only strike one string (hence the name *una corda*) and therefore will sound softer. The **Amount** parameter sets the attenuation in dB, the **Controller** parameter sets the MIDI CC number which should trigger the soft pedal. You can also set the Amount parameter to positive values to temporarily intensify the notes you’re playing.

The middle pedal is referred to as the *Sostenuto* pedal (or “hold pedal” in MIDI implementations). When pressing the pedal, all notes that are already playing will be held even after their key is released until the pedal is released. Keys that are pressed while *Sostenuto* is active are not affected.

The right pedal is referred to as the *Sustain* pedal and works just as expected.

4 Performance

4.1 Chord Splitter



Chord Splitter takes incoming chord notes and splits them into separate Groups. So for example, play a triad and each note of the triad will be played by a specific Group. This is great for playing arrangements of big band sections or orchestral performances.

Time: This sets the time buffer of the chord detection. Notes played within this time will be split across all available Groups.

4.2 Constrain to Scale



Constrain to Scale puts all incoming MIDI notes into the chosen scale.

Key: This knob chooses the root key of the scale.

Scale: Choose a scale to which all notes will be constrained to.

Incoming Note menu: Use this menu to select the behavior of incoming MIDI notes which do not fall within the selected scale.

4.3 Humanizer



Humanizer adds slight randomization to a selection of basic parameters related to timing, tuning, volume, velocity, and panning.

Note On: Randomly delays the note on time of each note with a selectable range of 0 to 100 milliseconds.

Note Off: Randomly delays the note off time of each note with a selectable range of 0 to 100 milliseconds.

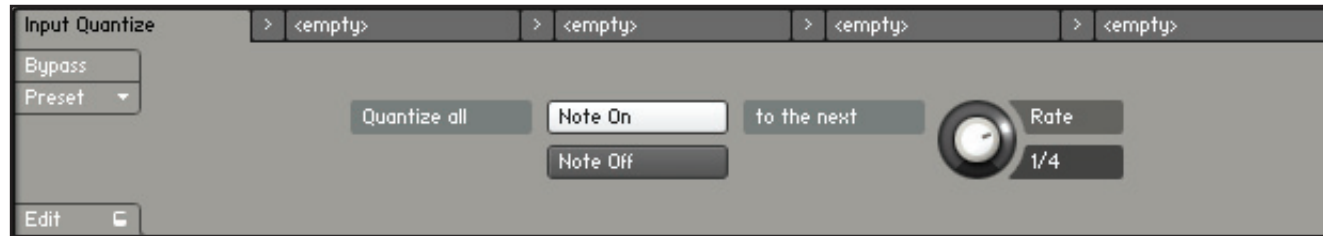
Velocity: Randomly adds or subtracts velocity values with a selectable range of -64 to +64.

Tuning: Randomly detunes each note with a selectable range of -1 to +1 semitone.

Volume: Randomly changes the volume of each note from -6 dB to +6 dB.

Pan: Randomly changes the panning of each note with a selectable stereo range spanning the entire L/R panorama.

4.4 Input Quantize



Input Quantize quantizes all incoming Note-On and Note-Off messages to a specified grid/rate.

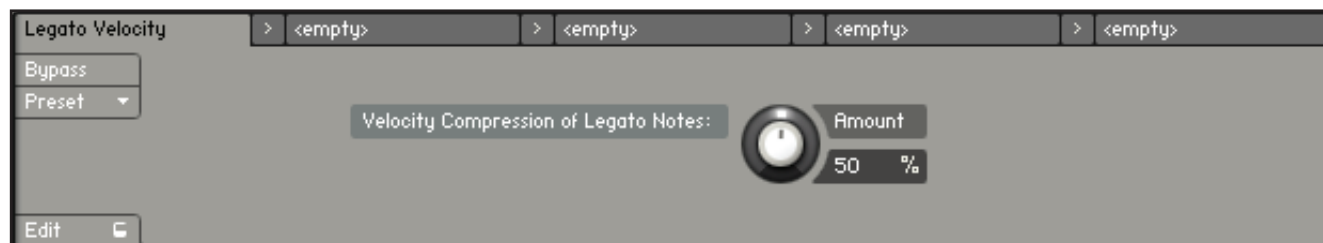
Note On: If only this button is selected, all incoming Note-On messages will be delayed to the next beat. You must hold the key up to the beat in order to trigger a note, if you release the key before the beat, no note will be triggered.

Note Off: If only this button is selected, all Note-On messages will be played immediately, and all Note-Off messages will be delayed to the next beat.

If both Note On and Note Off are selected, all incoming Note-On and Note-Off messages will be delayed to the next beat.

Rate: This is the “grid” which the quantized values lock to. The quantize grid ranges from 32nd notes to full bars.

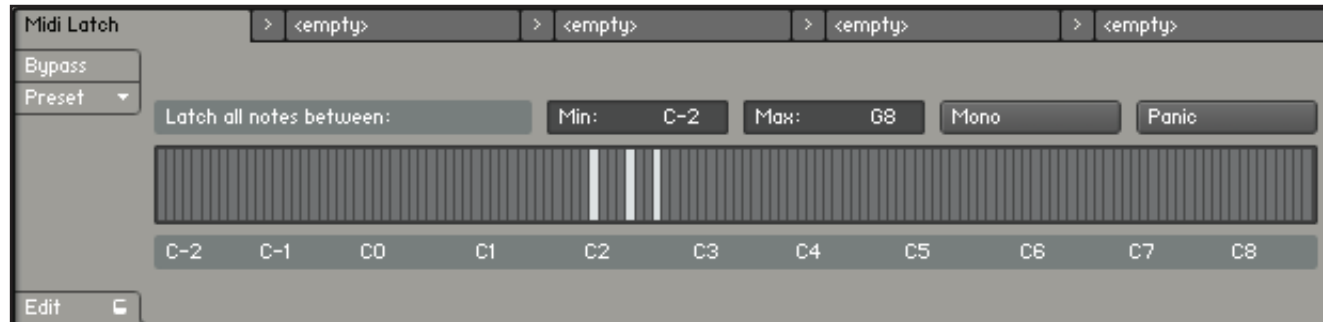
4.5 Legato Velocity



Legato Velocity controls the velocity compression of legato played notes in relation to the first played note.

Amount: Sets the velocity compression percentage. When set to *Off*, the played velocities will not change. When set to *Fix Vel*, all legato played notes will have the velocity of the first note.

4.6 MIDI Latch



MIDI Latch ignores the Note-Off messages of incoming MIDI notes. Play and release a key and the sample is triggered as if it were held continuously. Press the same key again and a Note-Off message is triggered; i.e. the sample is stopped. You can also specify which range should be affected by the latch function. The table will give you a graphic representation of all currently latched notes.

Min/Max: Specifies the range in MIDI note numbers in which incoming MIDI notes are latched.

Mono: When this is on, only one note can be latched at a time.

Panic: This sends a Note-Off message to all latched notes.

4.7 Transpose

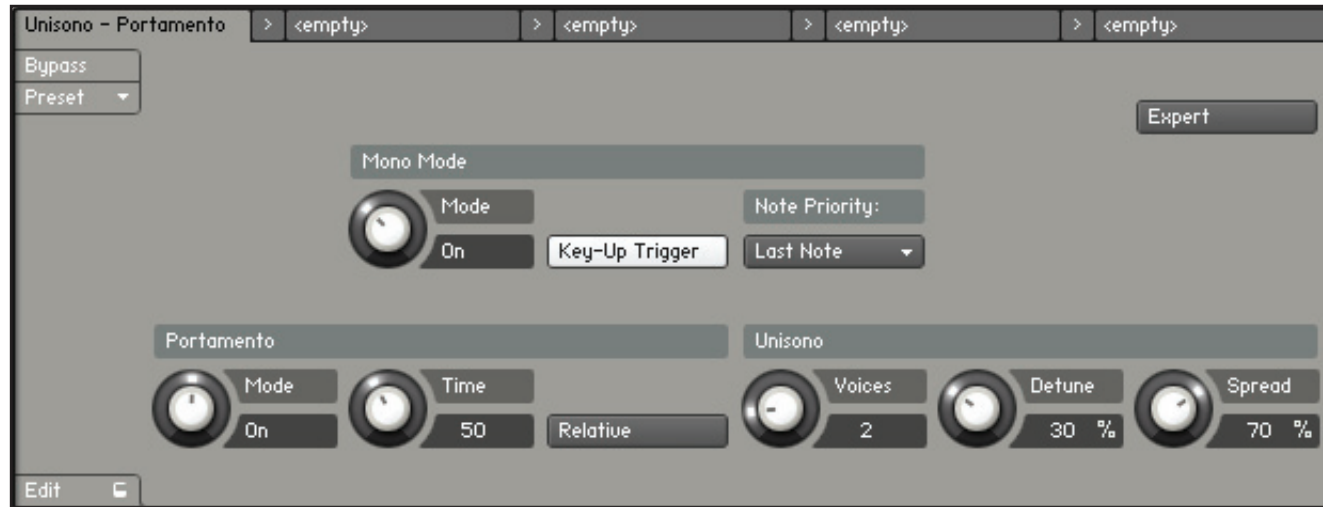


Transpose simply transposes incoming MIDI notes by the amount specified.

Semi: Transposes the incoming MIDI notes by the selected number of semitones.

Octave: Transposes the incoming MIDI notes by the selected number of octaves.

4.8 Unisono – Portamento



Unisono – Portamento allows you to apply unisono and portamento settings to any Instrument.

Mono Mode: Select among the different mono modes. *On* will always trigger a new sample, *Legato* does not trigger new samples, and *Offset* will trigger a new sample with the sample start offset (determined by the length of the previous held note).



Offset only works in Sampler mode.

Key Up Trigger: When this is on, notes are triggered upon release while other notes are being held.

Note Priority: This determines which note is played when releasing a key while a different note is held.

Portamento Mode: Choose between two portamento modes. When *Auto* is selected, only legato played notes will be portamento.

Time: This sets the glide time between notes when portamento is on.

Relative: When this is on, the glide time will increase with larger intervals.

Voices: Adjusts the number of voices played when pressing a key.

Detune: Adjusts the detuning among the voices.

Spread: Adjusts the panorama among the voices.

Expert: Turn this on to adjust the expert settings.

5 Randomize & Change

5.1 Change Duration



Change Duration fixes the note durations of incoming MIDI notes.

Length: Change the length of the notes in either timing intervals synched to the Master Clock or in fixed millisecond values according to the Tempo Sync setting.

Tempo Sync: Select whether the length is synched (*Sync*) to an interval of the Master Clock or is set in milliseconds (*Free*).

5.2 Change Pitch



Change Pitch alters the pitch of incoming notes either by MIDI note transpositions or by retuning the audio.

Octave: Transposes incoming MIDI notes by the selected octave intervals.

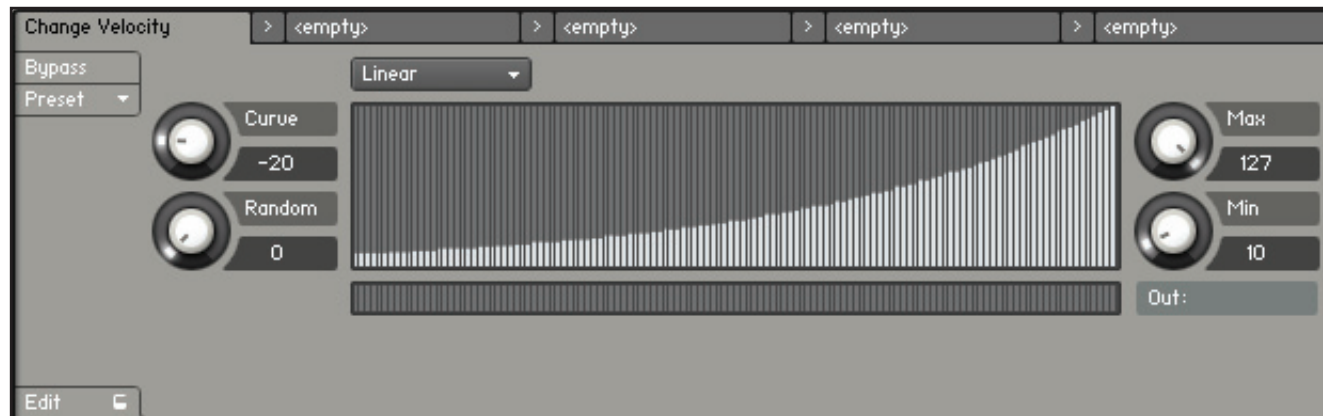
Semi: Transposes incoming MIDI notes by the selected semitone intervals.

Coarse: Adjusts the audio tuning of the notes in semitone steps.

Fine: Adjusts the audio tuning of the notes in cent steps.

Range: Sets the range within which the tuning is randomized with each note, with separate range settings for both MIDI and audio tuning.

5.3 Change Velocity



Change Velocity is an advanced velocity processing tool.

Velocity Curve menu: Select the type of basic velocity curve you want to create.

Velocity Curve Table: Displays the velocity values of the curve. Velocity values can also be manually entered into this table.

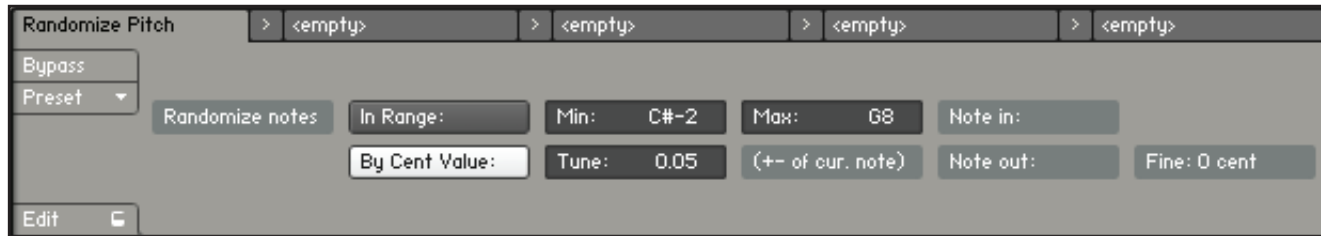
Curve: Adjust the convex or concave curve amounts of the velocity curve.

Random: Adjusts the range of the random amount of velocity added or subtracted to the incoming velocity.

Min/Max: Adjust the minimum and maximum values for the velocities in the velocity curve.

Fix: When a fixed velocity curve is selected, this knob selects the fixed velocity value.

5.4 Randomize Pitch

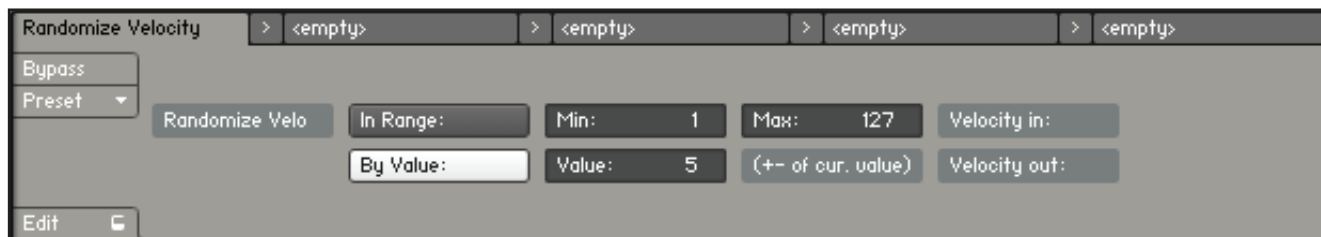


Randomize Pitch randomizes the note number of incoming MIDI notes and/or the tuning of the triggered samples.

In Range: Click this button to randomize notes by note number in the range specified by **Min** and **Max**.

By Cent Value: Click this button to randomize the tuning of the triggered sample in cent. If you set **Tune** to 0.10, all samples will be randomly tuned in the range ± 10 cent.

5.5 Randomize Velocity



Randomize Velocity randomizes the velocity value of incoming MIDI notes.

In Range: Randomizes all velocities in the range specified by **Min** and **Max**.

By Value: Randomly adds or subtracts velocities by the value range specified by **Value**.

6 Sequencing

6.1 Arpeggiator



Arpeggiator is a fully featured arpeggiator.

Mode: Select the basic arpeggiator mode:

- *On* enables the regular arpeggiator mode.
- *Hold* will latch all played keys.
- *Hold+-* latches all played keys and subsequently played keys will be added or taken away from the note buffer.
- *Off* turns the arpeggiator off.

MIDI Thru: When activated, played notes will be merged with the arpeggiated notes.

Note Order menu: The behavior of the note order is selected from this menu.

Octave: Sets the octave displacement, i.e. the distribution of the arpeggio pattern in various octaves. The arpeggio pattern cycles from the played octave to the octave set upwards.

Strike: Sets the number of strikes of each note in the note buffer. For values greater than 1, the note buffer will be repeated by the amount specified.

Rate: Sets the rate of the arpeggiator in fractions of a beat related to the Master Clock.

Duration: Sets the duration of the arpeggiated MIDI notes in percent. This will change the length of the MIDI notes and not the volume envelope.

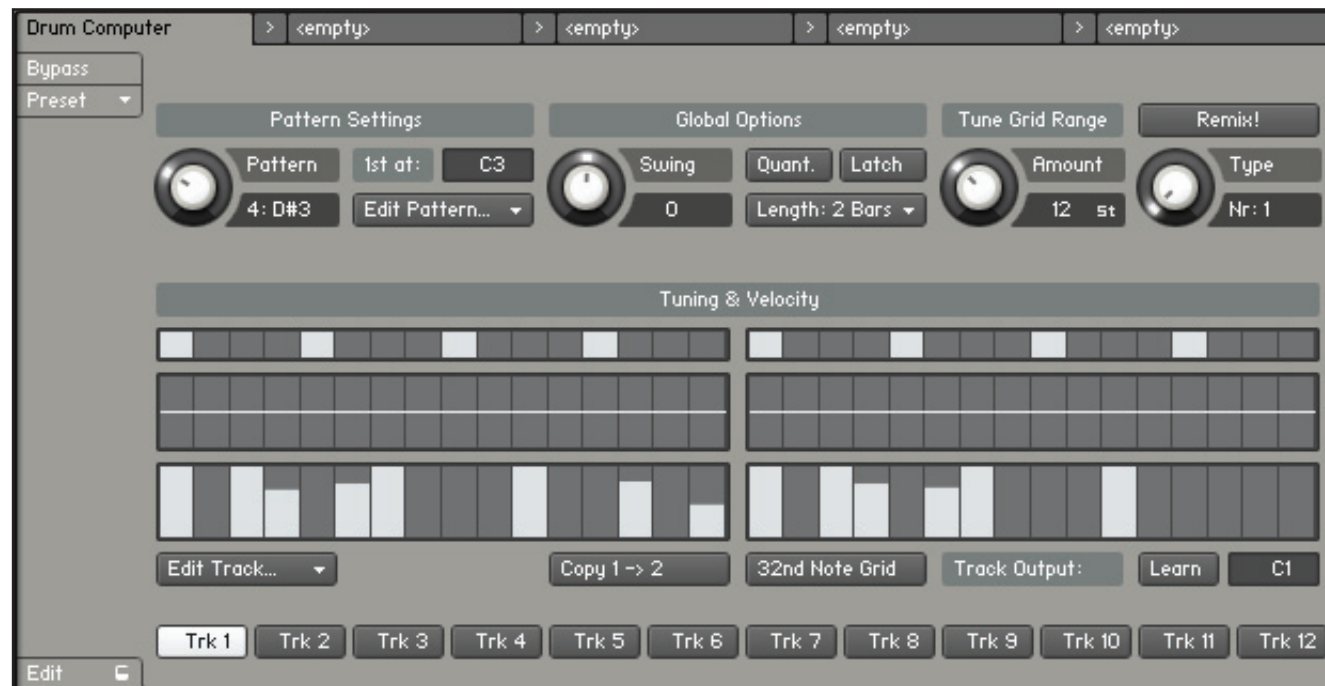
Swing: Sets the amount of swing in the groove.

Steps: Sets the number of steps in the rhythmic pattern.

Fix Velocity: When enabled, played velocities are ignored and taken from the columns of the rhythmic grid. When off, played velocities will be scaled by the columns of the rhythmic grid.

Rhythm Grid: Sets the rhythmic pattern of the arpeggiated notes. The columns set the velocity of each note. If the column is set to zero, the step will not be played. The actual velocity depends on the Fix Velocity button.

6.2 Drum Computer



Drum Computer is an advanced drum sequencer.

Pattern: Select one of the 12 drum patterns.

1st at: This is the MIDI note which triggers the first pattern. All other patterns are triggered by the subsequent eleven chromatic keys.

Edit Pattern: Use this menu to copy, paste, and clear patterns. *Copy Pattern to All Patterns* is very useful when creating a basic groove upon which to create additional variations.

Swing: Adjusts the swing amount of all of the grooves.

Quant: When activated, the pattern change and/or end will occur at the end of the pattern.

Latch: When activated, playing a MIDI note will trigger the pattern and continue playing until the same key is pressed again.

Length: Changes the length of the pattern to 1 or 2 measures.

Tune Amount: Sets the pitch range of the tuning table in semitones for all patterns.

Remix!: Turn on to activate the remix function, which changes the beat based on the selected remix type.

Remix Type: Select the remix pattern for the remix function.

Velocity Grid: Adjusts the velocity per step of the selected track. [Cmd]/[Ctrl]+click to delete a step.

Tuning Grid: Adjusts the tuning offset per step of the selected track. The range is -100% to 100% of the range specified by the Amount knob. [Cmd]/[Ctrl]+click to reset a step to 0%.

Indicator Grid: Displays the current position of the playing beat.

Edit Track: Copy, paste and clear tracks with this menu.

Copy 1 -> 2: Selecting this copies the track pattern in the first measure and pastes it into the second measure.

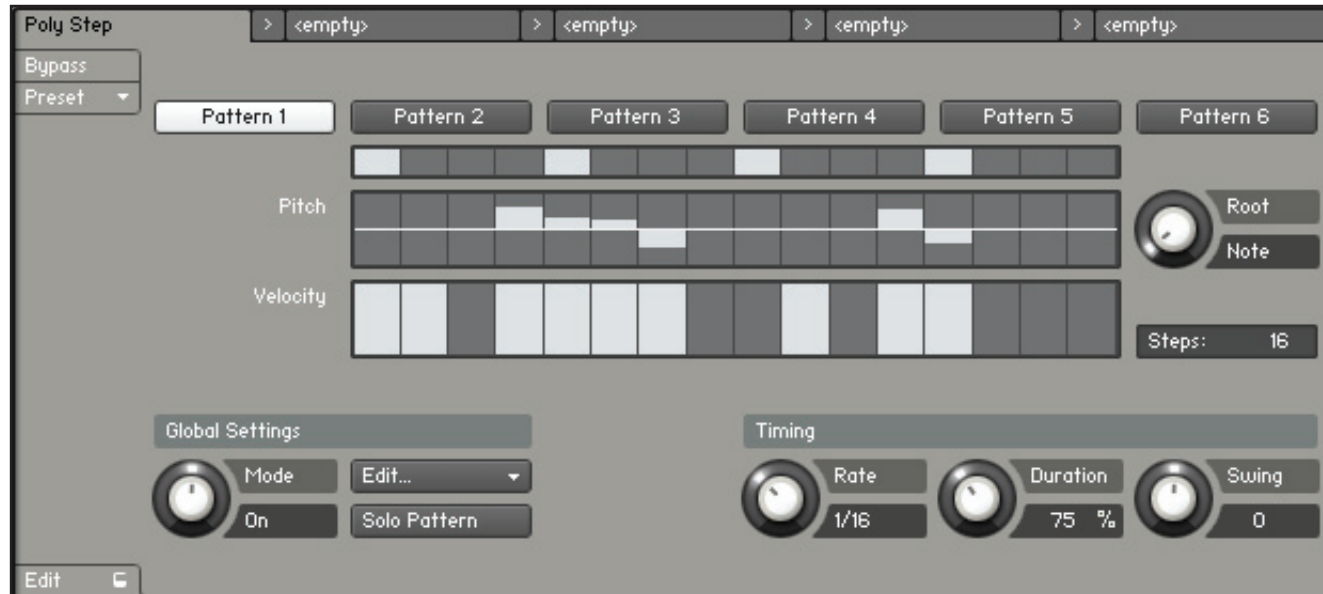
32nd Note Grid: Select this to switch the grid to 32nd note steps.

Learn: When activated, press a key and the track will trigger the selected note.

Note: This is the MIDI note which is triggered by the selected track.

Trk 1–12: Select these buttons to view and edit all 12 tracks.

6.3 Poly Step



Poly Step is a step sequencer with six independent tracks.

Pattern 1–6: Choose one of the 6 patterns to edit. Each pattern is edited independently and played simultaneously.

Velocity Grid: Adjust the velocity for each step of the selected pattern. [Cmd]/[Ctrl]+click to delete a step.

Pitch Grid: Adjust the note offset for each step of the selected pattern. The range is -12 to +12 semitones. [Cmd]/[Ctrl]+click to reset the pitch of the step to 0.

Indicator Grid: Displays the current position of the playing note.

Root: Specify the note which serves as the root note for the Pitch Grid:

- When set to *Note*, the incoming MIDI note will be the root note.
- When set to *+/- 1/2/3 Oct*, the incoming MIDI note will be transposed by this amount and then act as the root note.

Steps: Choose the number of steps in each pattern (up to 16).

Mode: This is the basic mode of the Poly Step:

- *On* enables it.
- *Hold* will latch all played keys.
- *Off* disables it.

Edit: This menu has commands for copying, pasting, and clearing the patterns.

Solo Pattern: When this is enabled, the currently displayed pattern is soloed.

Rate: This sets the duration of one step, synced to the Master Clock. The Rate is a global setting which affects all patterns.

Duration: This sets the duration of the played MIDI notes as a percentage of a step length.

Swing: This adjusts the amount of swing in the groove.

6.4 Retrigger

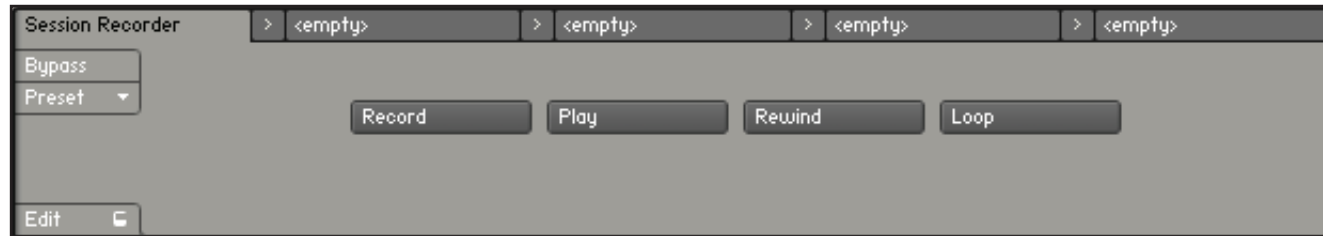


Retrigger repeats the triggering of a note with the rate specified.

Rate: Adjust the tempo in fractions of a beat synced to the Master Clock, or as a time in milliseconds which is not related to the Master Clock.

Tempo Sync: Use this menu to change between *Sync* and *Free* modes.

6.5 Session Recorder



Session Recorder allows you to record and playback a MIDI sequence.

Record: This button puts the script into record-ready mode. The actual recording begins when the first note is played. Clicking a second time will stop the recording.

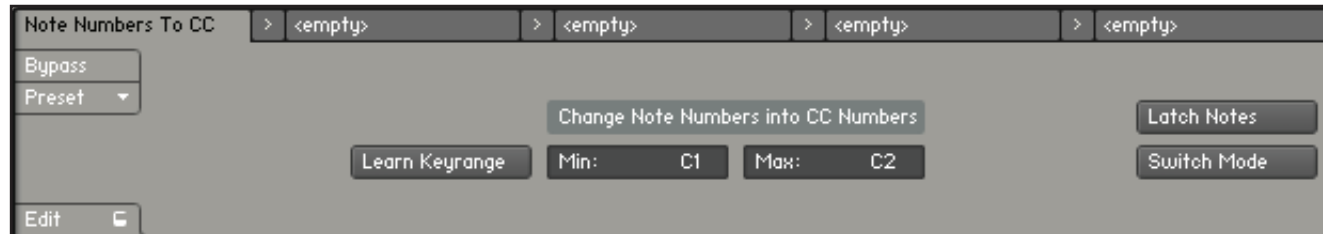
Play: Click here to playback the recording. Clicking a second time will stop playback.

Rewind: This will rewind the sequence back to the beginning. Using this button during playback will immediately reset the sequence to the beginning and continue playing the sequence.

Loop: When this switch is on, the sequence will continue to repeat until turning it off or stopping playback.

7 Transform

7.1 Note Numbers to CC



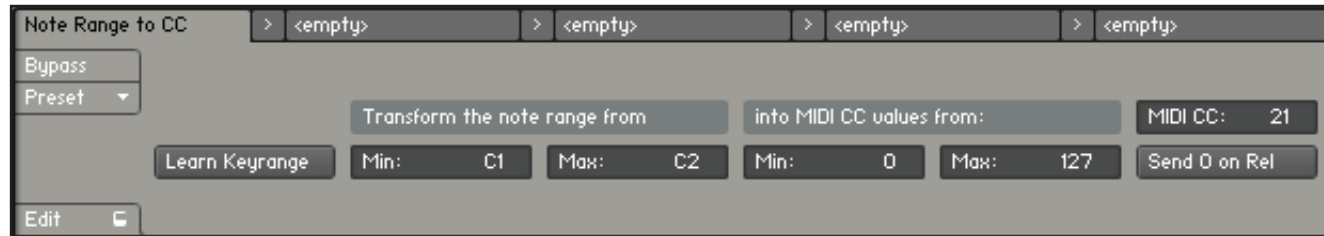
Note Numbers to CC is a tool which transforms MIDI note numbers directly into CC controller numbers.

Learn Keyrange: When this is enabled, you can select the lowest and highest keys on their MIDI input device which will act as the controller numbers.

Min/Max: These notes are the minimum and maximum MIDI notes which will be converted into CC numbers.

Latch Notes: When this is enabled, the notes will latch when played, which will also latch the values sent to the assigned CC numbers.

7.2 Note Range to CC



Note Range to CC is a tool which transforms MIDI note numbers directly into CC values for a specific CC number.

Learn Keyrange: When this is enabled, you can select the lowest and highest keys on their MIDI input device which will act as the CC values.

Min/Max Range: These notes are the minimum and maximum MIDI notes which will be converted into CC values.

Min/Max Values: These values are the minimum and maximum CC values which will be accessed with the MIDI notes.

MIDI CC: This is the CC controller number which the script will act on.

Send 0 on Rel: When this is enabled, releasing a note in the selected note range will send a CC value of 0 to the controller.

8 Tuning

8.1 Dynamic Pure Tuning



Dynamic Pure Tuning tunes the Samples triggered by the incoming MIDI notes in real time to pure intervals. So for example, when you play a C major chord, the three notes will be tuned in a way that the chord is made up from pure intervals, in this case a pure major third, a pure minor third and a pure fifth. The result will be a pure major chord that does not produce any beatings.

What are pure intervals? Pure intervals can be expressed using simple frequency ratios. For example: a pure major third has a frequency ratio of $5/4$, whereas an equal tempered major third has a ratio of $21/3$, which is approximately $63/50$.

Pure intervals will not beat, i.e. they will not produce any change in amplitude.

This module will tune the following intervals:

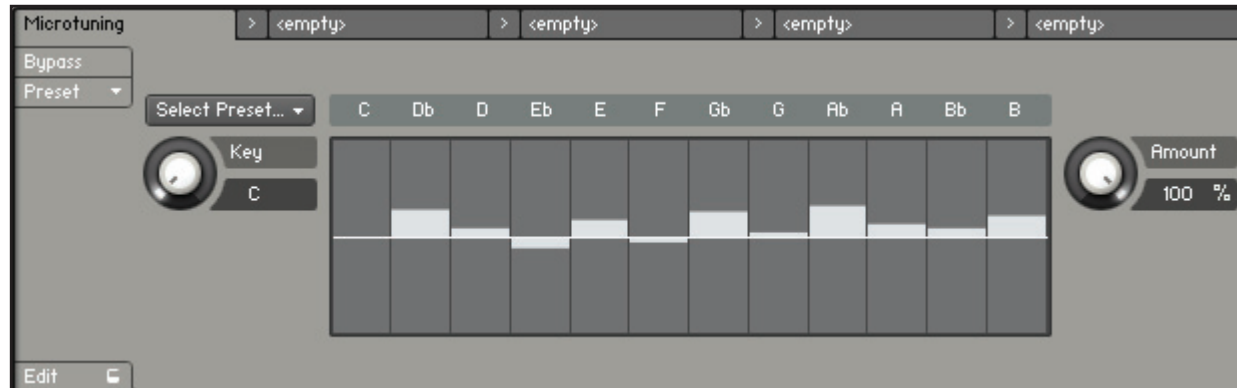
Interval played	Frequency ratio	Deviation from equal tempered interval
Fifths	3/2	+2 cent
Fourth	4/3	-2 cent
Major thirds	5/4	-14 cent
Minor sixth	8/5	+14 cent
Minor third	6/5	+16 cent
Major sixth	5/3	-16 cent
Minor seventh	16/9	-4 cent
If Natural Seventh is selected:		
Minor seventh	7/4	-31cent

Certain rules apply:

- The minor seventh is only tuned when a dominant seventh chord is played (with or without the fifth). When played alone, it is not tuned; therefore a major second is also not tuned.
- If a dominant 9 chord is played, the 9 is tuned to 10/9 (-8 cent) when Natural Seventh is disabled. If enabled, the 9 is tuned to 9/8 (+ 4 cent).
- The values of the tuned notes will always be as close as possible to the “middle” line, represented by equal temperament. So when you play C – E, the E will not be lowered by 14 cent but the C will be raised by 7 cent and the E will be lowered by 7 cent in order to constitute a pure major third.
- It is possible that held notes change their tuning if other notes are played. In that case, the **Time** parameter sets the speed of the tuning of the held notes.

Depth: This sets the amount of tuning in percent, leave it at 100 to hear pure intervals.

8.2 Microtuning



Microtuning is a scale based microtuning module. You can tune each scale degree ± 50 cents and set the first scale degree to any of the twelve notes.

Select Preset: Use this menu to select from a collection of standard and classical tunings.

Tuning Table: Adjust the detuning for each of the 12 notes in the scale.

Key: This sets the first scale degree.

Amount: This knob adjusts the applied amount of the tuning. When set to 100%, each note is tuned to the cent value specified in the table. When set to 0%, no tuning is applied.

8.3 Notes per Octave



Notes per Octave is a microtuning script which divides the octave into equal parts. The number of notes per octave ranges from 1 to 1200.

Root: This knob sets the root note from which the octave will be divided into the number of equal parts.

Notes: This value sets the number of evenly divided notes per octave.

8.4 Over-Undertones



Over-Undertones creates a series of up to 128 overtones and undertones.

Note: This sets the MIDI note at which the fundamental of the over-undertone series will be played.

Pitch: This sets the pitch of the fundamental of the over-undertone series.

8.5 Quarter Tone



Quarter Tone tunes all notes above and below the specified note in quarter tones.

Root: Select the root note for the quarter tone scale.

9 Utilities

9.1 6 MIDI Controllers



6 MIDI Controllers allows you to set up to six knobs to act as continuous controllers for assigned CC numbers.

MIDI CC: Assign the knobs to a specific CC controller number in this field.

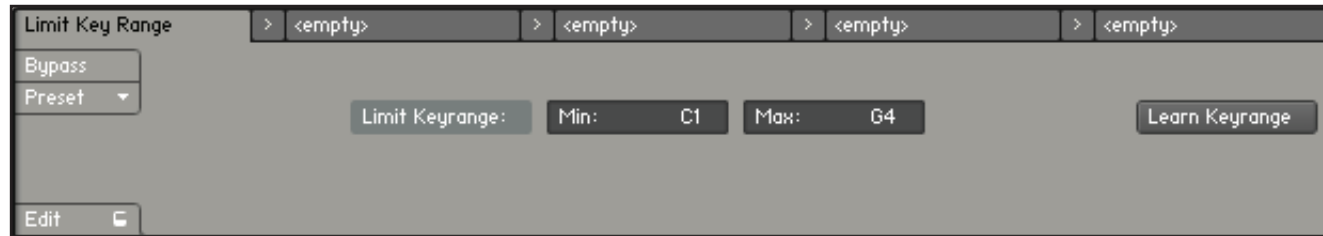
Knob 1–6: Use these knobs to control the values from the assigned CC numbers.

Send with Note: If enabled, each note will trigger all active controllers, i.e. each note is accompanied by MIDI CC values.

Randomize: When enabled, all active controllers are randomized. If **Send with Note** is enabled, each note will randomize the controller values.

Touch: This will send a snapshot of all active controllers.

9.2 Limit Key Range



Limit Key Range limits the playing area of an Instrument to the specified MIDI notes.

Min/Max: These are the minimum and maximum MIDI notes which will be activated for the Instrument.

Learn Keyrange: When this is enabled, you can select the lowest and highest keys on their MIDI input device which will be the minimum and maximum values for the limited keyrange.

9.3 MIDI Monitor



MIDI Monitor is a utility which allows you to view incoming MIDI data. Select the event types you wish to monitor and the events will be displayed in the text display window.

Display: Here is where all of the MIDI information will appear.

Verbose Mode: When this is enabled, each MIDI message will be displayed on a separate line and will be recorded in a list.

Clear Display: This clears all data from the current display.

Note On: Turn this on to display incoming MIDI note on note number messages.

Velocity: Turn this on to display incoming MIDI note on velocity messages.

Controller: Turn this on to display incoming MIDI CC messages.

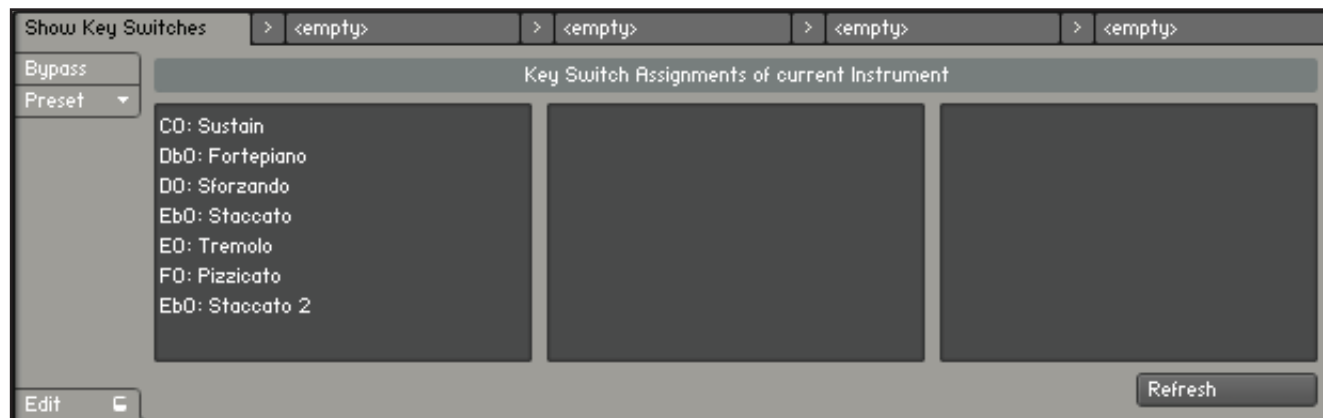
Pitch Bend: Turn this on to display incoming MIDI pitch bend messages.

Note Off: Turn this on to display incoming MIDI note off note number messages.

Channel Pressure: Turn this on to display incoming MIDI channel pressure messages.

RPN/NRPN: Turn this on to display incoming MIDI RPN and NRPN messages.

9.4 Show Key Switches



Show Key Switches displays the keyswitches and their corresponding Group names for the Instrument.

Refresh: If you make any changes to the Groups and/or keyswitches after loading the script, click this button to update the display.

10 Appendix

10.1 Tuning Tables

10.1.1 Pure Tunings

Pure

Note	Frequency ratio	Deviation from equal tempered
C	1/1	0 cent
C#/D \flat	25/24	-29.328 cent
D	9/8	+3.910 cent
D#/E \flat	6/5	+15.641 cent
E	5/4	-13.686 cent
F	4/3	-1.955 cent
F#/G \flat	25/18	-31.283 cent
G	3/2	+1.955 cent
G#/A \flat	8/5	+13.686 cent
A	5/3	-15.641 cent
A#/B \flat	9/5	+17.596 cent
B	15/8	-11.731 cent
C	2/1	0 cent

Overtones 16-32

All intervals are taken from the fifth octave of the harmonic series (i.e. the scale is made up from the overtones 16 17 18 19 20 21 22 24 26 27 28 30 32):

Note	Frequency ratio	Deviation from equal tempered
C	1/1	0 cent
C#/D \flat	17/16	+4.955 cent
D	9/8	+3.910 cent
D#/E \flat	19/16	-2.487 cent
E	5/4	-13.686 cent
F	21/16	-29.219 cent
F#/G \flat	11/8	-48.682 cent
G	3/2	+1.955 cent
G#/A \flat	13/8	+40.528 cent
A	27/16	+5.865 cent
A#/B \flat	7/4	-31.174 cent
B	15/8	-11.731 cent
C	2/1	0 cent

10.1.2 Pythagorean Tunings

Pythagorean tunings are based on pure fifths, two alternatives are available:

Pythag. Mid: Five pure fifths are tuned down and up from C, F#/G \flat is deliberately set to ± 0 cent.

Note	Frequency ratio	Deviation from equal tempered
C	1/1	0 cent
D \flat	256/243	-9.775 cent
D	9/8	+3.910 cent
E \flat	32/27	-5.865 cent
E	81/64	+7.820 cent
F	4/3	-1.955 cent
F#/G \flat	-	0 cent
G	3/2	+1.955 cent
A \flat	128/81	-7.820 cent
A	27/16	+5.865 cent
B \flat	16/9	-3.910 cent
B	243/128	+9.775 cent
C	2/1	0 cent

Pythag. (Up): 11 pure fifths are tuned upwards from C to E#:

Note	Frequency ratio	Deviation from equal tempered
C	1/1	0 cent
C#		+13.685 cent
D	9/8	+3.910 cent
D#		+17.595 cent
E	81/64	+7.820 cent
E#		+21.505 cent
F#		+11.73 cent
G	3/2	+1.955 cent
G#		+15.64 cent
A	27/16	+5.865 cent
A#		+19.55 cent
B	243/128	+9.775 cent
C	2/1	0 cent

10.1.3 Meantone temperaments

Mean Tone (1/4): Classic mean tone temperament: the syntonic comma (sC) is divided into four equal parts, this fourth comma is subtracted from the pure fifth and constitutes the mean tone fifth. The fifths E_b - B_b -F-C-G-D-A-E are tuned as mean tone fifths, the thirds A-C#, D-F#, E-G# and G-B are tuned pure.

Note	Frequency ratio	Deviation from equal tempered
C	1/1	0 cent
C#	(135/128) / sC3	-23.950 cent
D	(9/8) / sC2	-6.843 cent
E_b	(32/27) / sC-3	+10.265 cent
E	5/4	-13.686 cent
F	(4/3) / sC-1	+3.422 cent
F#	(45/32) / sC2	-20.529 cent
G	(3/2) / sC1	-3.422 cent
G#	(5/4) ²	-27.372 cent
A	(27/16) / sC3	-10.265 cent
B_b	(16/9) / sC-2	+6.843 cent
B	(15/8) / sC1	-17.108 cent
C	2/1	0 cent

Silbermann (1/6): Tuning from Georg Silbermann (1683-1753) used in the late baroque for church organs: the syntonic comma is divided by six (3.584 cent); all fifths downwards from C to D \flat and all fifths upwards from C to F \sharp are lowered by 1/6 of the syntonic comma.

Note	Deviation from equal tempered
C	0 cent
D \flat	+8.145 cent
D	-3.258 cent
E \flat	+4.887 cent
E	-6.515 cent
F	+1.629 cent
F \sharp	-9.774 cent
G	-1.629 cent
A \flat	+6.515 cent
A	-4.887 cent
B \flat	+3.258 cent
B	-8.145 cent
C	0 cent

10.1.4 Well-temperaments

Werckmeister III: Temperament by Andreas Werckmeister (1645-1706), dating from 1691. The fifths C-G-D-A and B-F# are lowered by a quarter of the pythagorean comma.

Kirnberger III: Temperament by Johann Philipp Kirnberger (1721-1783), dating from 1779. The fifths C-G-D-A-E are lowered by a quarter of the syntonic comma, the fifth F#-C# is lowered by the schism, and the remaining fifths are pure.

Neidhardt I: Temperament by Johann Georg Neidhardt, dating from 1724. The fifths C-G-D-A-E are lowered by a 1/6 of the pythagorean comma, the fifths E-B, B-F#, G#-D# and E_b-B_b are lowered by 1/12 comma, the fifths F#-C#, C#-G#, B_b-F and F-C remain pure.

Vallotti: Temperament by Francesco Antonio Vallotti, dating from 1754. The pythagorean comma is distributed over the fifths F-C-G-D-A-E-B; each of these fifths is lowered by 1/6 of the pythagorean comma.

Young: Temperament by Thomas Young from 1800, sometimes referred to as Young II. The pythagorean comma is distributed over the fifths C-G-D-A-E-B-F#; each of these fifths is lowered by 1/6 of the pythagorean comma.

10.2 Scale Types

This overview gives you the scale types based on C used in several scripts:

The image displays 20 musical scales based on the key of C, arranged in 11 rows. Each scale is represented by a single staff of music with a treble clef and a key signature of one flat (Bb). The scales are:

- Major: C-D-E-F-G-A-B-C
- Natural Minor: C-D-E-F-G-A-Bb-C
- Harmonic Minor: C-D-E-F-G-A-Bb-A-C
- Melodic Minor: C-D-E-F-G-A-Bb-A-C (ascending) and C-Bb-A-G-F-E-D-C (descending)
- Dorian: C-D-E-F-G-A-Bb-A-C
- Phrygian: C-D-Eb-F-G-A-Bb-A-C
- Lydian: C-D-E-F#-G-A-Bb-A-C
- Mixolydian: C-D-E-F-G-A-Bb-A-C
- Locrian: C-D-Eb-F-G-A-Bb-A-C
- Whole-tone: C-D-E-F#-G#-A#-B-C
- Diminished: C-D-Eb-F-G-A-Bb-A-C
- Octatonic: C-D-Eb-F-G-A-Bb-A-C
- Pentatonic Major: C-D-E-G-A
- Pentatonic Minor: C-D-Eb-G-A
- Blues: C-D-Eb-F-G-A-Bb-A-C
- Messiaen III: C-D-E-F#-G-A-Bb-A-C
- Messiaen IV: C-D-E-F#-G-A-Bb-A-C
- Messiaen V: C-D-E-F#-G-A-Bb-A-C
- Messiaen VI: C-D-E-F#-G-A-Bb-A-C
- Messiaen VII: C-D-E-F#-G-A-Bb-A-C
- Lydian b7: C-D-E-F#-G-A-Bb-A-C
- Locrian #9: C-D-Eb-F-G-A-Bb-A-C
- Major-Minor: C-D-E-F-G-A-Bb-A-C