

TX16Wx Software Sampler 3

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2. About TX16Wx

The TX16Wx Software Sampler is a simple, yet powerful sampling instrument inspired by various classic hardware samplers from the 80s and 90s, but mainly the excellent Yamaha TX16W sampler as used with the Typhoon operating system.

Many software samplers sport a multitude of features aimed mainly at selling gigabyte sized preset libraries. The TX16Wx instead aims to bring back some of the joy of working with the classic hardware instruments, using sampling not for playing back pre-built libraries, but instead creating your own new sounds in creative way.

Perhaps the biggest reason this software was created though, is that I have yet to find a software sampler, free or otherwise, with both workstation features, and a clear cut, well-documented file format that does not lock the user in to a product forever. The TX16Wx file format is simple XML files and can be translated even by hand in a simple text editor.

3. Sound Architecture

Sounds in TX16Wx are organized in a hierarchical structure of bank, performances, programs, groups, splits and waves. These components are normally stored to disk as individual files and loosely referenced by file name. See the file format section.

3.1. Bank

The bank is the complete sampler state, including settings for External Controllers, outputs and all the performances, programs and samples.

3.2. Performance

A performance is a complete active multitimbral setup, with assignment of programs to Midi channels and audio outputs. Performances are the top level items exposed to the containing DAW.

3.3. Channel slots

Each channel slot contains a single program and maps this to a Midi channel and an output.

3.4. Program

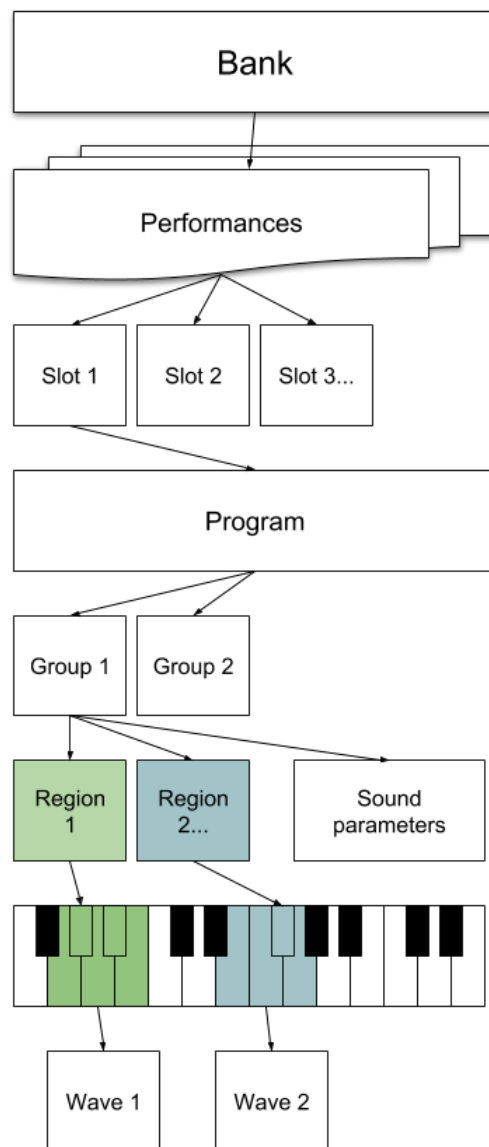
A program is a complete instrument. It contains one or more groups of samples.

3.5. Group

A group consists of one or more sample regions, and can be thought of as a layer of sound. A group maps to sound settings and modulation mappings. A group may also override the channel slots output settings to send individual groups to specific outputs (for example when building a drum kit).

3.6. Region

A region maps a single wave or wave matrix to a range on the keyboard. It also allows you to choose specific loops for sustain/release, as well as playback mode or setting root overrides.



In TX16Wx pro you can also set individual playback engines per group, such as `time stretch` or `pitch shift` engine.

3.7. Wave

A wave (or sample) is an individual sample loaded or streamed from disk. A wave can be shared between any number of groups regions. A wave also contains such information as root key, tuning and loop points.

3.8. Matrix

 (TX16Wx Professional only)

A wave matrix is a two-dimensional mapping of samples, allowing on-key trigger switching based on either round-robin, randomness or modulation sources.

Wave matrices are a powerful tool to create sound alterations based on secondary input, for example to build realistic-sounding drum kits or similar.

A matrix can be mapped into a region just like a wave.

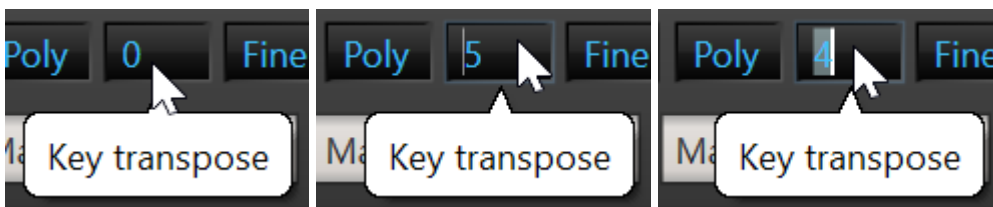
4. User Interface

4.1. Selectors



Selecting performances and programs can be done by either clicking the left side up/down arrows or left-clicking combo box button to open a list of loaded content. Click the text area of the combo box to edit the name of the current item.

4.2. Numerical dials

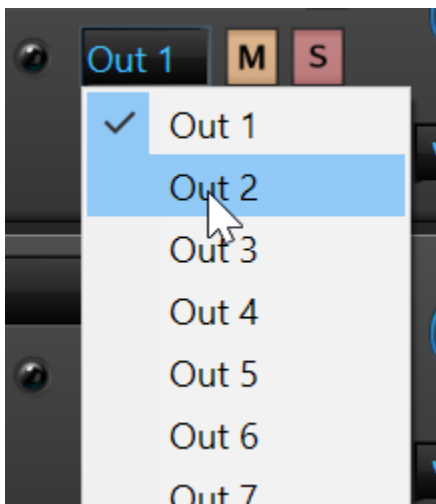


Most numerical parameters can be manipulated by either click-dragging the display to slide the values up/down, or double clicking to enter the value by typing.

Most dials can be switched to a more or less sensitive mode by holding the Shift key while dragging.

Use this to switch between coarse and fine adjustments. By clicking Ctrl-left, a dial will reset to its default value.

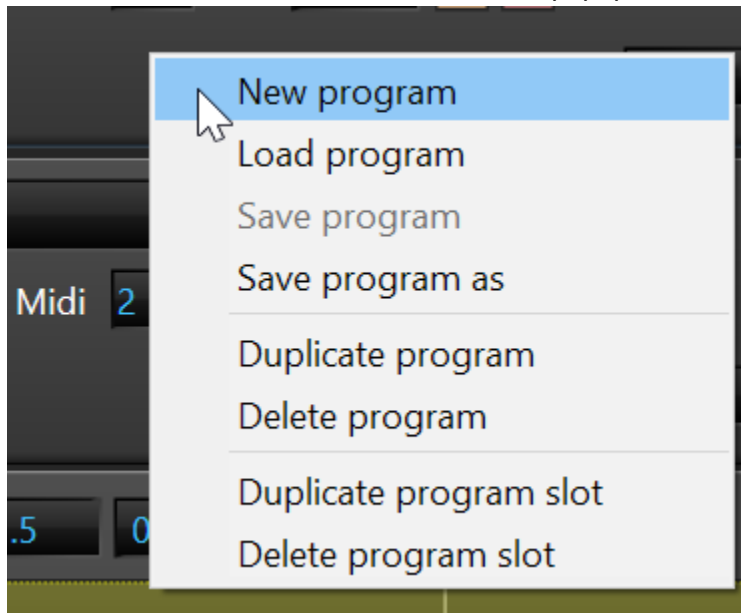
4.3. Menu selectors



Discreet parameters, such as filter/LFO type, outputs, midi channels etc. are selected by clicking the display and choosing the value from the popup menu.

4.4. Popup menus

Most areas of the UI have context-sensitive popup menus available on right-clicking.



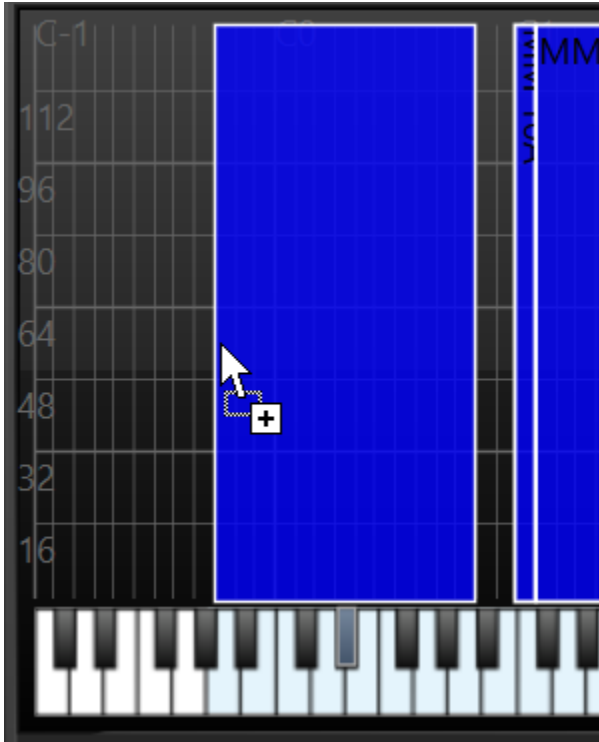
Also, look for the **cog wheel** icon in the various toolbars in the UI. Left clicking this will bring up the current editors action menu.

4.5. Tabular data

Lo Key	Hi Key	Lo Vel	Hi Vel	Lo FK	Hi FK	Lo FV	Hi FV	Root	Fine	Sample/Matrix
C1	C1	0	127	C1	C1	0	127	C2	0	MM 10A
C#1	D#2	0	127	C#1	D#2	0	127	C2	0	MM 10A
E2	A2	0	127	E2	A2	0	127	F#2	0	MM 10B
A#2	D#3	0	127	A#2	D#3	0	127	C3	0	MM 10C
E3	A3	0	127	E3	A3	0	127	F#3	0	MM 10D

Most items in TX16Wx, such as groups, regions and waves, are listed in tables, displaying the loaded items as well as their attributes. Items in tables can be sorted on the displayed attributes as well as permanently re-ordered using drag-and-drop. To edit individual attributes of selected items, either left-click and hold or double click the desired attribute cell.

4.6. Drag & drop



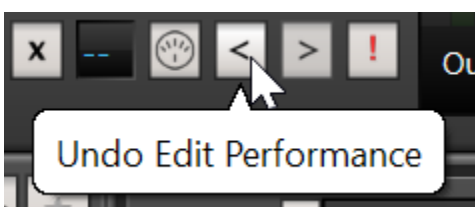
Any loadable sound item, such as banks, performances, programs and samples can be dragged and dropped into the UI to load them. Certain areas, such as the programs slots and the key mapper editor will treat some files special when you drag them there, i.e. dragging program content into a slot will replace the current program with the newly loaded one, and dragging sound files into the key mapper will layout the samples in a group.

4.7. Zooming and scrolling views



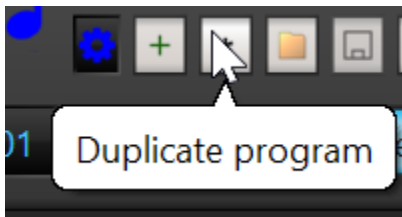
Editor views in TX16Wx can be zoomed and scrolled to help focusing the edited items/area. Zooming and scrolling can be done using the scrollbar controls or by using the mouse wheel. Using the mouse wheel will zoom in the horizontal direction and by holding the shift key you can zoom vertically (when available). Scrolled areas can also be moved by using the middle mouse button and will respond to drag gestures.

4.8. Undo



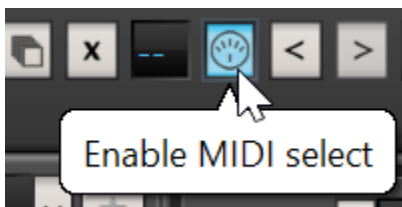
TX16Wx has built in support for undo & redo of edit actions as well as loading and deleting sound data. The undo and redo buttons are located in the performance view toolbar at the top of the UI. Maximum undo queue size can be modified in the setup view under settings.

4.9. Tooltips



TX16Wx has context sensitive tooltip support, providing help and hints for most aspects of the UI. Hover the mouse pointer over a control to display the context sensitive help.

4.10. MIDI Select

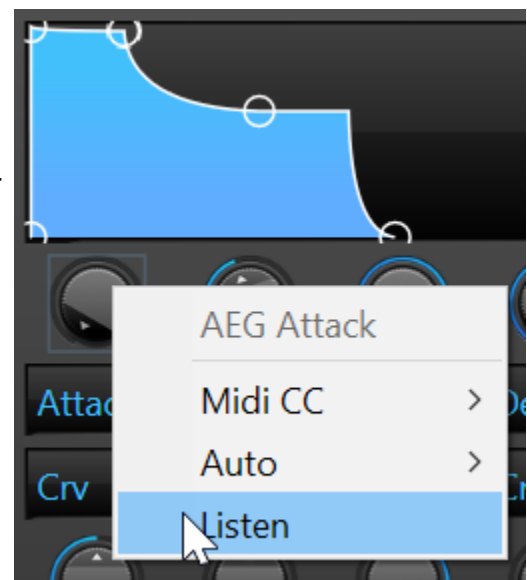


When active, incoming MIDI notes will cycle through the sound elements triggered by the note. Use this to quickly find the sound elements you are looking for.

4.11. Assignable automation

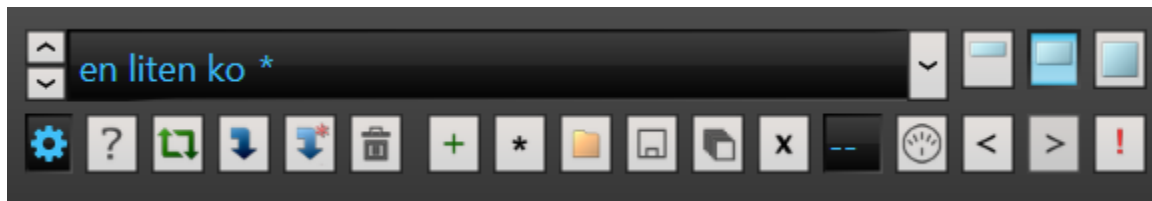
Many controls in the Program slot view and the sound controls section can be assigned either DAW automation parameters or controlled by Midi continuous controllers.

To assign an automation parameter or Midi CC to a parameter, right click the control and choose "listen" to begin listening for incoming controller data. Then move the automation/Midi control and TX16Wx will register the control binding.



5. Performance view

The performance allows you to select the active performance as well as do edit operations on the top level items in the sound hierarchy. Here you select, add, delete, load and save performances, programs and whole bank state.



5.1. Selecting performance

The performance selector in the top of the performance view allows you to switch between the currently loaded performances. By clicking the name field you may edit the name of the current performance.

5.1.1. Performance menu

Right click the performance selector area or click the edit menu (cog wheel icon) to bring up the performance edit menu. (Most commands are also available in the tool bar).

- **Load bank** - loads a txbank file, completely replacing the content of the Samplers memory. All currently loaded items will be discarded.
- **Save bank / Save bank as** - saves the full state of the sampler, along with any loaded sound data. You may be prompted to provide names for individual files being saved.
- **New performance** - creates a new, empty performance.
- **Load performance** - loads a performance along with its associated programs and waves into the current bank. Note that you can also drag & drop performances (or sound fonts) from windows explorer onto the performance field to load them.
- **Duplicate performance** - creates a shallow copy of the current performance. The new performance will reference the same programs and samples as the original performance.
- **Save performance / Save performance as** - saves the currently active performance to disk along with the programs and waves used. You may be prompted to provide names for individual files being saved.
- **Delete performance** - deletes the currently active performance. Note that this does not delete any programs or waves.
- **Clear bank** - empties the sampler memory. All currently loaded items will be discarded.
- **Clear undo queue** - empties the undo queue.

- **Delete unused** - deletes unused sound items

5.1.2. Reordering performances and programs

TX16Wx does not use fixed performance/program number assignments, however sometimes, for example when using MIDI program change to switch active sound items, or just to tidy up a bank, it can be helpful to re-order the sound data lists.

The re-order edit pages in the settings view lets you change the display order of the sound items, as well as delete and rename individual items.

Items can be dragged to the desired index. Double click an item to rename it. All operations within the edit page can be undone.

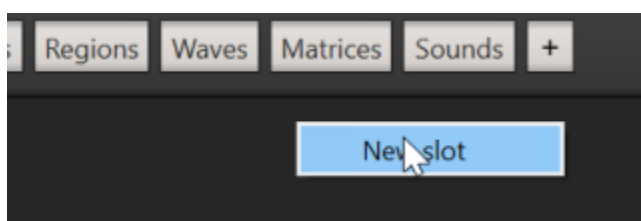
5.2. Working with program slots



A performance consists of one or more Program slots. These are accessed through the program slot list, the first tab of the left pane in the main UI.

Each program slot in the list maps a Program to a MIDI channel and output, with settings for volume, pan and effect sends (*TX16Wx Pro only*).

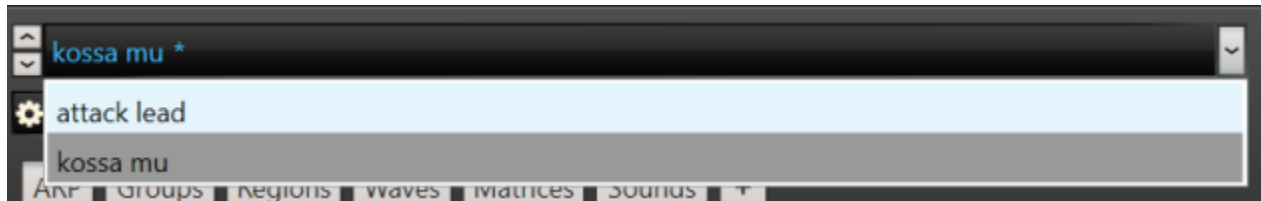
5.2.1. Adding and removing slots



Right click the slot area or an existing slot to access the context menu for adding, removing or duplicating slots. Slots can also be created, deleted and duplicated from the Program edit menu.

5.2.2. Selecting programs

Use the program selector to choose a program for the active slot.



5.2.3. Program menu

Right-clicking on a slot, or clicking the edit icon, brings up the slot program edit menu:

- **New program** - creates a new, empty program.
- **Load program** - brings up a file selector and allows you to browse for existing programs on disk. You can also drag & drop program files here to load them.
 - The program file selector can also be accessed by clicking the **load** icon next to the selector field
- **Save program / Save program As** - Saves the active program to disk along with any used waves. You may be prompted to provide names for individual files being saved.
- **Duplicate program** - creates a shallow copy of the current program. The new program will reference the same samples as the original program.
- **Delete program** - deletes the currently active program. Note that this does not delete any waves. See Delete Unused in the performance editor menu.
- **Duplicate program slot** - creates a shallow copy of the current program slot. The new slot will reference the same program as the original.
- **Delete program slot** - deletes the program slot. Note that this does not delete the program or any waves.

Tip: The Load Program file selector has a checkbox to enable/disable "preview" of the programs you browse. When this mode is active, any program file you click in the selector will be temporarily loaded into the current program slot and will respond to midi input. This is a great way to quickly preview how the currently playing song will sound with the new program loaded.

5.2.4. Slot outputs

The lower and middle area of the Program Slot shows the input/output controls: **Volume**, **Pan**, **Output channel**, **Midi channel** and **solo/mute**.



- **Quality** - sets the playback quality of the assigned program. Depending on the playback engine used, this affects sample interpolation or other aspects.
- **Velocity curve** - selectable velocity **mapping curve** override for this slot, affects how MIDI note-on velocity is mapped to playing voice velocity.
- **Polyphony limit** - sets the maximum polyphony for this program. If active voice count for the slot exceeds this number, the oldest playing voice will be stolen and re-used.
- **Transpose** - transposes incoming notes on the assigned channel
- **Detune** - fine adjustment to pitch of all mapped groups
- **Slot colour** - sets a colour for the program slot, to quickly be able to identify editors in the user interface.
- **Midi channel** - the program will respond to incoming midi messages on the assigned channel. If you select Omni, any midi message on any channel will trigger samples in the program.
- **Output** - assigns the default output channel for sound from groups played on this slot. However, individual groups may override this setting, i.e. while the program is set to one output, one or more groups in it may actually play on another output.
- **Mute / solo** - turns off output from this/all other slots.
- **Volume and Pan** - Note that these are combined (multiplied) with the individual volume and pan settings in the programs respective groups.

5.2.5. Effects sends

■ (TX16Wx Professional only)

The right side area of the Program slot contains the effect sends controls.

FX / Output send 1 - 3 sets destination, level and pre- or post-fader send for the entire program mapping.



5.2.6. Parameter automation

By right-clicking the dial/control for some program slot parameters you can assign automation to control the values. When automated, any changes you make to the parameter will be sent to the DAW host, and any parameter change from the host will modify the parameter.

6. File browser

The left side of the main user interface is the integrated file browser. Here you can access sound content on disk, and quickly jump between your favourite locations, a.k.a. places.

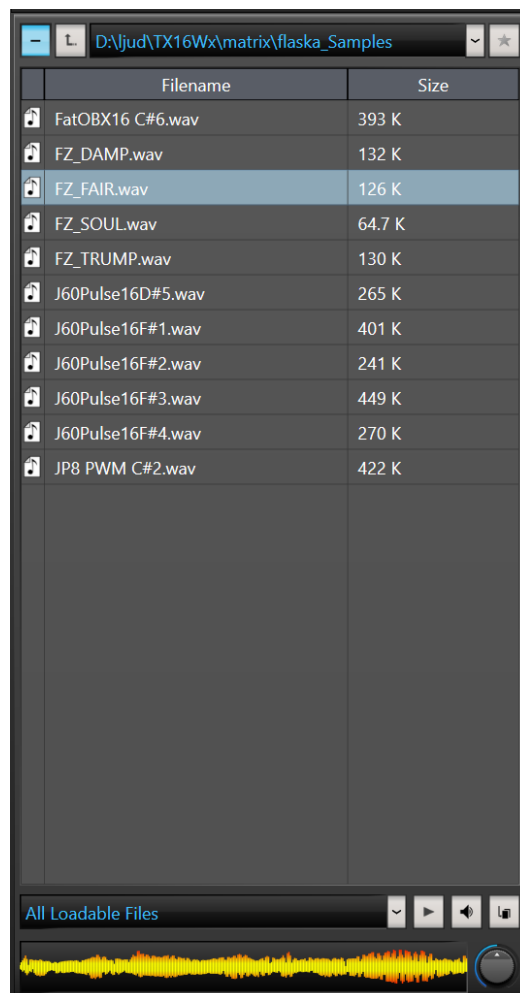
The top field of the browser shows the current location in your computer, and also lets you quickly jump to another drive or favourite location. To the left you find the up folder button, used to go up in the file hierarchy.

The rightmost icon in the top bar is the favourite indicator. It lights up when you are in a designated favourite path. Click it to toggle the current path on/off as a favourite.

The bottommost selector lets you filter what file content will be shown. By default it will show all files. You can switch between different content filters using the combo box.

You can drag and drop items from the file browser into TX16Wx, or simply double click them to load the content into the sampler.

Some content can be browsed in the file browser (i.e. sound font files), and the contained sound data can be browsed and loaded individually as if individual files.



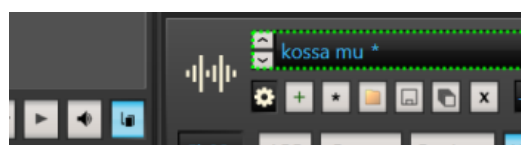
6.1. Playing waves

The lower panel in the file browser contains, from left to right, the Wave preview display, the play button and the auto play toggle. When a sample is selected, you can see a preview of the content in the preview window. You can listen to the sound by pressing play. If auto play is turned on, selecting a wave file will automatically play it from start to end.

The volume control in the lower right corner sets preview volume for both the file browser, file dialogs and also previewing in the sample editor.

6.2. Preview mode

The rightmost button in the file browser toolbar is the preview toggle. When active, selecting files in the file browser will temporarily load them into the last selected applicable sound object.



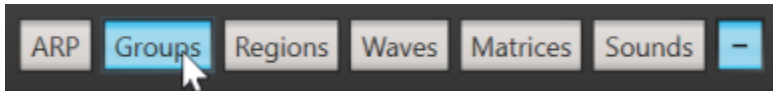
Sound objects that can be previewed are waves, wave matrices and program files. Waves and matrices can be loaded into regions, waves into matrix cells and programs into program slots.

To work with preview, select the sound item you want to modify, for example a region. Activate preview and pick a wave file in the browser. The file will be loaded and temporarily replace the currently mapped sound. Re-selecting the region, selecting another region or editing any parameter will reset the region into its original state.

If you are satisfied with the previewed sound, double click the sound file to load it permanently. The region will be re-mapped with the new sample.

The same workflow applies to matrix cells and program slots.

7. Slot editors



Each program slot can expand editors to manipulate the various sound elements and settings making up the selected program.

You can also drag and drop sound elements between editors in separate slots to copy parts of a program to another.

Tip: Use the **[+]** button to quickly switch currently open editors closed and back.

Tip: Use the **1** through **7** numerical keys to quickly open/close/navigate between slot editors.

Tip: Use **ctrl-1** through **ctrl-7** to quickly move between slots.

7.1. Group panel

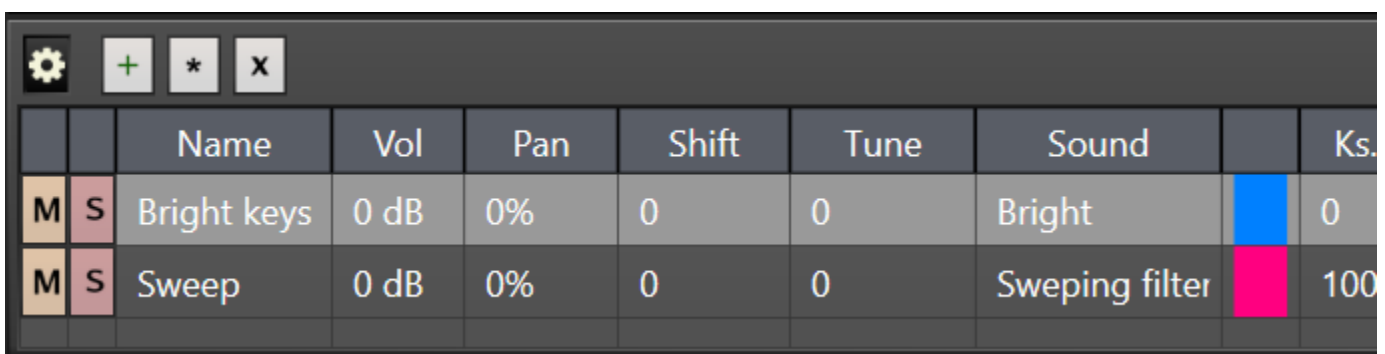
The group panel shows the groups in the selected program. Each group can contain any number of mapped regions, as well as map to one or more sound parameter objects.

7.1.1. Group list

Groups are a collection of region mappings, i.e. samples mapped to key ranges, determining things like output bus, transposition engine, quality settings and sound settings mapping.

You typically use groups to create sound layers.

Groups can be assigned individual colours in the user interface, making identifying the mapped regions in the key mapper easier.



		Name	Vol	Pan	Shift	Tune	Sound		Ks.
M	S	Bright keys	0 dB	0%	0	0	Bright	Blue	0
M	S	Sweep	0 dB	0%	0	0	Sweping filter	Pink	100

7.1.2. Group menu

Right-clicking or clicking the "cog wheel" widget brings up the action menu for groups.

- **New** - creates a new, empty group

- **Duplicate** - copies the currently selected group(s) and their content.
- **Delete** - deletes the currently selected group(s) and their content.
- **Select All** - select all groups (shortcut key: Ctrl-A)
- **Merge** - merges the currently selected groups into a single one.

The group list presents all editable group attributes.

- **Mute** - mutes the selected group(s). When active the group(s) will not generate sounds when played.
- **Solo** - solos the selected group(s). When active, only the soloed group(s) will generate sounds when played.
- **Name** - the name of the group.
- **Shift** - coarse tuning offset of the group.
- **Fine** - fine tuning offset of the group.
- **Sound** - selects the sound parameter element mapped to this group. Sound parameters determine synthesis parameters for the connected samples. Many groups can share a single sound parameter element.
- **Colour** - sets the displayed colour of the group. This is helpful to separate different group regions in the region mapper.
- **Key scale cents** - sets the key scale tuning for the elements of the group. A setting of 100 cents corresponds to a full note transposition for each Midi note.
- **Play mode**
 - **Normal** - samples are triggered on Midi note on, and released on Midi note off
 - **Toggle** - group is triggered and silenced by alternating note-ons. I.e. hitting a MIDI key once will start playback, and hitting it again will stop it.
 - **One shot** - Group triggers on Note-On, but the AEG envelope will transition to Release stage without any Sustain period, i.e. holding the key will have no effect.

Typically you would use this for drum sounds. Note that the AEG will still shape the sound, thus to hear anything you will have to turn up decay/release parameters.
 - **Release** - samples are triggered on Midi note off and plays until sample end. In this mode, no sample loops are played.
- **Poly mode**

- **Poly** - (default). Each pressed MIDI key triggers a new played voice.
- **Mono** - Only one voice can play at a single time for the group. Simulates the behavior of monophonic instruments.
- **Legato** - group plays polyphonically, but if a key is triggered while another is held, the last voice previously triggered will be reused similar to **Mono** mode.

Tip: Mono and legato mode will not retrigger waveform, envelopes and LFOs when reusing a note, but continue playing like if the note was actually "bent" to the new note. To force a retrigger behavior you can set the group(s) to a choke group, which will force retriggering of modulators and wave but in all other ways still play like Mono /legato.

- **Transposition engine** - (*TX16Wx Pro*) sets the playback engine for the group.
 - **Re-sampler** - wave data is resampled with varying density/speed determined by incoming Midi key and key scale. Quality settings determine the interpolation algorithm applied to the data.
 - **Pitch shift** - alters the tonal pitch of samples without modifying the playback speed, using FFT processing. The quality settings will determine the precision of the calculation.
 - **Time stretch** - alters the playback speed of the samples without modifying the tonal pitch. Note that in this mode, no sample transposition is done. For best results, samples need to be assigned a tempo and the DAW host must provide accurate tempo information on processing.
- **Priority** - determines which key is retained in monophonic mode
 - **Last** - the last key triggered gets priority.
 - **Low** - the lowest key held gets priority.
 - **High** - the highest key held gets priority.
- **Choke group** - if set, all regions in all groups sharing the choke group will behave monophonically and re-use/steal the same playing voice. This is useful for such things as creating open/closed hi-hats where the one silences the other.
- **Output** - (*TX16Wx Pro*) sets an individual output for the group.
- **Quality** - (*TX16Wx Pro*) sets the playback quality for the group. In transposition mode, this determines the sample interpolation type, for other engines the quality alters other algorithm precision parameters.

7.1.3. Muting Groups

Individual Groups can be muted. A muted group will not produce any sound and will not be shown in the keyboard mapping editor. This is useful for tuning individual groups in multilayered programs, and also to reduce cluttering when laying out keyboard maps.

7.1.4. Slices

If a groups regions map wave slices, you can drag and drop the group into your DAW or file system to export a standard MIDI file for playing the part layout in order.

7.1.5. Choke groups

A choke groups is essentially a monophonic relationship between groups, where all groups sharing choke group will use at most one voice, i.e. cut each other off when played.

A typical use for this is setting up hi-hats, where each sample should cut off any other playing. Choke groups can also be used with the **poly mode** setting to achieve certain effects, such as multi-group monophonic instruments.

Poly Mode	No Choke Group	Choke Group
Poly	Notes play polyphonically, AEG resets on note-on	Notes play monophonically within choke group, AEG resets on note-on
Mono	Notes play monophonically within group. No AEG reset on voice stealing.	Notes play monophonically within choke group. No AEG reset on voice stealing.
Legacy	Notes play polyphonically, except when note within group is held while triggering another, in which case behaves like mono.	Notes play polyphonically, except when note within choke group is held while triggering another, in which case behaves like mono.

7.1.6. Group key switcher

■ (TX16Wx Professional only)

You can add advanced switching parameters to groups, allowing note trigger to happen only when certain conditions are fulfilled.

<input checked="" type="checkbox"/> Enabled	RR Src	-		Source	Ext Ctrl 1	
Remove	Seq/R	2	5	Range	10	34
	Random	0.061	0.314	BPM	80	115

The following conditions can be set or combined

- **Modulation/external controller - source/range** - The group will trigger when the external or modulator source is within the specified range. Note that the range is converted into a 0-127 range, similar to thresholds in the matrix switcher.
- **Random** - each note-on message will trigger a random value. The group will play if the generated value is within the specified range.
- **BPM** - the group will play if the host tempo is within the specified range
- **Sequence position/length** - sets a sequence length for the group. Each group will have a unique note-on counter, or you can select a counter source (see below), resetting when it reaches the sequence length. If the counter value is equal to position, the group will trigger.
- **Key down/up/last** - group will trigger if the key is within the bounds specified by the key lo/hi range, and is currently down/up or was the last key depressed.
- **Key previous** - group will trigger if the previous note depressed was equal to key
- **Round robin source** - selects the counter used for this switch node. Available selections are
 - **Group** (default)
 - **Program** (shared between all groups in a program)
 - **MIDI key** (unique counter per key on this channel)

7.2. Region panel

Regions are mappings of samples or wave matrices to MIDI key/velocity ranges. The region panel lets you view and modify the regions in the active group.

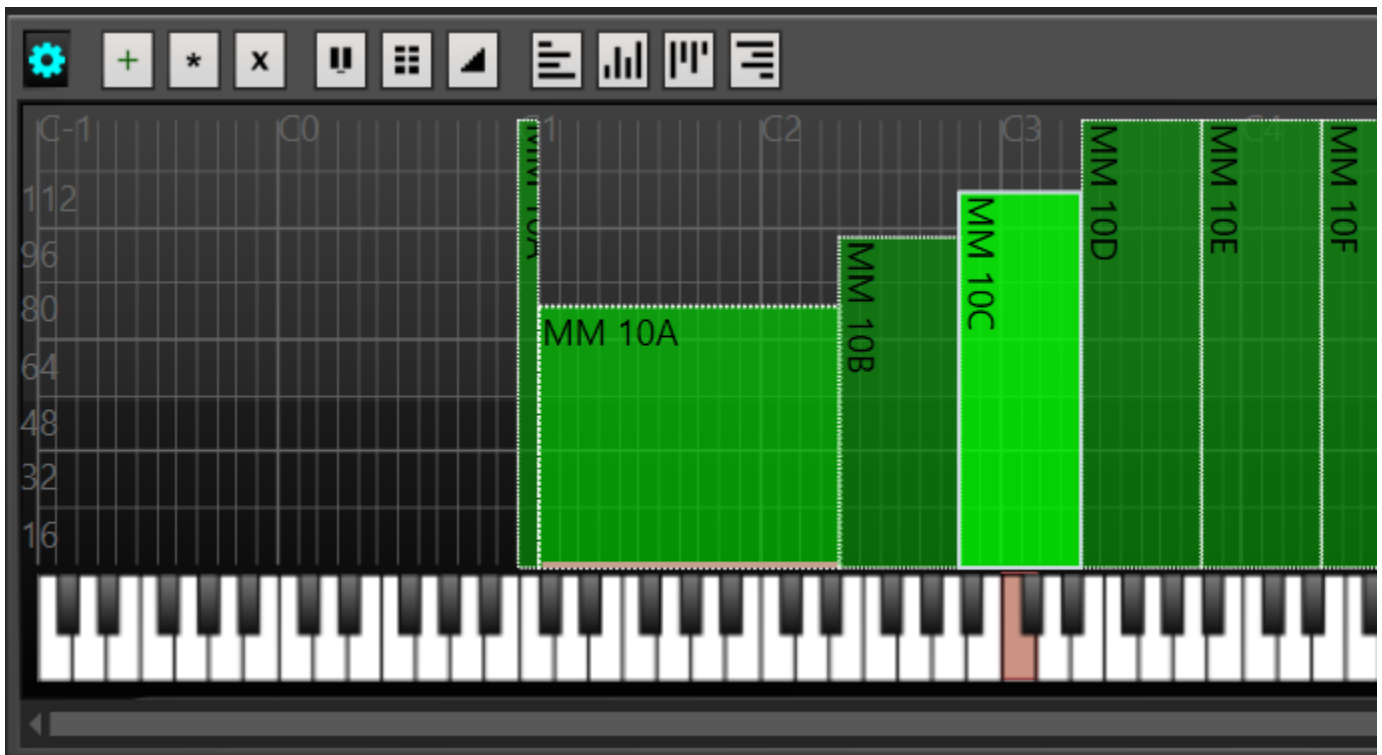
7.2.1. Region menu

Right-clicking or clicking the "cog wheel" widget brings up the action menu for regions.

- **New region** - creates a new, empty region
- **Duplicate region** - duplicates the selected region(s)
- **Delete region** - deletes the selected region(s)

- **Select all** - selects all regions
- **Align**
 - **Low key** - align selected regions low key
 - **High key** - align selected regions high key
 - **Low velocity** - align selected regions low velocity
 - **High velocity** - align selected regions high velocity
- **Remap by tokens** - (TX16Wx Pro) opens the token re-mapper
- **Distribute**
 - **Key** - distributes the selected regions evenly by key
 - **Velocity** - distributes the selected regions evenly by velocity

7.2.2. Key Mapper



The mapping editor provides a graphical view of the regions key and velocity ranges in the currently selected group(s), as well as cross-fade settings and root key assignments.

Click-drag a region or its edges to change its key and velocity range.

Alt-click-drag a regions edges to modify its fade range to enable cross fade between regions. A region will fade out its playback volume based on the position between the group edge and the fade edge.

Double clicking inside a region in the keyboard mapper will open a file dialog to load a new sample from disk.

Note: The Wave file selector allows you to preview samples in several ways.

You can enable Auto Play, which will play any sample selected in the browser through the main stereo output automatically. If not enabled, you can select a wave and press the Play button to listen to the sample one.

When browsing from the Keyboard Mapping view you can also enable Preview which will temporarily place the selected sample in the currently active Split.

This is a great way to preview how a new sample fits a playing tune.

The key mapper will highlight incoming MIDI messages on the keyboard as well as triggered regions in the program groups. If you press a key on the mapper keyboard, it will play the corresponding MIDI note on the selected slots MIDI channel.

Tip: You can vary the MIDI velocity of the note played through the mapper keyboard by holding down Ctrl (lower), Shift (higher) or Ctrl+Shift (highest velocity).

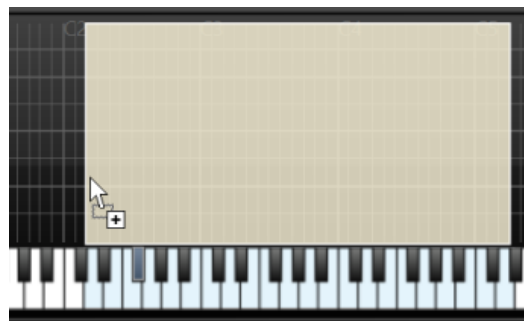
Tip: Select all groups on or overlapping a specific MIDI key by **ctrl-right-clicking** in the mapper keyboard.

7.2.3. Creating new regions

New regions can be created in various ways. You can use the region menu to add a new, empty region, or duplicate an existing one.

You can also drag and drop wave files into the keyboard mapping editor to either create a new region, or replace the mapped sample in an existing one. In this case, TX16Wx will do automatic layout of the new waves.

If you drag and drop samples into either an empty area of the key mapper, or into the mappers keyboard area (lower part), the dropped samples will create new regions. The new regions will start at the key you dropped the samples at, and end depending on the highest root key or the end of the keyboard. You can also explicitly determine where the new regions will begin and end by first moving the mouse to the desired low key, then while holding the SHIFT key pressed, move the mouse pointer to the desired high key and release. The new regions will then have its bounds set to this range.

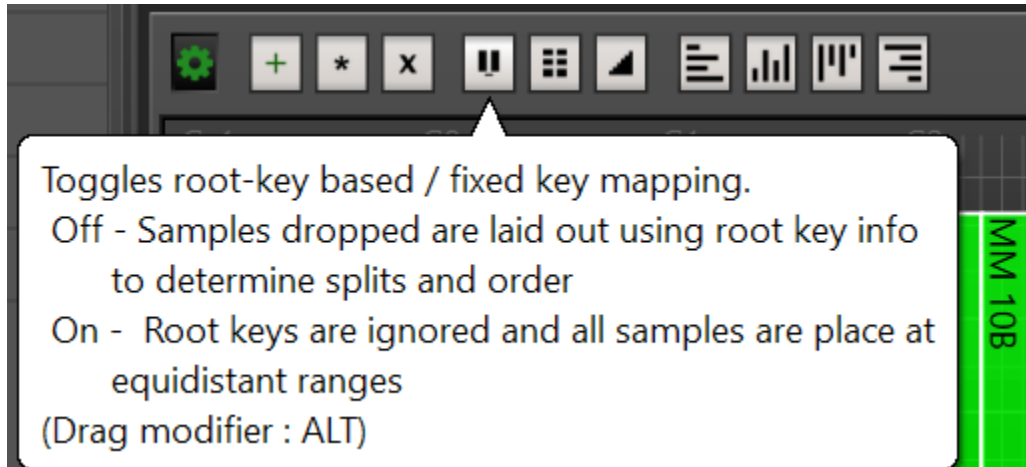


7.2.4. Automatic key mapping

When dropping samples into the keyboard mapper, TX16Wx will try to place them as well as possible, based on the area you drop them and the root information in the dropped sample file(s).

When dropping samples with root key information, the new mapping will be laid out with the samples in ascending root key order, split appropriately, ending a half octave above the highest root key.

When samples without root key information are dropped, TX16Wx will assume that you are building a drum kit or a similar non-pitched layout, and map the samples in the order they are dropped, at even intervals, determined by the keyboard range for mapping non-pitched sounds option (default 1).



You can force fixed key mapping by enabling the fixed key mapping toggle button in the toolbar, or by holding the **alt** key while dropping the samples into the keyboard mapper.

You can completely disable tonal based key mapping by turning on force fixed keyboard mapping in the settings page.

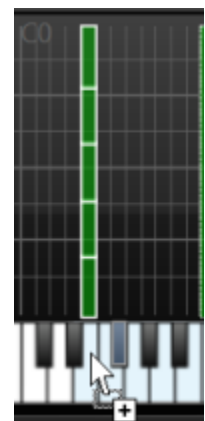
To manually set the resulting groups keyboard range, first drag the cursor to the desired low key on the key mapper keyboard, then while holding **shift**, move the cursor to the desired high key and release.

7.2.5. Velocity mapping

By enabling the velocity mapping toggle button in the toolbar or by holding **ctrl** when dropping the samples, you can map dropped samples as velocity layers - i.e. separate regions placed by velocity.

By default, dropped samples will be partitioned according to root key information and velocity layers will be created based on these sets. You can disable this to force all layers onto the same key by toggling the force fixed button (**alt** modifier)

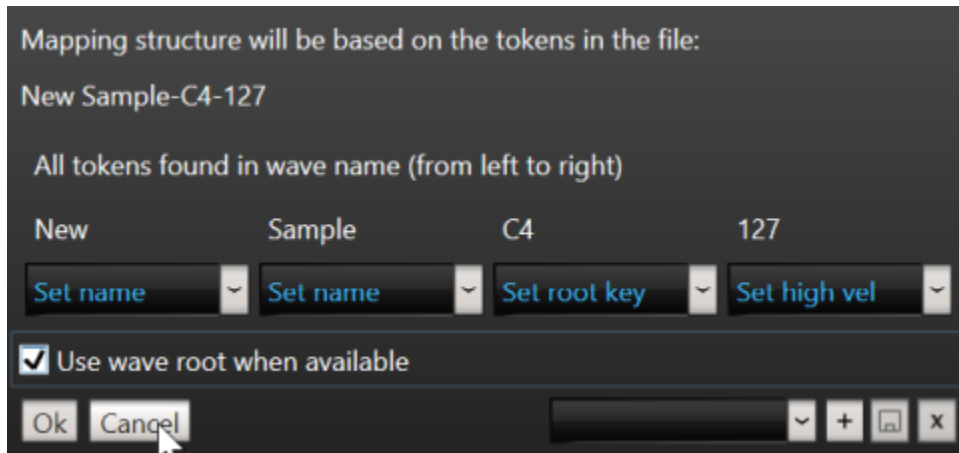
This can also be disabled globally in the settings page.



7.2.6. Token-based sample mapping

■ (TX16Wx professional only)

The token-based mapping tool can be used to create a sample mapping when a set of samples are missing embedded roots, or when additional information, such as key or velocity range etc. is embedded in the file name.



To use the auto-mapper, first drop the samples you wish to map into the keyboard mapper layout. Then select the resulting region(s) and the "auto-remap" entry in the mapping command menu. A dialog showing the detected name tokens will open. Choose what token should affect what mapping parameter. When you are satisfied, press ok, and a new mapping layout will be created.

Token usage settings can be saved as presets and recalled when mapping similarly named sample files the next time.

Keys can be written as symbolic MIDI names, i.e. `C#3`, or MIDI note numbers, i.e. `0-127`.

Token commands:

- `Ignore` - ignores the token
- `Set root key` - sets the split root to the parsed key value
- `Set single key` - sets the root + low + high key to the parsed key value
- `Set low key` - sets the low key bounds for the sample
- `Set high key` - sets the high key bounds for the sample
- `Set low velocity` - sets the low velocity bounds for the sample
- `Set high velocity` - sets the high velocity bounds for the sample
- `Set group name` - sets the name of the samples group
- `Use wave root when available` - use the embedded root key of the mapped wave if none has already been set by token.

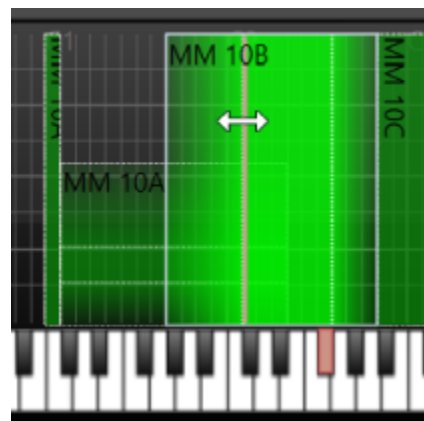
7.2.7. Region cross-fading

■ (TX16Wx professional only)

In TX16Wx Professional, regions can have fade-in/out ranges that define a key and/or velocity range where the sound produced shifts from silent to full volume.

To create a fade, **ctrl**-click the region edge and drag towards the group center. The fade can also be edited by **ctrl**-clicking the region fade bounds.

Fade ranges can be used to create both velocity and keyboard cross fades by fading out the previous region as the next one is faded in.



To remove all fade ranges from a region or regions, use the "Reset region fade" command in the command menu.

7.2.8. Region list

The region list shows all editable attributes of the regions in the last selected group.

	Lo K	Hi K	Lo V	Hi V	Lo FK	Hi FK	Lo FV	Hi FV	Root	Fine	Sam
M	C#8	D#9	0	127	C#8	D#9	0	127	C9*	0	OB8
M	E9	G9	0	127	E9	G9	0	127	F#9*	0	OB8
M	G9	G9	0	127	G9	G9	0	127	*	0	OB8
M	C#1	D#2	0	127	C#1	D#2	0	127	C2	0	MM
M	E2	A2	0	127	E2	A2	0	127	F#2	0	MM
M	A#2	D#3	0	127	A#2	D#3	0	127	C3	0	MM
M	E3	A3	0	127	E3	A3	0	127	F#3	0	MM

- **Mute** - toggles whether the region will play.

■ Note that this is a trigger mute, i.e. when active, MIDI notes will not trigger this region.

- **Low/high key/velocity** - regions key/velocity bounds
- **Low/high key/velocity fade** - regions key/velocity fade bounds
- **Root key** - sets the root key (override) for the mapped sample.

This is initially set to the natural root key as defined in the assigned wave, but can be changed for only this region, a.k.a. **overriding root key**.

The root key is also displayed on the key mapper reference keyboard. By clicking and dragging this you can easily change the root override.

When the root key/fine tuning is changed the override indicator shows a ***** next to the root key fields.

NOTE: This does not modify the wave root key, i.e. this will only affect the selected region. The overriding root can be "baked" into the wave file by clicking the **"**"** indicator, to affect all groups/regions to which the wave is assigned.

NOTE: The root key can also be overridden for an assigned wave matrix, in which case the root will affect all samples in the matrix.

NOTE: In older versions of TX16Wx the behavior of the split root key was to directly modify the assigned wave file.

- **Fine tune** - sets the root fine tune (override) for the mapped sample
- **Sample/matrix** - selects the mapped sample or wave matrix (TX16Wx Pro)
- **Mode** - selects region playback mode
 - **RAM** - the sample is loaded into and played back from system RAM. This is the simplest /fastest playback mode, but can have a higher memory footprint, especially when mapping many large samples.
 - **DFD** - the sample is played back from disk, with only a small portion loaded into system memory. This mode has a slightly higher overhead, but can significantly lower memory consumption in the system. Note that not all loadable sample formats support this mode.
 - **Slice** - a variation of RAM playback where only the sample range determined by the mapped loop (which must be a slice loop) is played back.
- **Reverse** - plays the wave backwards
- **Sustain loop** - selects the **sustain** loop. This is the loop that will play while a MIDI key is held.
- **Release loop** - selects the **release** Loop. This is the loop that will play after the MIDI key is released but the voice still plays the AEG release.
- **Attenuation** - sets region volume boost/dampening
- **Pan** - sets per region stereo panning.

7.3. Sound editor

The sound editor panel contains various pages of sound-shaping parameters for the active program. Each tab corresponds to a sound parameter element.

Each program can contain any number of sound parameter objects, and these can be either shared by, or individual to, multiple groups.



Double-click the tab label to edit the sound name.

Closing the tab deletes the sound parameter element and removes it from all group mappings.

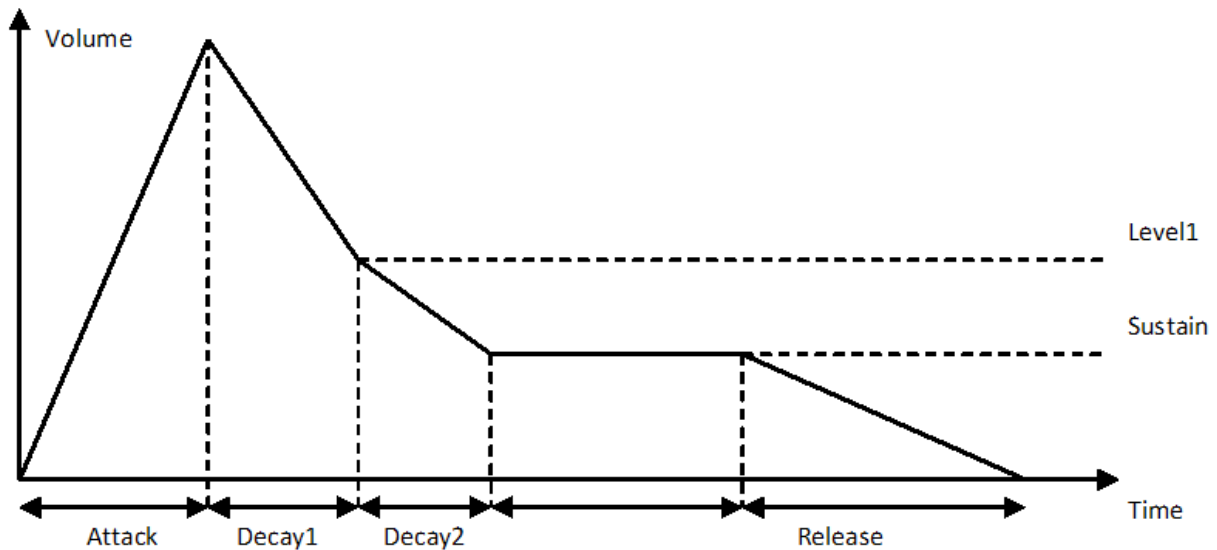
7.3.1. Output, Pan, Velocity and Glide

- **Volume** - sets the Program relative volume.
- **Pan** - set the Program relative pan.
- **Velocity** - sets the velocity sensitivity of the group. This determines how keyboard velocity affects the played volume of the group.

- **Velocity Offset** - sets the lowest velocity at which the group responds. For example if this is set to 63, the group will never play at a lower volume than a key velocity of 63 would produce.
- **Velocity curve** - sets the **response curve** for MIDI velocity.

7.3.2. AEG / main

The Amplitude Envelope Generator modifies the volume of the group over time. It is an extended version of the standard ADSR envelope with some additional parameters.



7.3.3. Wave Start

Offsets the played wave(s) start point in the group. You can modulate this value in the **modulation table** view. For example, by modulating this with keyboard velocity you can skip a sharp transient in a wave when playing at low velocities.

7.3.4. Delay

Delays playing of the group by a specific time from MIDI note on. You can modulate this value in the **modulation table** view.

7.3.5. Filter / insert

TX16Wx has two resonant filters per group, switchable between 6dB and 24dB response slope. Filter 1 is a traditional bi-quad filter and filter 2 is an advanced SVF.

Filter Parameters:

- **Type**
 - **Off** - Filter off
 - **Lowpass** - frequencies below the cutoff frequency are suppressed.

- **Highpass** - frequencies above the cutoff frequency are suppressed.
- **Bandpass** - frequencies below and above the cutoff frequency are suppressed.
- **Notch** - frequencies around the cutoff frequency are suppressed. The resonance parameter will regulate the width of the filter.
- **LowShelf**
- **HighShelf** - increases or reduces frequencies below the shelf frequency. The gain is controlled by the drive parameter.
- **Peak** - makes a peak or a dip in the frequency response. The resonance parameter controls the width of the filter and the drive parameter the gain.
- **AllPass** - passes through all frequencies unchanged, but changes the phase of the signal (controlled by resonance and drive)
- **Frequency** - the cutoff frequency of the filter
- **Resonance** - causes frequencies near the cutoff to become amplified.
- **Drive** - boosts or dampens the signal through the filter.

■ Note: Only the lowpass filter works in 6dB mode. Other filters will silently operate at a 12dB slope.

7.3.6. FX / sends

■ (TX16Wx professional only)

Each group can have three assigned sends that go to either a FX bus or a separate output. Sends can be done either pre- or post-fader/pan.

Each group can also have a single insert assigned. The insert is applied before fader and sends, and the two first parameters can be modulated like a normal group parameter through the modulation destinations "insert p1/p2".

7.3.7. LFO

Two Low Frequency Oscillator generators are available per group.

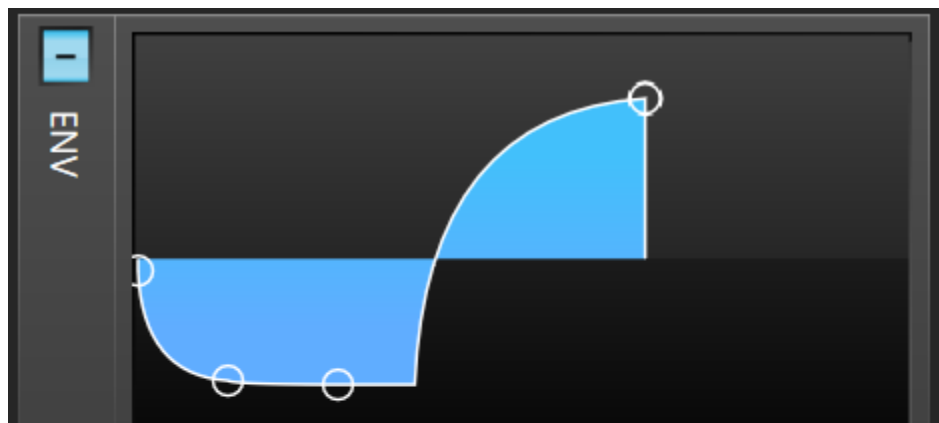
LFO Parameters:

- **Rate** - LFO frequency in Hz, ranging from ~0.01` - 1500Hz
- **Amplitude** - Strength of the generated modulation pulse
- **Fade in** - Time before the LFO reaches its maximum amplitude. Use this to achieve a "fade-in" effect in the modulation.

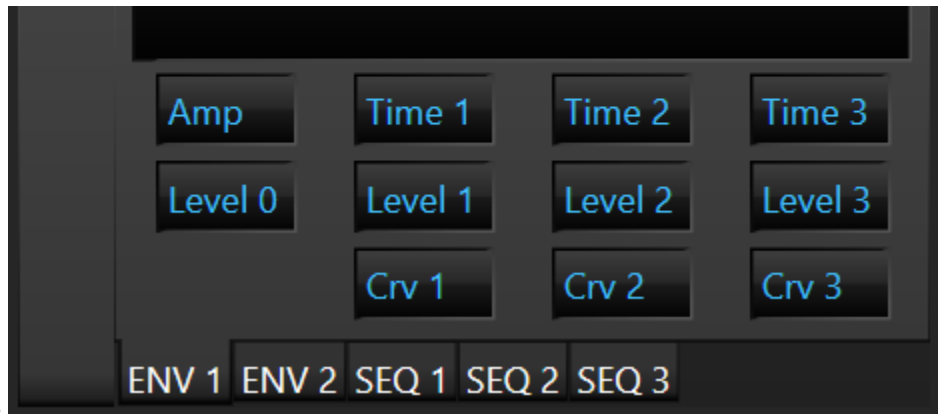
- **Position** - Wave cycle start of the LFO. A setting of 0.5 effectively reverses the phase of the generated wave.
- **Type** - Generated wave type
 - Triangle
 - Sinus
 - Sawtooth
 - Square
 - Exponent
- **Sync**
 - **None** - LFO will start at a phase determined by the rate and sample position of the playing son, i.e. free running.
 - **Key** - The LFO cycle starts at each note-on.
 - **Group** - If any voice is active playing this group, the LFO phase will be synced to this.
 - **Voice** - If any voice is active playing any group in this voice, the LFO phase will be synced to this. Note that the LFO will be synced to the first group found playing, so this parameter is best used on all the groups in a program.
- **Mode**
 - **Normal** - rate is expressed in hertz.
 - **Tempo** - rate is expressed as a beat designator with the actual rate determined by the song tempo. For example settings the rate to 1/4 will cause the LFO to complete one period per every quarter note.

7.3.8. Modulation envelopes

TX16Wx has two simple three-stage modulation envelopes per group. These can be used to modulate other sound shaping aspects of the group.



- **Amp** - determines the strength of the modulation output
- **L0** - start level
- **T1-3** - envelope times
- **L1-3** - envelope levels

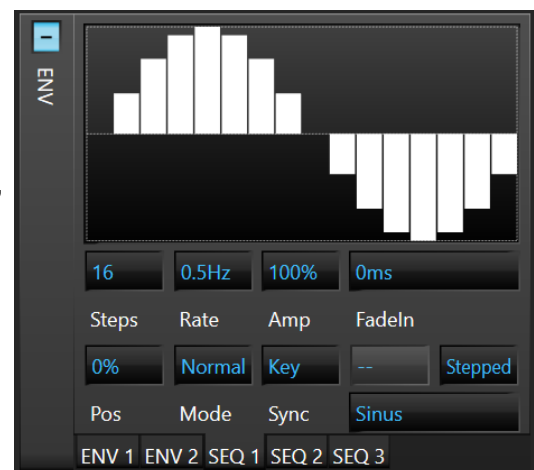


Note that the T2-L2 stage will be held as long as the MIDI key is pressed, and begin transition to the T3-L3 stage on MIDI note-off.

7.3.9. Step sequencer

Similar to the LFO, and shares most of its parameters, but instead of pre-determined waveforms, allows the user to draw a step sequence of modulation values which will then be played at the determined rate.

- **Steps** - sets the number of sequence steps between 8 and 128 steps.
- **Type** - assigns a LFO style waveform to the sequencer, or fills it with a random pattern.
- **Smooth/stepped** - determines if the modulation value will interpolate smoothly between the sequence values, or run in a 'stepped' mode. The former creates a soft, LFO-like sound, while the second will produce a more pronounced 'jumping' effect, useful to create electronic pulsating sounds.

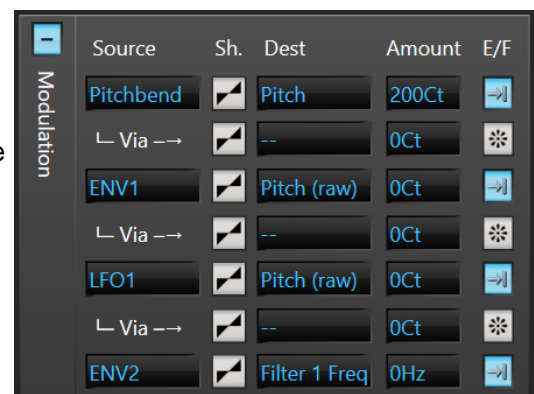


- **Cycle/Step sync** - when tempo sync is active, setting this parameter to "step" will make each step period the assigned sync duration, where as "cycle" will play the whole sequence.

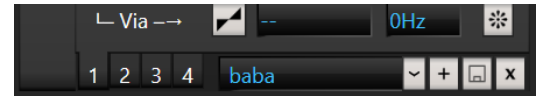
7.3.10. Modulation table

Each group can have up to 16 active modulation mappings, from either the sound shaping generators or external Midi input. The Modulation Mapping View lets you edit and manage these.

- **Source** - selects the modulation data source
 - **ENV1 / ENV2** - Modulation envelopes.



- LFO1 / LFO2 - Low frequency oscillators
- SEQ1 / SEQ2 / SEQ3 - Step sequencers
- Pitchbend
- Modulation Wheel
- Channel Pressure
- Aftertouch
- Key - Maps depending on the played Midi key, where C0 represents no, and G10 (highest Midi key) represents full modulation.
- Key/R - Like Key, but maps the modulation into the groups Key Range.
- Vel - Maps depending on the played Midi velocity, from 0 to 127.
- Vel/R - Like velocity, but maps the modulation into the groups velocity range.
- BPM/R - Host/wave relative tempo.
- Random - Generates a random value between -1 to 1. This source is like MIDI key/vel, a note-on value only.
- External Controller 1-16 - Takes the modulation value from system-defined External Midi Controllers.
- MIDI Continuous Controller - Any MIDI CC
- Automation Parameters - DAW host automation parameters.
- Destination - sets the destination parameter for the modulation
 - Amp - before-filter-and-shaper amplitude. (+/- 1). This is the amplitude of the generated sound before it is treated by any of the other sound shaping aspects, such as filter and inserts.
 - AEG Attack - the attack parameter of the AEG. (+/- 1)
 - AEG Time - the overall speed (time between stages) of the AEG. (+/- 200%)
 - ENV1 / ENV2 Amplitude - (+/- 1)
 - LFO1 / LFO1 Amplitude - (+/- 1)
 - LFO2 / LFO2 Rate - (+/- 200Hz)



- `SEQ1 /SEQ2/ SEQ 3 Amplitude` - (+/- 1)
- `SEQ1 /SEQ2/ SEQ 3 Rate` - (+/- 200Hz)
- `Filter Frequency` - (+/- 20000Hz)
- `Filter Resonance` - (+/- 1)
- `Pitch/Pitch (raw)` - (+/- 127 semitones). Affects the resulting pitch of the played notes. The first scaled by the groups key scale parameter, the latter is raw pitch cents.
- `Volume` - (+/- 1) - The post-sound-shaping output volume of the group (i.e. fader volume).
- `Pan` - (+/- 1)
- `Loop start` - (time)
- `Loop end` - (time)
- `Loop Direction`
- `Wave Start` - (time)
- `Glide` - (Note: only evaluated on note-on)
- `Amount` - how much the modulation will affect the destination parameter. This field scale is dependent on the destination.
- `Via` - Optionally selectable modulation source used to dynamically affect the depth of the modulation. If enabled, the modulation generated will scale between "Amount" and "Via amount" dependent on the value of this source.
- `Via Amount` - Strength of the modulation when the "Via" parameter is a full value.
- `Enabled` - Enables/disables this modulation slot
- `Frozen` - if set to true, the modulation will only be evaluated once on Note-On. This will effectively use a snapshot value of the modulation source at the time of note trigger.

Note: Modulation destinations are additive in nature, thus to have the modulation work as expected you should in some cases set the original parameter to zero and drive it completely with modulation. Any destination can have any number of sources whose inputs are summed together.

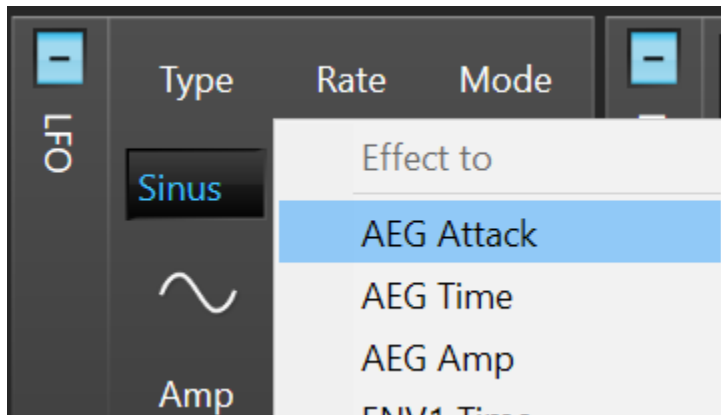
Note: The BPM/R modulation source is only active when the assigned wave has a tempo defined.

7.3.10.1. Modulation Presets

The lower right corner of the modulation editor contains the preset selector, where you can add, copy, delete and select modulation matrix presets.

Modulation Presets are a quick way to keep your favorite modulation settings handy.

7.3.10.2. Quick modulation assignment



You can right-click any modulator such as a LFO or ENV to bring up a context menu where you can add a routing from the modulator to the available destinations.

7.4. Wave panel

The wave editor panel lets you view and modify the loaded waves in the sampler, as well as record new ones.

Note that while you have an individual sample editor panel for each sampler slot, all loaded samples are considered shared between performances/slots/program.

7.4.1. Wave menu

Right-clicking or clicking the "cog wheel" widget brings up the action menu for samples.

- **Go to start/end/loop start/loop end** - make respective point in the sample visible
- **Load wave** - opens a file selector for loading new samples into the plug-in.
- **Save wave** - saves the currently active sample
- **Save wave as** - saves the currently active sample as a new file.
- **Duplicate wave** - creates a new copy of the currently active sample
- **Delete wave** - removes all mappings for and unloads the currently selected sample
- **Delete unused waves** - unloads all unmapped samples
- **Load replacement wave** - opens a file browser for loading new wave(s) to replace the selected wave. All existing mappings will be rewritten to the new wave the existing sample unloaded.
- **Replace mappings** - replaces one or more wave mappings with the last selected wave. Select the wave(s) you want to modify and then last the wave you want to replace them with.

-

Tip: You can also replace wave mappings by dragging files directly from the file browser onto a loaded wave in the list.

- **Loop**
 - **New loop** - adds a new loop to the active sample
 - **Duplicate loop** - duplicates the currently selected loop
 - **Delete loop** - deletes the currently selected loop
 - **Assign loop** - assigns the currently selected loop to all mappings of the sample.
 - **Auto-detect new loop** - automatically finds a new loop based on auto-correlation. Select a specific range of the selected wave in the wave editor to determine the portion searched for the best loop.
- **Slice**
 - **Layout slices** - if the sample has slices, this creates a new group with the slices to keys mapped in ascending order. If the sample is already slice mapped, the mapping will be updated.
 - **Delete all slices** - deletes all non-pinned slices in the selected sample
 - **Slices to waves** - creates a new sample for each slice in the selected wave
 - **Remove overlap** - adjusts slices to remove overlap regions
- **Detect** - detects attributes of the selected sample. Select a specific region of the sample to restrict the data processed.
 - **Pitch** - detects root pitch of the sample
 - **Tempo** - detects tempo
- **Edit** - modifies the selected wave or selected wave region
 - **Normalize** - adjusts sample volume so the highest volume is zero dB
 - **DC remove** - removes DC bias in the sample
 - **Trim** - removes the sample data outside selected range or start/end range
 - **Cut range** - removes the sample data inside selected range or start/end range
 - **Duplicate range** - duplicates the sample data inside selected range or start/end range
 - **Reverse** - reverses the sample data inside selected range or start/end range

- **Stereo to mono** - converts a stereo sample to mono
- **Mono to stereo** - converts a mono sample to stereo
- **Swap channels** - swaps L/R stereo channels

7.4.2. Wave editor



The wave editor shows a graphical representation of the currently selected sample. Here you can adjust start/end positions, loop ranges and select an edit range for detection or edit processing.

Tip: You can quickly zoom in/out in the sample view using the mouse wheel. Drag using the middle mouse button to scroll the view. The view also responds to drag gestures when scrolling.

The **start** and **end** marker determines where sample mapping playback will begin/end.

When a loop is selected, its beginning and end can be modified by dragging either the whole loop region, or the start/end edge of the block.

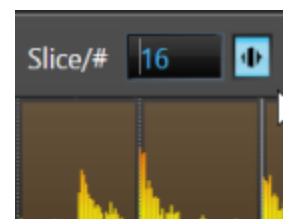
You can play back the currently active wave by clicking and holding the left mouse button inside the sample view area. The active wave will be played at its root pitch from the point you clicked. Use this to locate appropriate start / end points for the wave or loops.

You can also press the **play** button in the toolbar to play the sample from start. Looped playback can be enabled with the **loop toggle** button.

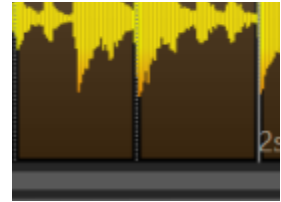
7.4.2.1. Slice into parts

Slices a waveform into equidistant parts, independent of content

- **Slice/#** - sets the number of slices to create



- **Slice button** - activates slicer
 - Once activated, you can slide the slicer/# parameter up/down to adjust the number of slices created.
 - Turn of the slice button to finalize the result



When manipulating slices, either using the slice/# or beat slicer tools as well as manual slice definition, any active mappings will automatically update their layouts to match the new set of slices.

Use Pinned Slices to keep slices you are satisfied with while modifying the slice parameters to refine further results. This prevents the pinned slices from being replaced.

7.4.2.2. Beat slicer



Uses transient detection to slice waveform data into parts based on rhythmic content - also known as loop slicing. This is typically used to cut a drum loop into parts of a single hit, which can then be mapped to keys and replayed through MIDI.

- **Threshold** - sets the beat detection threshold, determining how prominent a transient must be to warrant slicing
- **Cutoff** - sets the cutoff frequency for transient detection, limiting the analysis to frequencies below this value.
- **Slice button** - activates slicer
 - Once activated, you can adjust the threshold and cutoff parameters to tune the slicing until you get the desired result.
 - Turn of the slice button to finalize the result

7.4.2.3. Loop overlay

By using loop overlay you can see the opposing loop point overlaid the normal sample data. This allows you to more easily match and find good loop points. Use this with the go-to and zoom buttons to quickly switch between points and adjust them.



7.4.3. Wave list

The wave list shows all editable attributes of the loaded samples.

- **Name** - wave name
- **Root** - sample root key (if set)
- **Fine** - sample fine tune
- **Start/end**- sample start point. Use the **back** and **forward** buttons to decrease/increase the sample position to previous/next zero-crossing point.
- **Tempo** - sample tempo (if set)

You can click-drag the **start/end** dials to modify the waves start and end points.

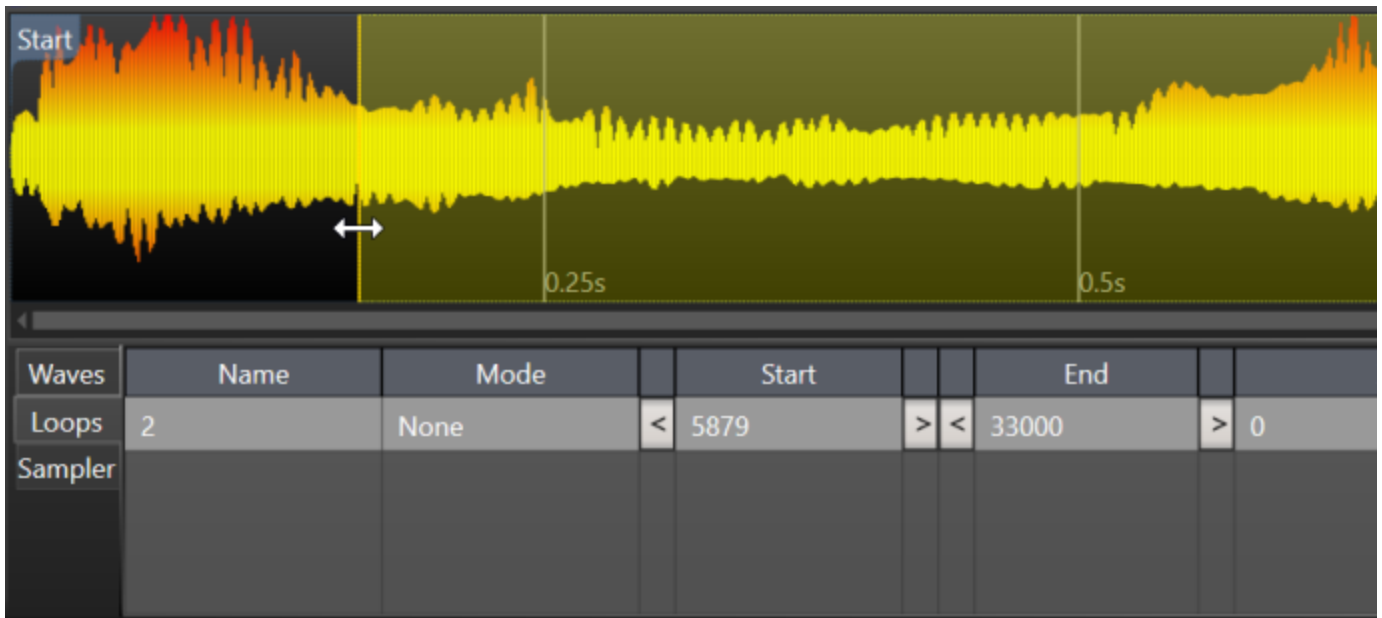
Waves	Name	Root	Fine		Start			End
Loops	FZ_SOUL	C4	0	<	0	>	<	33000
Sampler	J60Pulse16F#2	F#3	0	<	0	>	<	123245
	J60Pulse16F#4	F#5	0	<	0	>	<	138298
	JP8 PWM C#2	C#3	0	<	0	>	<	215913

By double- clicking you can also enter these manually. By clicking the **back/forward** arrows on either side of the dials the value is incremented by searching for the closest **next/previous** zero-Crossing point in the sample data.

You can also click-drag the **start/end** markers in the sample view to modify this directly.

7.4.4. Loop list

A wave can have several defined loops. The loop list shows all loops and slices in the currently selected wave.



- **Name** - loop name
- **Mode** - loop mode
 - **None** - disabled
 - **Forward** - (default) when reaching end marker, playback of the loop will jump back to the start marker.
 - **Backward** - when reaching the end marker, the playback will reverse and play until the start marker is again reached, at which point the playback skips back to the end marker and continues playback backwards.
 - **Bidirectional** - - the loop will switch direction every time it crosses the loop markers, i. e. when it reaches the end marker, playback reverses and plays until the start marker is reached. Here the playback returns to normal and continues until the end marker, at which points the process, yes, loops.
 - **Slice** - - The region is not repeated, but rather, if mapped into a region set to **slice** mode, will cause only the loop region to play for this particular mapping.
 - **Pinned slice** - Like a slice, but the slice will be preserved if you use the beat detector, slice evenly or delete slice commands. Useful for iteratively building a set of slices.
- **Start/end**- sample start point. Use the **back** and **forward** buttons to decrease/increase the sample position to previous/next zero-crossing point.
- **X-fade** - loop crossfade size. If set, the loop end point will crossfade with the beginning during playback. This can be useful to create seamless loops with hard to loop materials.

- **Repeat** - when non-zero, the loop will play back this number of times after which playback will continue as if no loop was set.

Loop points are edited in the same way as wave **start/end**. As with these, the **back/forward** arrows of the numerical dials lets you search zero-crossing points in the sample data. This is an effective way to find good loop points.

Loops can be copied or moved between samples by drag & drop.

You can quickly move the sample views focus to any of the wave/loop start/end points by using the wave editor menu command **goto**.

Slices, like loops can be edited by dragging their start/end locators in the wave editor. Unlike loops though, slices are expected to be contiguous, i.e. where one slice ends, another one starts. Thus, when you move a slice point you are in fact adjusting two regions end and start points respectively.



Insert new slice points by using **alt** + double click at the point you want to insert the new slice. To combine two slices into one, **alt** + double click the slice point to remove the cut.

7.4.5. Sampler



Just like a hardware sampler, the TX16Wx makes it easy to create your own sounds from scratch by recording the sound input from your host as new waves. The Sampler controls are located in the sampler tab in the wave panel.

- **Mono/stereo** - toggles mono or stereo recording
- **Listen** - when active VU meters will indicate any active sound input.
- **Trigger on threshold exceeded** - when active, sampling will start when the input signal exceeds the set threshold level
- **Trigger on transport** - when activated, the recording will begin once the host transport enters playing mode

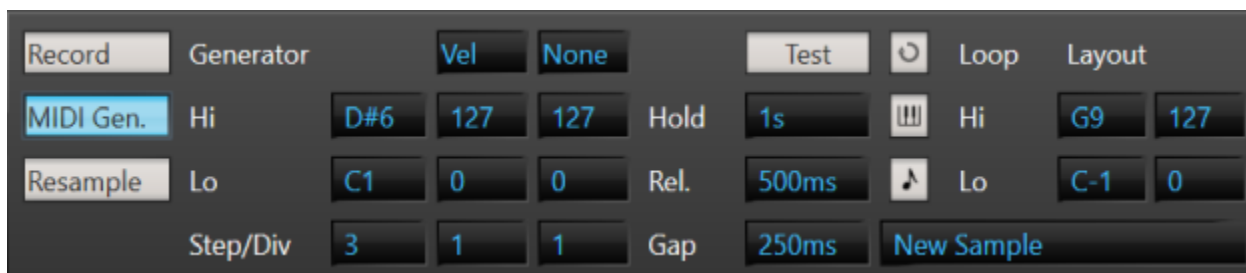
- **Trigger on MIDI key** - when activated, the recording will begin when the selected MIDI key is pressed
- **Trigger on MIDI CC** - when activated, the recording will begin when the selected MIDI continuous control exceeds 63.
- **Record** - toggles recording on/off

When recording finishes, the result will be in a new sample, ready for editing and mapping.

The generated material can also be post-processed:

- **Layout samples + lo/high key** - automatically lays out the sample into a new group when recorded.
- **Detect pitch** - attempts to detect natural root pitch in the recorded material.
- **Auto loop** - attempts to locate loop points in the recorded material.
- **Name** - name template for the new sample(s). The following tokens are available:
 - **{R}** - root key
 - **{L}** - low mapping key (when doing auto layout)
 - **{H}** - high mapping key (when doing auto layout)
 - **{V}** - low velocity (when doing auto layout)
 - **{W}** - high velocity (when doing auto layout)
 - **{K}** - generated key value (MIDI generator)
 - **{1}** - primary axis value (MIDI generator)
 - **{2}** - secondary axis value (MIDI generator)

7.4.5.1. MIDI generator / re-sampler



TX16Wx can generate note sequences and sample generated content based on these - a feature useful for example for (re-)sampling full instruments over both a keyboard and velocity range.

The two modes of operation are:

- **Midi generator** - TX16Wx will generate MIDI notes on the DAW output bus. Route this MIDI to an external instrument and its audio **output** to the TX16Wx **input** bus.
- **Resample** - Similar to **MIDI sequence**, but the MIDI notes are sent to the internal bus. You can then set the audio **input** to one of the TX16Wx **output** busses to record audio generated by TX16Wx, effectively resampling internal content.

The MIDI generator has three content axis. The first one is MIDI **key range** and **step size**, i.e. start and end key + the interval at which to generate notes.

Secondly, you can add two configurable axis, traversing either MIDI **velocity** or **continuous control values**. Here you set a **low/hi** value, and a subdivision value, determining how many steps the range will be split up into.

Recording settings:

- **Hold** - determines note length in seconds.
- **Release** - Sound release time. The generator will expect the sound to continue for this amount of time after note off.
- **Gap** - Gap between generated notes.

The recorded samples will be cut up based on the above criteria. You can then enable **post processing features** to automatically layout and loop the generated material.

7.5. Matrix editor

■ (TX16Wx Professional only)



The wave matrix editor lets you load and manipulate wave matrix definitions. These are two-dimensional grids of up to 127 x 127 samples that can be mapped into regions just like a regular wave.

A wave matrix however allows you to select a single sample to be triggered from within the grid based on the value of either external MIDI controls or any modulation source in the triggered voice.

A typical use case for the wave matrix is a percussive sound with the Y-axis being velocity and samples mapped by velocity, then mapping variations on the respective sounds in the X-axis and select from this bases on controller, stepping or random values.

7.5.1. Wave matrices edit panel

Use the wave matrix toolbar, located in the top of the left hand editor panel to add, save, delete or duplicate wave matrices.

Wave matrices can also be created, deleted and duplicated from the Wave matrix edit menu.

Directly below the toolbar is the wave matrix list, which shows all currently loaded wave matrix definitions. From this list you can select a matrix for editing or drag it into the keyboard mapper just like you would a wave file. You can also drag & drop matrix files here from the file browser to load them.

Each wave matrix has settings for the trigger condition source of the **X**- and **Y**-axis. These are the same sources as are used for sound modulation.

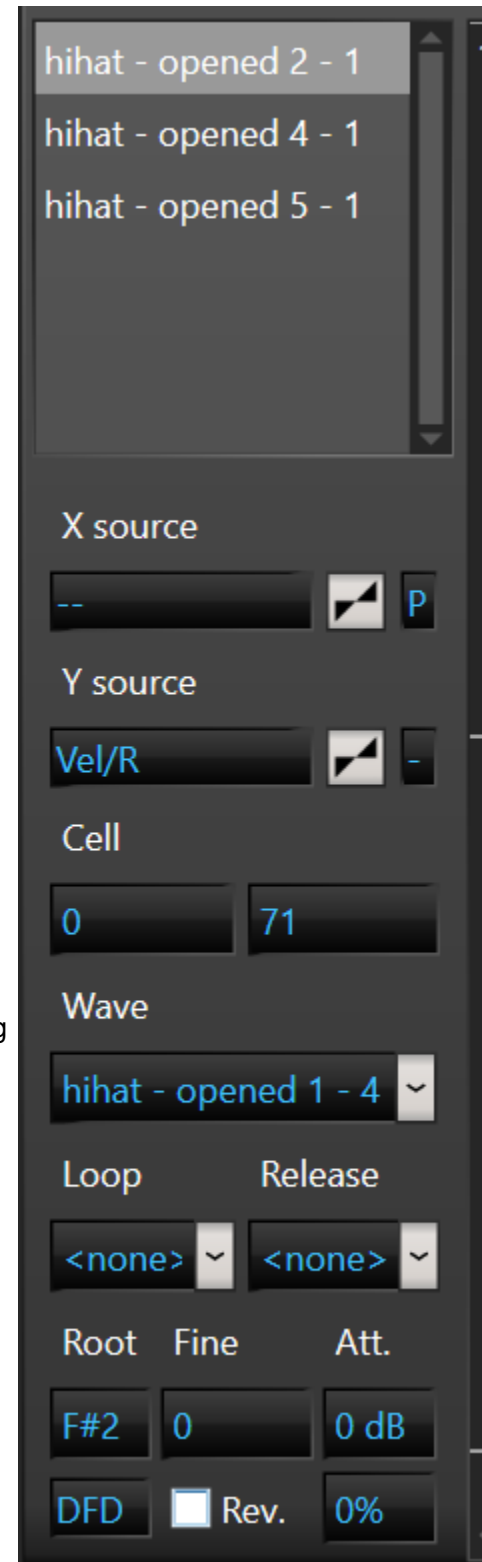
If the axis trigger source is left blank, the row/column will cycle through in a round-robin fashion. The round robin counter source can be selected, similarly to the [group key switcher](#).

Available sources are:

- **Default** - this matrix
- **Group** - shared between all elements in the group, including group switches
- **Program** - shared between all sound elements in the program
- **MIDI key** - unique counter for the triggered MIDI note on the assigned channel

Note : The BPM/R modulation source cannot be used in the wave matrix, since its output is dependent on the assigned wave.

The [mapping curve](#) for each axis allows you to determine how the source modulator input is mapped to the matrix values.



The currently selected matrix cell's attributes can be inspected and modified in the panel below. The two topmost fields display the exact trigger threshold values for the cell.

Each cell contains its own sample selection with root override, sustain and release loop, similar to a region.

7.5.2. Wave matrix edit menu

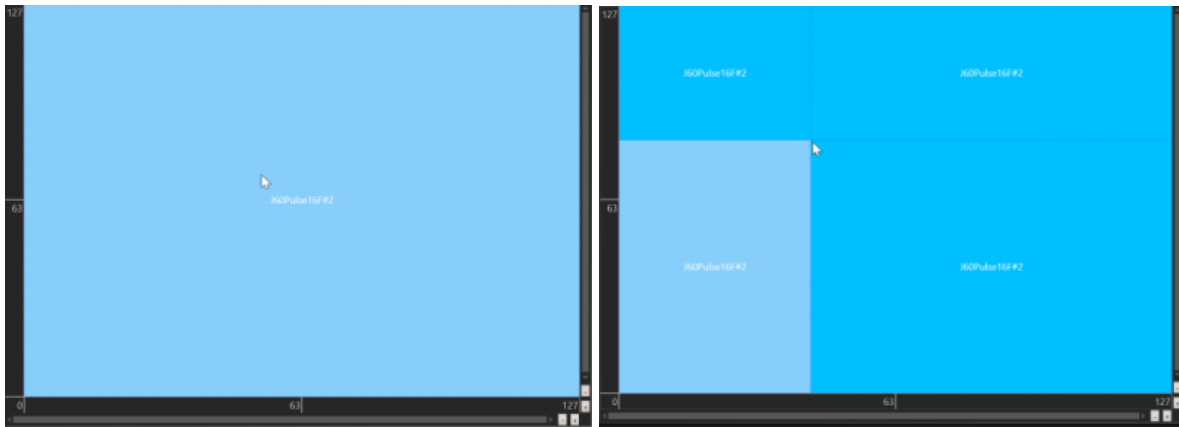
Right-clicking in the editor area, or clicking the edit icon, brings up the wave matrix edit menu:

- **New matrix** - creates a new, empty matrix.
- **Load matrix** - brings up a file selector and allows you to browse for existing matrix files on disk.
- **Savematrix/Save matrix as** - Saves the active wave matrix to disk along with any used waves. You may be prompted to provide names for individual files being saved.
- **Duplicate matrix** - creates a shallow copy of the current matrix. The new matrix will reference the same samples as the original item.
- **Delete matrix** - deletes the currently active matrix. Note that this does not delete any waves. See **Delete unused** in the performance editor menu.
- **Delete unused matrices** - deletes all matrices not mapped into a region. Note that this does not delete any waves. See **Delete unused** in the performance editor menu.
- **Load wave** - opens a file selector to load a new wave into the currently selected
- **Rows/Columns**
 - **Delete** - deletes the rows/columns of the currently selected matrix cells.
 - **Reverse** - flips the rows/columns of the currently selected matrix cells along the X/Y axis.
 - **Rotate** - rotates selected rows/columns across respective axis.
 - **Swap** - swaps the contents of selected rows/columns with each other
 - **Distribute** - sets the rows/columns to equal distance from each other.

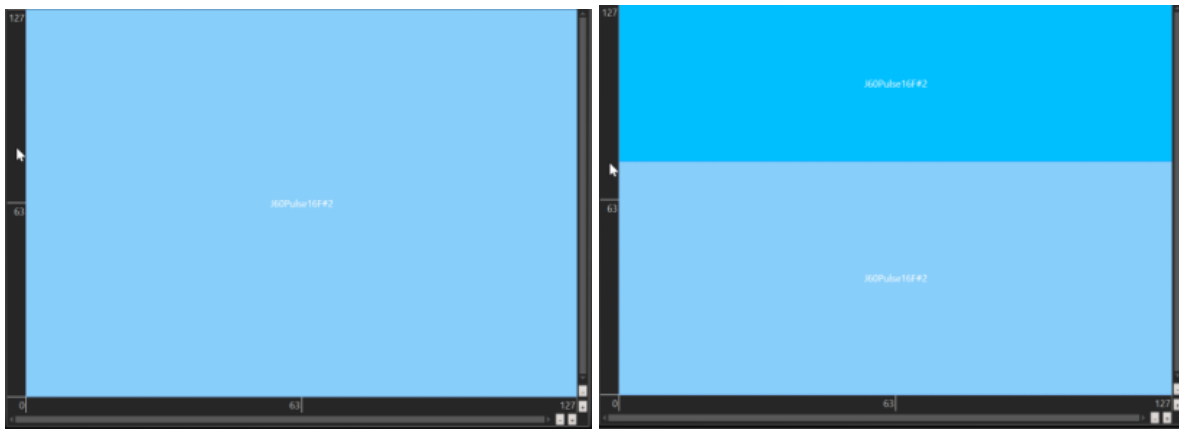
7.5.3. Wave matrix edit area

The edit area lets you create and edit matrix definitions graphically. Each matrix starts out as a 1x1 sized grid. By **alt**-clicking inside the editor you can insert new rows and columns.

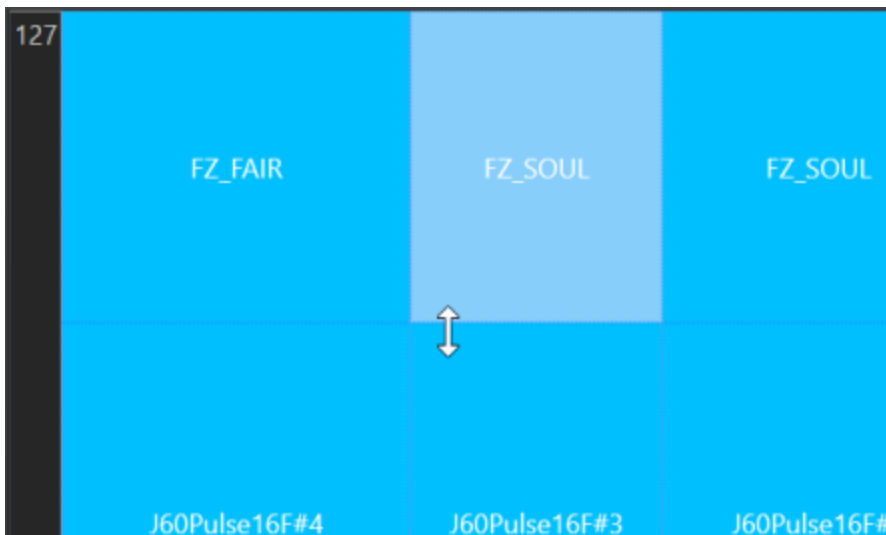
alt-click inside the grid to split the matrix rows and columns at the selected point.



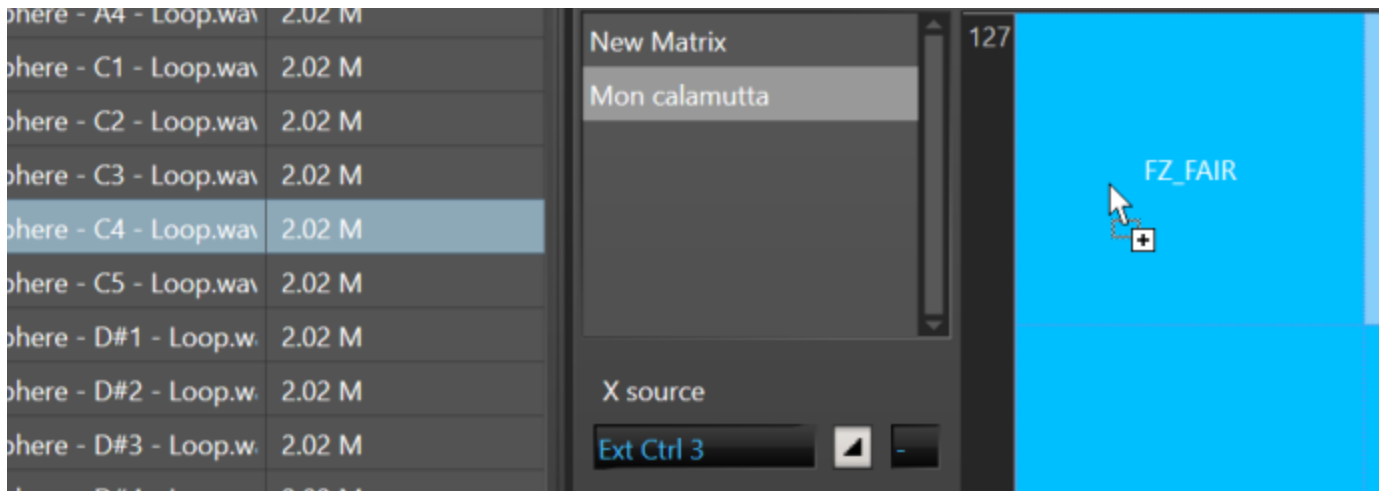
alt-click in the row or column scale area to split just the row or column.



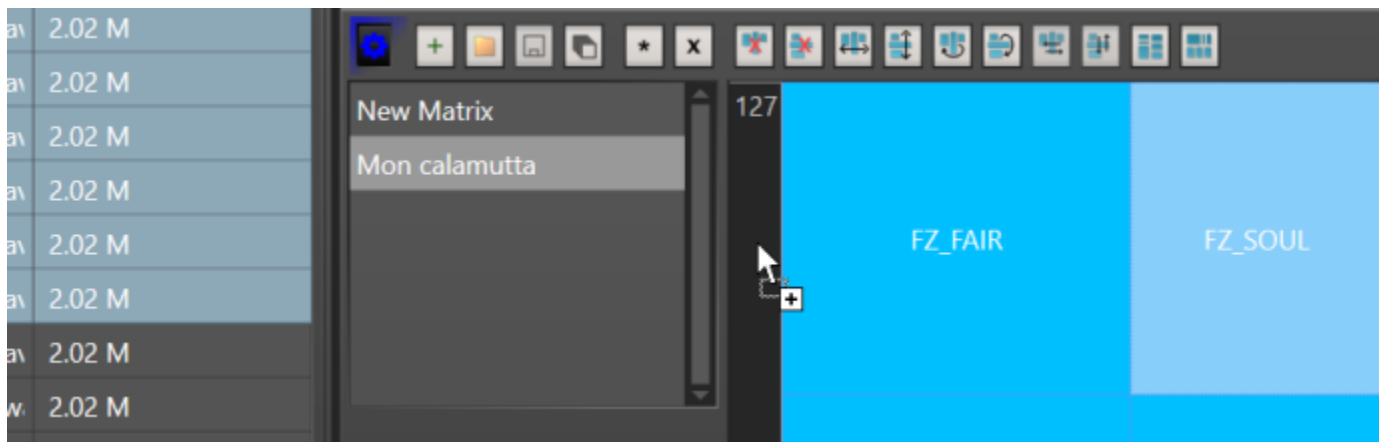
The matrix rows and columns can be moved by clicking and dragging.



Drag and drop wave files from the file browser or explorer into a cell to replace the assigned wave.



By dragging several files into the row/column scale area you can map all the files into the row/column. The matrix will be resized to accommodate all the dropped files if needed.



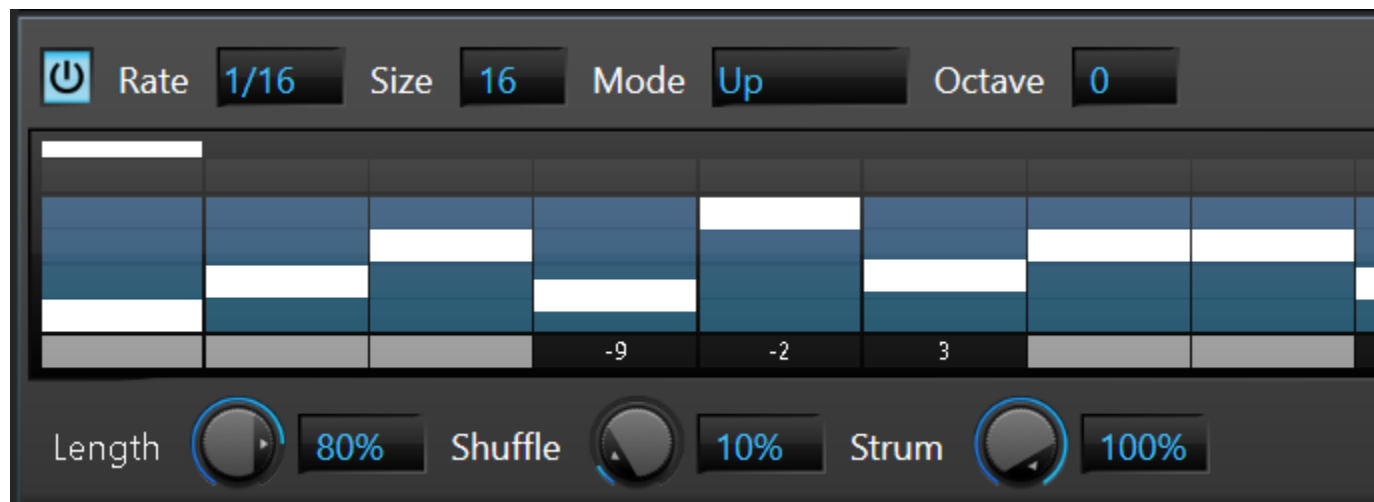
Double-click a matrix cell to open a file selector to replace the assigned wave. Loading a wave like this also lets you preview the new assignment while selecting.

Cell contents can be swapped between cells by drag and drop. Use **alt**-drop to copy content rather than swapping.

8. Arpeggiator

■ (TX16Wx professional only)

Each program slot has an arpeggiator MIDI effect that, when enabled, transforms MIDI input notes based on switchable patterns.



- **Rate** - speed of pattern playback, expressed in note length per pattern step.
- **Size** - number of pattern steps
- **Mode**
 - **Up** - Held MIDI notes are traversed from lower to higher keys
 - **Down** - Held MIDI notes are traversed from higher to lower keys
 - **Up/down** - Held MIDI notes are traversed in alternating order
 - **Random** - Held MIDI notes are traversed in random order
 - **Poly** - Held MIDI notes are all played at once, instead of sequentially. This generates a strumming pattern effect.
- **Octave** - repeats held notes over N octaves
- **Pattern** - the arpeggiator has eight selectable patterns, each with its own full compliment of settings. You can assign an automation control to this to switch patterns while playing.
- **Length** - note length (relative step length). Turn this down to create a more staccato effect.
- **Shuffle** - causes the steps to play back less quantized, "shuffled", to give a more organic feel to the pattern.

- **Strum** - when arpeggiator is set to **Poly** mode, this causes notes in the held chord to play back more or less "strummed", giving an effect similar to guitar chords being played in a strumming fashion.

■ Arpeggiator settings can be stored as presets for quick recall of patterns and parameters.

9. Send effects

■ (TX16Wx professional only)

TX16Wx has 6 FX busses, each of which can be assigned an effect. Effects are controlled and saved per performance. An effect can be sent to any of the outputs, and its level and wet/dry mix can be controlled.



- **Mute** - disable the FX and the send - no sound is produced
- **Bypass** - disable the FX and send the incoming signal (group/program slot sends) through to the output
- **Level** - output level of the effect
- **Mix** - wet/dry mix. 100% wet means only effect result is sent through (default)

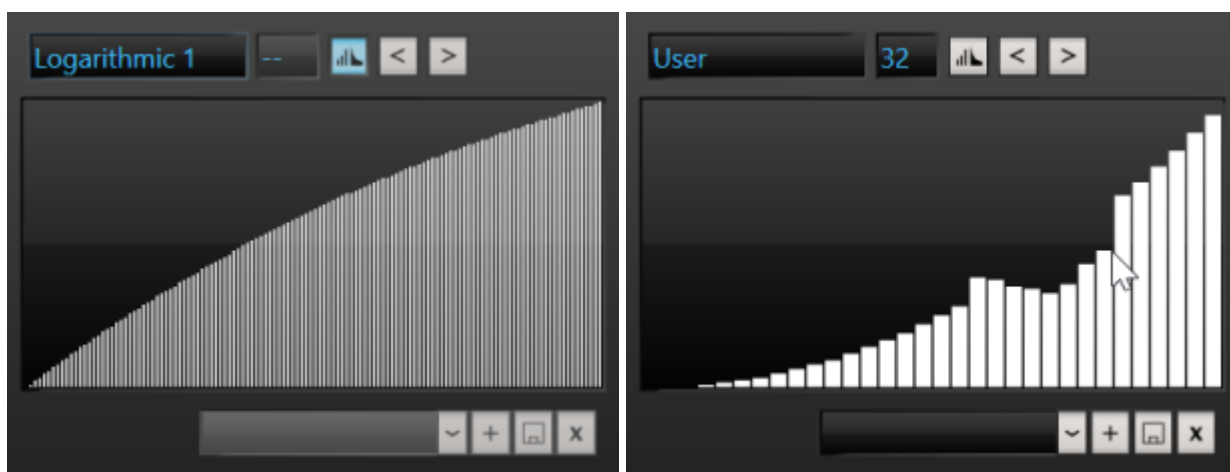
Most FX parameter can be automated. By right-clicking the FX parameter you can assign an automation control.

10. Mapping curves

Several parameters in TX16Wx, such as velocity response, modulation mappings and matrix axis, have mapping curves for translating the source input to resulting values.



Press the curve button in respective UI panel to open the curve mapping pop-up. Here you can select from pre-defined curves or paint a user-defined curve.



When user curve is selected, you can choose the number of curve steps to use/display and whether the curve should be interpreted *smooth* or *stepped*. The latter mode can be used to create discrete switches between output values.

11. Setup page

The Setup tab contains various settings and options that are either global and/or stored in the bank.

11.1. Settings

Global options for the sampler:

- **Use TX16Wx Pro features** - turns on features available exclusively to the non-free TX16Wx Professional Edition. You can enable this mode to evaluate the Pro features, but you may only do so for 30 days. After that, this mode requires you to purchase a license from the TX16Wx website, <http://www.tx16wx.com/>.
- **Save all waves in FXB/project** - toggles whether TX16Wx should force storing all actual wave data when storing the sampler state in the VST host project or when writing the bank as FXB (VST/AU plug-in chunk data). Leaving this option set to true makes your project files self-contained in such that TX16Wx does not have to locate wave files from disk when the project is reloaded. However, if you have a large sample set in memory this can cause your project files to become quite large, which causes issues with certain hosts.
- **Save waves in project** - if this option is active and the host supplies the project file location, TX16Wx will store all sample data that must be written as separate files instead of writing the data into the project file itself. The samples will be written as `<project dir>\TX16Wx\<project name>\<wave name>`. When combined with 'Save all waves in FXB/project' all data will be stored into the project directory.
- **Preview programs in file dialog** - should loading programs using a file selector temporarily load the selected program file for preview
- **Preview waves in file dialog** - should loading waves into Splits using a file selector temporarily load the wave into the Split for preview
- **Auto play waves in file dialog** - should waves selected in file selectors auto play
- **Auto play waves in file browser** - should waves selected in the file browser auto play
- **Copy content on bank save**
- **Copy content on performance save**
- **Copy content on program save**
 - Should contained sound items be copied and saved into the save file structure when saving the parent sound item. This can also be toggled in the file selector.

- **Use 'places' when saving files** - should paths be written as relative to Places (if possible) when storing sound data to disk. If set to off, any referenced sound files not present in the directory saved to (or subdirectory) will be written as absolute paths.
- **Sample folder naming** - determines where sample content will be placed when saving programs to disk with "copy content" active
- **Load output configuration from bank** - sets if output configuration is read when loading a new bank / host project file. "Never" will disallow output configuration from any bank, "Project Only" will load outputs from DAW host bank, but not from txbank files. "Projects and files" will load output configuration from both.
- **Auto create sound items on new / clear** - should clearing bank or creating a new performance automatically create stub content in the sampler, equivalent to "New perf + slot + prog"
- **Keyboard range for mapping non-pitched sounds** - key range per sample when creating groups containing fixed key mappings (not based on root key info)
- **Force fixed key mapping** - turns off root key based keyboard mapping for dropped samples
- **Enable key range / velocity partitioning when doing velocity layer mapping** - globally enables/disables root key partitioning when mapping velocity layers
- **Default sampler auto mapping low/high key** - sets the default keyboard bounds for the sample auto mapping feature of the sampler section. These values also affect the slice layout function.
- **New samples format** - sets data format for new samples.
- **MIDI octave display offset** - adjusts octave naming in the UI. Note that saved sound data will still use canonical MIDI octave names.
- **MIDI notes display as numbers** - Shows MIDI notes as MIDI note numbers (0-127) instead of symbolic names (C2, C#2 etc.)
- **MIDI velocity response curve** - determines how incoming MIDI note-on velocity values are mapped to voice velocity. Default is a linear mapping.
- **MIDI program change mode** - determines how TX16Wx responds to MIDI program change messages. By default, MIDI program change will switch between performances, thus selecting different complete multitimbral setups. By changing the setting to **Program**, TX16Wx will instead switch program assignments on individual program slots in the current performance.

- `Show program / performance numbers` - when active, program and performance selectors will display the respective index numbers of the item displayed.
- `Report MIDI note names to host` - when active, TX16Wx will report mapped samples as MIDI note names to the host application
- `Load existing performances`
- `Load existing programs`
- `Load existing waves`
 - Can be set to `yes/no/ask`. When loading sound data already loaded, this determines if a new copy of the data should be added to the bank. In general it is a bad idea to load duplicate copies of sound data, especially waves, since saving the data will be ambiguous.
- `Replace wave when dragging into sample list` - should samples and mappings be automatically replaced when dragging a new sample file into the wave list.
- `Place wave peaks file in alternate cache path` - should `reapeaks` files be placed in a separate folder instead of side-by-side with the originating wave file
- `Alternate wave peak cache path` - folder for peak files.
- `UI Size` - select UI resolution. The plug-in will attempt to resize on the fly.

Depending on your host this might require you to close and reopen the UI. Note that the actual size of the UI will depend on this as well as the chosen skin, since the plugin will resize to accommodate this.
- `UI Skin` - select the active skin defining the graphical look of the plug-in.
- `Enable tooltips` - turn tooltip help on/off
- `Knob mode` - switch between host determined, circular or linear knob mode
- `Max undo queue size` - determines the maximum number of Undo steps kept. You should keep this value reasonably low to avoid a high memory footprint.
- `MIDI edit of key / velocity fields` - sets how and when TX16Wx will respond to MIDI input to set values in note and velocity text input fields.
- `Default quality mode` - sound quality setting, see sample interpolation.
- `Offline rendering quality` - sets overriding interpolation mode for non-real-time rendering (mix down)

11.2. Outputs

TX16Wx normally has 12 **stereo** output busses. In the TX16Wx Professional edition bus 5 through 12 can also be switched to **mono** mode.

The configuration can be saved in settings as defaults and will also be saved along with bank data on either file or in the DAW host project.

Whether or not these output settings are re-read on bank load is controlled by the Load output configuration from bank setting.

Note: Not all hosts support dynamically changing outputs

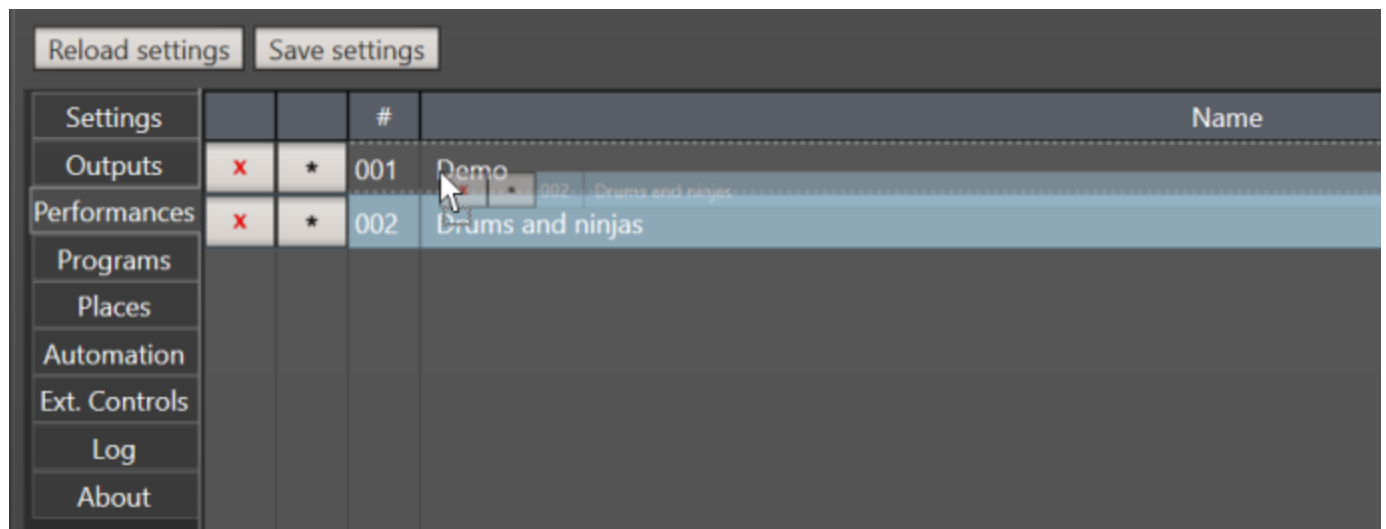
Note: After you change the output configuration you will have to rebuild/reconnect the output busses in your host application. Some hosts may have problems with modifying outputs in a running plug-in. In these cases you will have to reload the plug-in.

Note: The AU plug-in will suggest the output configuration you make here to the host, but the host may choose to ignore this and configure the actual busses in a different manner.

Note: The AAX plug-in cannot modify the output bus layout dynamically, but you can change output configuration stored in settings.

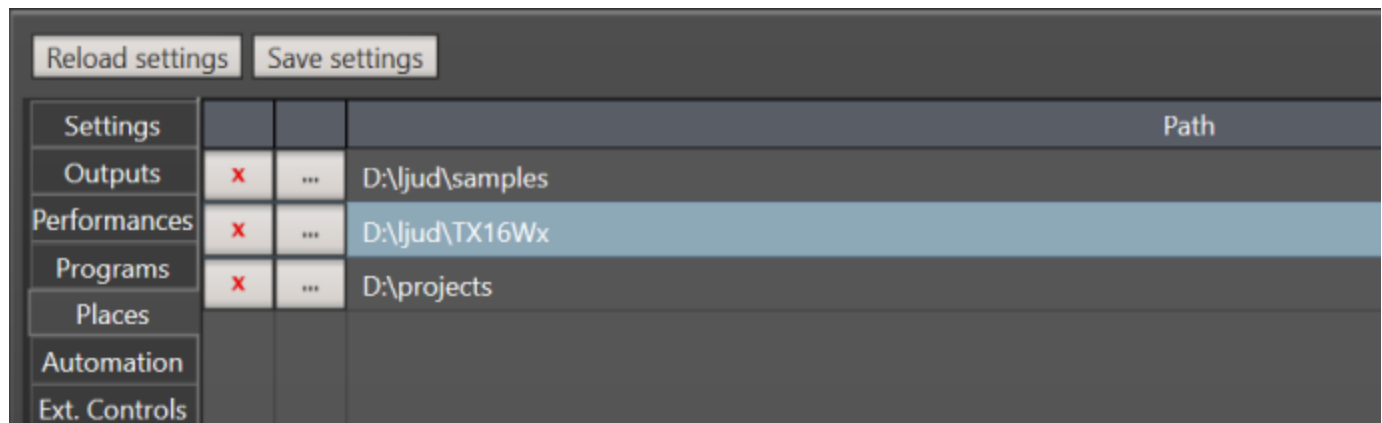
11.3. Performances / programs

The performance/program list allows you to manage, rename and reorder loaded performances and programs. This is particularly useful when you need to ensure programs are in specific order to set up MIDI program change.



11.4. Places

Places are file system search paths where TX16Wx will look to resolve referenced file names when loading sound data. Inversely, when saving files and Use Places is active in the settings tab, the relative file paths used to reference between bank, performances, programs and waves will be written relatively to these paths.



This definition of search paths allows you to create a complex archive of sound files without having absolute paths in the referencing filenames, thus making the sound data re-locatable.

You can also assign names to places. The file browser will then display these labels instead of the actual file path when browsing.

11.5. MIDI external controllers

TX16Wx can have up to 16 external Midi controllers as well as settings for MIDI response defined. These are stored with the bank data on disk or in DAW memory, but can also be stored as system defaults. Midi controllers can be selected either from the list, or, if you for example have a controller area with mapped sliders, you can enable Midi Learn for the controller slot and move the slider to map it automatically.

XCtrl	Midi Control
0	000: Bank Select
1	000: Bank Select
2	000: Bank Select
3	000: Bank Select
4	000: Bank Select
5	000: Bank Select
6	000: Bank Select
7	000: Bank Select
8	000: Bank Select
9	000: Bank Select

Each controller can be given an offset, which then acts as the center point for the controller. Midi controllers range are normally $\langle 0 - 127 \rangle$, but setting offset to 63, would instead cause the range to become $\langle -63 - 64 \rangle$, i.e. bipolar.

11.6. Automation

Like external controllers, the VST/AU automation parameters can be mapped to be bipolar instead of unipolar. In bipolar mode, the effective range of the parameter is $\langle -1 - 1 \rangle$ instead of $\langle 0 - 1 \rangle$. Note that the offset only applies when the automation parameter is used as a modulation source.

The bottom buttons lets you can either load the system default mappings or save the current set as defaults.

Automation parameter settings are saved with the TX bank or in the DAW `fxb` data.

11.7. Log

Contains log messages about loading, saving etc.

11.8. About

Information and copyright notice about TX16Wx and dependent libraries.

Also contains license information for TX16Wx Professional (if enabled).

You can use the `activate` button to enter a (new) activation code for TX16Wx Professional, or the `deactivate` button to revoke it.

12. TX16Wx Professional

TX16Wx is free, but is also available in a commercial, professional version. This edition adds several advanced features and capabilities to the instrument.

You can enable TX16Wx professional features in the settings page to evaluate them. If you decide to purchase a license you can install it easily by using the **activate** button in the **about** page of the setup screen. You will be prompted for your activation code.

13. Working in your DAW

Normally a DAW host application will ask the active plug-ins to store their session data in the project file (s) when closing a project. This is how the state of a VST/AU instrument is restored when resuming a project.

Since TX16Wx is a sampler instrument, its internal state is dependent on waves loaded from disk, typically many megabytes in size. Storing this whole state into the project can cause problems, as some hosts cannot handle very large state data chunks.

TX16Wx will by default not store wave data that has not been modified in this memory, but instead just keep a reference to the file on disk. While this greatly reduces the size of stored data in most cases, it will leave your project vulnerable if you for some reason delete or change those original files.

For safety, you should probably store your entire bank state to disk inside your project structure, with 'copy content' enabled.

The `Save all waves in FxB/project` settings will cause TX16Wx to store all wave data in the host project file.

14. Saving sound data

14.1. Banks / Performance / Program

When storing sound program data from TX16Wx, you may tick the option **Copy Content** on/off in the file selector window opened (**Save As**). When **Copy Content** is on, all contained sound data will be copied into the same directory as you are saving to, and the resulting sound files will reference the copied material.

Inversely, if Copy Content is off, the saved data will reference the original files (potentially resolved through places).

14.2. Waves

TX16Wx stores its sound data as Microsoft **WAV** files on disk. If a bank references sound data that has not been modified, the original wave files will be referenced.

Once wave data is modified in memory however, TX16Wx will store a new version of the sound data in Wav format in a directory next to the stored program file.

15. File formats

15.1. Bank / Performance / Program

TX16Wx stores its sound definitions in utf-8 XML data files. The XSD definitions for the txbank, txperf and txprog file formats are included in the TX16Wx installer.

15.2. Supported sample formats

TX16Wx can stream all non-compressed wave formats supported directly from disk, as well as wave data in sound fonts.

- **WAV** - reads and writes PCM and floating point Wav files, including instrument and sampler definitions.
- **AIFF** - reads PCM and floating point Audio Exchange Format Files.
- **AIFFC** - reads ulaw, alaw and Typhoon DWVW Compressed AIFF files.
- **OGG** - reads ogg vorbis encoded compress audio files
- **FLAC** - reads flac loss-less compression files
- **W??** - reads Yamaha wave files

15.3. Importing sound data

15.3.1. Sound font 2

TX16Wx has limited support for import of Sound Font 2 files.

Sound font container content can be browsed in the file browser, where individual presets and samples can be loaded. A sound font can also be loaded in full by drag and drop into the plug-in windows, or by using the Load Performance file selector.

TX16Wx will translate wave data as well as create program representations of the SF2 bank voices.

Note: If you load a sound font into memory when working on a project, and "Save all waves in FXB/project" is not turned on, TX16Wx will attempt to reference the wave data in the sound font. Thus the project will be dependent on the imported sound font bank. To avoid this, save the bank in TX format before closing the project.

15.3.2. SFZ Files

TX16Wx has limited support for the SFZ format. You can load a single SFZ into a program slot or simply drag and drop them into the sampler.

15.3.3. EXS Files

TX16Wx has limited support for the Logic EXS program format. You can load a single EXS into a program slot or simply drag and drop them into the sampler. The importer handles sample mapping, filters, envelopes and modulators (to a certain degree).

15.3.4. AKP Files

TX16Wx has limited support for the Akai S-5000 AKP program format. You can load a single AKP into a program slot or simply drag and drop them into the sampler. The importer handles sample mapping, filters, envelopes and modulators (to a certain degree).

16. Skins

TX16Wx supports user defined skins which can be used to alter the graphical appearance of the plugin.

Skins are loaded from the "skins" folder in either or the shared program folder or from the user settings folder.

Skins are created by a CSS-like style sheet definition along with graphical elements. Please refer to the skinning information on the TX16Wx website for more information.

17. Credits and Acknowledgements

TX16Wx uses the following third-party software:

- Libogg
- Libvorbis
- Libflac

The plugin is based on the CWPlug library with the GUI built using CWUi, a derivative of VSTGUI. The VST plugin uses the definitions of the Steinberg VST SDK.

Some icons are courtesy of <http://icons8.com/>

None of the DSP parts in this software would have been possible without the great resources at <http://www.musicdsp.org/>

The sound architecture is based on the wonderful Typhoon OS, created by NuEdge Development for the original TX16W hardware sampler. <http://nuedge.net/typhoon2000/>