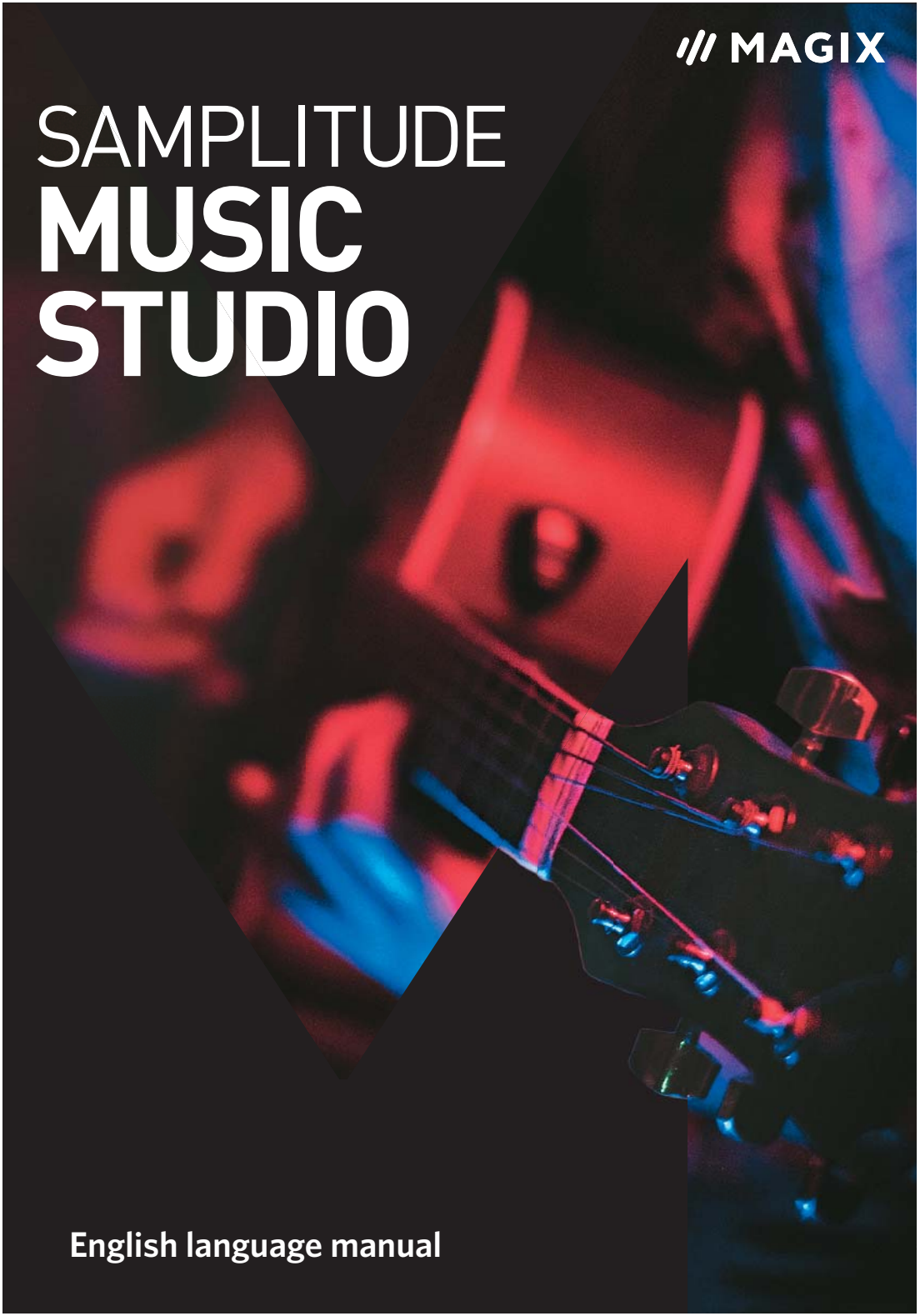
MAGIX

SAMPLITUDE MUSIC STUDIO



English language manual

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  2. Sign in using your login details.
  3. Click on "Purchase access code" in the navigation bar.
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- **Additional telephone service:**
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http://support.magix.net/

Mail (Europe): MAGIX Development Support, P.O. Box 20 09 14, 01194 Dresden, Germany

Mail (North America): MAGIX Customer Service, 1105 Terminal Way #302, Reno, NV 89502, USA

Please make sure you have the following information at hand:

- Program version
- Configuration details (operating system, processor, memory, hard drive, etc.), sound card configuration (type, driver)
- Information regarding other audio software installed

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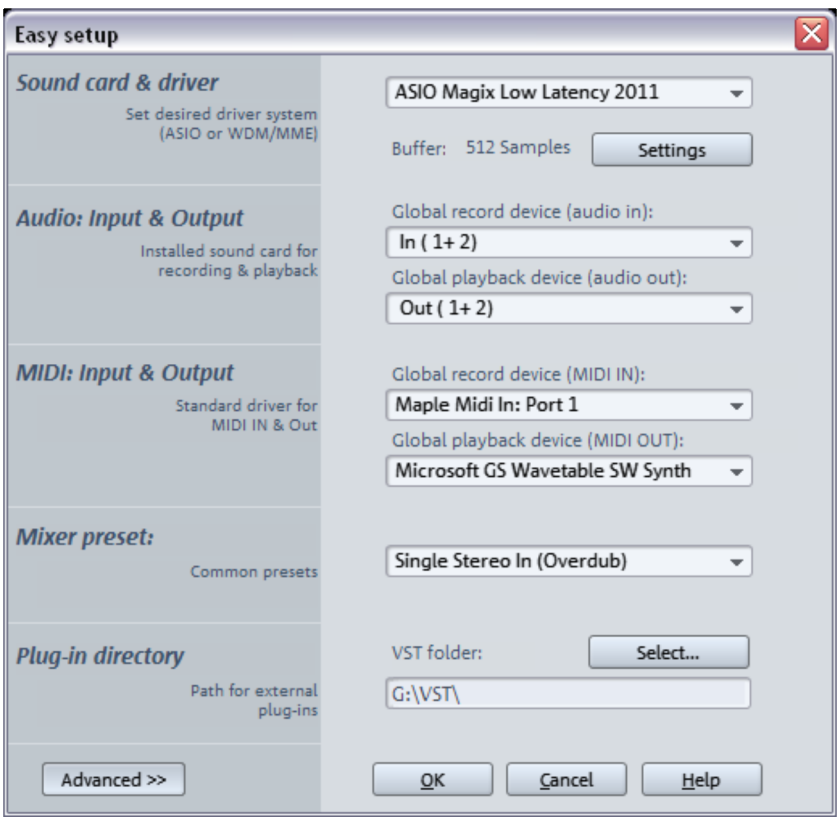
Tutorial

In this chapter we will introduce the most important features of Samplitude Music Studio. You will learn how to create an arrangement with audio and MIDI as well as the powers of both formats. You will also receive information about essential parts of the program so that you can take advantage of all possibilities of Samplitude Music Studio.

Quick Setup

After starting the program for the first time, the "Quick Setup" dialog appears. In this dialog, you can specify which sound card configurations you would like to use. Usually you will not have to change anything, because Samplitude Music Studio automatically selects the correct settings. But you can still customize the settings here if you want to, e. g. select an external sound card instead of the built-in sound card.



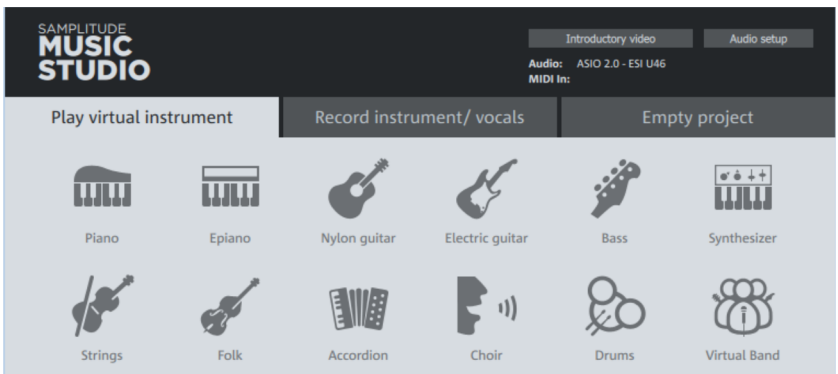
You can also set your plug-in directory for VST plug-ins (view page 216) and other elements.

The settings dialog appears only once when you start the program for the first time, giving you the chance to check and adjust the settings of Samplitude Music Studio. After that, you can open the dialog by pressing "y" on your keyboard (or via "File" > "Program settings" > "System/Options").

- Beginners should not change the settings at all and simply click "OK".

Start Wizard

The Start Wizard appears when you open Samplitude Music Studio and allows you to create a new project that already contains specific presets.



The presets under "**Play virtual instrument**" can be used to play and record one of the twelve virtual instruments included with the program using a MIDI keyboard. What gets recorded is not the output from the virtual instrument (i.e. the audio), but your inputs on the keyboard in the form of MIDI data. You can find more information about this in the MIDI recordings (view page 26) section below.

"**Record instrument/vocals**" contains templates for recording vocals, instruments and entire bands. Suitable effects are preset on these tracks but not activated. In this case, audio data is recorded.

Under "**Empty project**" you can create a project that doesn't contain any presets. You can, however, set the name of the song, how many tracks you want the project to contain and the location you want to save it to. Everything can be changed at a later stage.

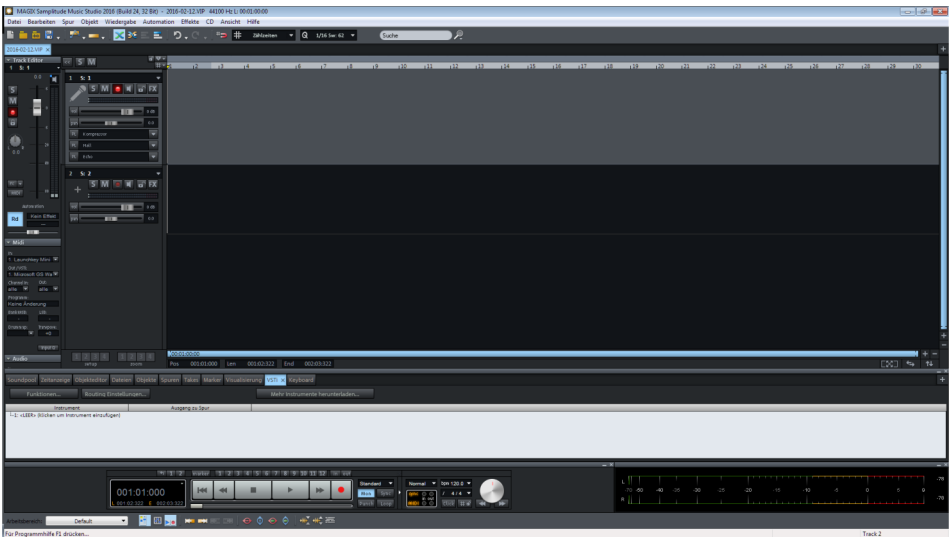
At the very top of the dialog under "**Audio setup**", there are shortcuts to the most important system settings. Normally, Samplitude finds the right settings on its own, so in most cases you won't need to change anything here. However, if you aren't getting any playback or recording, you can check your settings here and change them if needed. You can read more about this under Quick Setup (view page 497) in the system options chapter.

At the bottom of the dialog, you have access to recently saved projects. Since we won't have any saved projects at the very beginning, we want to create a new project.

- Click on "Vocals" under the "Record instrument/vocals" tab.

Record

This creates a new project and turns on recording for the first track.



When you sing into the microphone, the peak meter in the track box should register a peak.



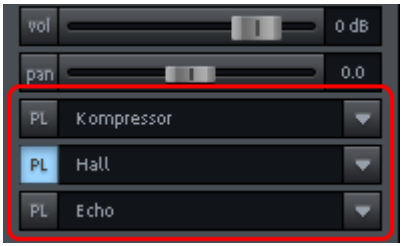
The level displays what is entering the soundcard's inputs. If it reaches the upper red range, the input level is too high. If this happens, you want to reduce the input loudness.

You should be able to hear the vocals in your headphones ("monitoring"). To avoid feedback, mute your speakers.



The "Mon" button on the transport console deactivates monitoring.

When you select a "Record vocals/instrument" preset, the corresponding effects will be loaded in the recording track, but they won't be active. You should be able to hear the effects when you activate them. For more information about this, see the Effects (view page 31) section below in this tutorial.



Note: In order for everything to work as described, a few settings have to be correctly set. If something doesn't work, refer to the "troubleshooting" section.



To get (and maintain) the right tempo on your first take, you can **click** to activate the metronome. You can select various speeds by using the arrow button next to "bpm".

We don't recommend trying to record an entire song at once, but recording the different instruments and vocals one after another on different tracks. For example, if you wrote a song that you usually accompany with the guitar, you should record the guitar without vocals first and then add the vocals later, in a second step. This has the advantage of being able to entirely focus on one aspect (i.e. the instrument or vocals), thereby improving recording quality.

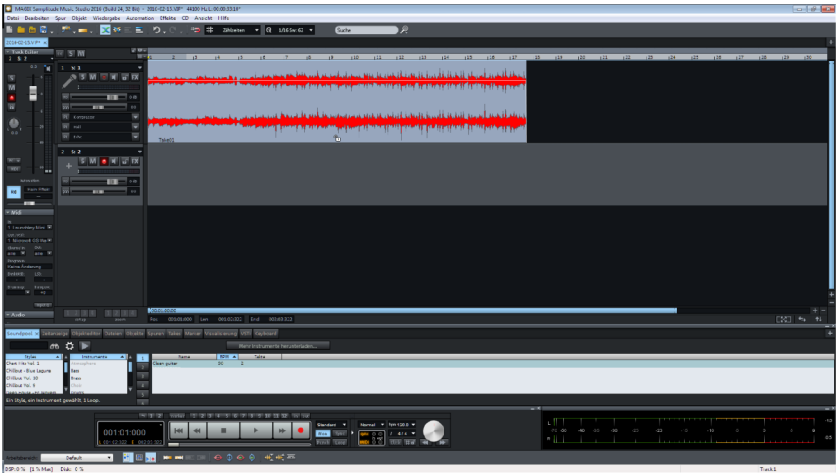


If you are ready to start your first test recording, click on the red "Record" button. Samplitude Music Studio will now start recording.

Tip: You can open the Varispeed settings by right clicking on the jogwheel in the transport console. This allows you to reduce the tempo for the sake of practicing. It also works for recording!



After recording, an audio object containing the recording will appear in the track.



Now you can record on other tracks. The red button to the left of every track displays which track is currently being recorded. In the picture above, this is track 2.



You can click to enable any track for recording as well as record on any track.

Troubleshooting

Peak meter not displaying peaks

Check to make sure the audio source (e.g. microphone, guitar) is connected to your sound card. Have you selected the right input (view page 439)? Is the controller for the input level on the sound card—or the gain controller on the mixing console—turned up? Most sound cards include their own mixing program where you can set the input sensitivity.

I can't hear myself (no monitoring)

In order for monitoring to work, you have to have an ASIO driver selected as the sound card driver (view page 435). Samplitude includes the MAGIX Low Latency driver, which provides ASIO functionality for all audio devices.

The monitoring sound is hollow or strange, or I hear myself twice

Most sound cards—including your computer's onboard sound—provide support for the Windows sound card mixer in addition to support for Samplitude Music Studio monitoring. This mixer contains a signal path that leads directly from the input signal to the sound card output, and can also be used for monitoring.

If the monitoring sound is hollow, strange, or you hear an echo, both monitor paths are likely active and are interfering with each other. If this is the case, deactivate monitoring in the Windows sound card mixer.

To deactivate monitoring via the sound card:

1. Open the control panel, go to "Sound" and select the "Recording" tab or right-click on the speaker icon in the lower right hand corner of your screen and select "recording device" from the context menu.
2. Double-click on the device you want to use. If your audio source is connect and producing sound, you should see a peak in the peak meter.
3. Go to the "Listen" tab and uncheck the checkbox that says "Listen to this device". Then click on "Apply".

I don't hear any effects in the monitoring

In order to hear effects, you must have at least "Track FX Monitoring" set as the monitoring mode (view page 436).

Cutting

Let's assume you bump into the microphone during recording, and you've got a nasty pop in an otherwise good recording. And now you want to remove the pop.

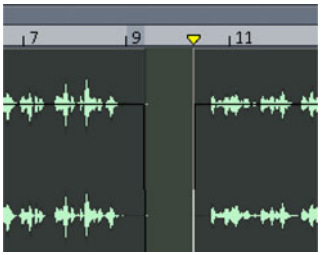
- Play back your recording (the easiest way to do so is by using the spacebar on your keyboard) and search for the section that you want to cut out.
- You can move the playback marker in the bar ruler above the first track at any time by clicking.



- If necessary, zoom into the display to get a better view of the waveform display. To do so, use the horizontal and vertical zoom buttons located in the bottom right-hand corner:



- Click on the audio object to select it.
- Place the playback marker just in front of the pop and press the "T" key on your keyboard.
- Now place the playback marker just after the pop and press the "T" key again.
- Click on the isolated piece containing the pop and delete it from the track.



Did you cut out too much by mistake? No problem: The object handles located at the edges can be used to recover deleted material and vice versa, to remove bothersome remnants.

- To do so, select the section you want to edit with the mouse.

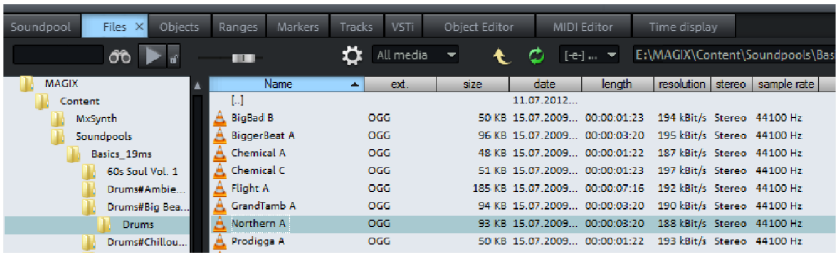


- Move the mouse pointer exactly on top of the handle. After it has turned into a double-arrow, you can move the front part to the right or to the left with the mouse button held down – ideal for fine-tuning your cuts.

Integrate audio material

Now add new, already available audio material. Audio material can be added to your virtual project (VIP) from different sources and in different file formats. You can add audio CDs, WAV files, MP3 files, sample CDs (such as the MAGIX Soundpool series), as well as other audio files. There are various options available for loading audio material:

- In the menu bar, click on "File > Import > Load audio file..." and select an audio file via the import dialog.
- Activate the integrated file browser via the "Files" button at the lower edge of the screen (or via the menu "View > Manager > File manager"). This accesses all drives and folders on your computer. Any audio file can be dragged to the track by pressing down the left mouse button (drag & drop).



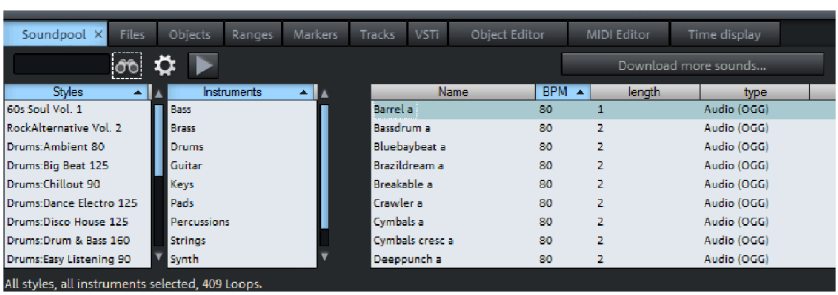
- You can also drag audio files directly from Windows Explorer into the Samplitude Music Studio arrangement.
- Audio tracks first have to be copied onto the hard drive separately. To do this, click in the top menu bar of Samplitude Music Studio on "File > Import > Load audio CD track(s)...".

Arranging MAGIX Soundpool loops

Up until now, you have only been working with your own material. Next we want to show you how you can use the included Soundpool loops to create your own songs.

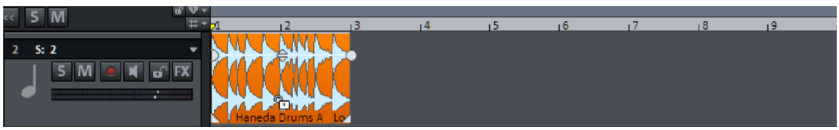
MAGIX Soundpools offer professionally produced, short audio files — so-called "samples". They have been produced to be perfectly combined with each other and looped. "Looping" means creating an entire instrument track from a single audio sample. This entails replaying the sample sequentially to provide the impression of a repeating musical leitmotif.

- It's best to create a new, empty arrangement first. To do this, go to "File" and select the option "New virtual project (VIP)". Then select "Empty project" in the Start Wizard.
- Select the "Soundpool" tab in the docker (or "View" > "Manager" > "Soundpool Manager"), to view the included Soundpool samples.

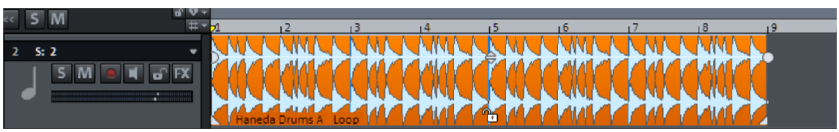


- The "styles" are displayed on the left side of the Soundpool manager. If you have inserted, for example, a MAGIX Soundpool DVD, you can select a style here. Samplitude Music Studio shows "Rock" because this style is included.
- Next, choose the instrument you want to use. At the start, we recommend choosing a drum sample to create the initial percussive structure. Open the "Drums" directory in the "Instruments" section.

- To preview, click once on a file in the file list. To load it, drag the desired file to the track.
- Every object can be moved around (horizontally on a single track and vertically between tracks) in the project window by using the mouse. Drag the drum loop onto the first track all the way to the left to the beginning of the track.



- Next, the sample is looped, and the short object is turned into a repeating loop. To do so, click on the bottom right handle of the audio object and drag the mouse to the right the amount that you need for your first song part. Around 8 bars should be enough at first. After doing this, the object will occupy the first 8 bars of the first track.
- Now you want to make sure that the playback range is as long as the sample (in this case, 8 bars). To do so, click above and to the right in the timeline and drag out the playback range to match the length of the looped object.

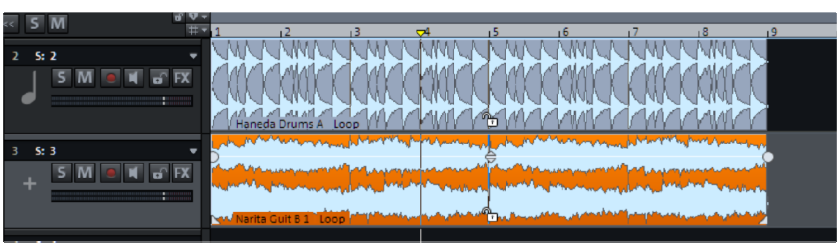


- Now press the play button (spacebar is faster). The drum sample will loop for 8 bars.

What this means is that the playback marker will begin at the very start, then move through the playback range and then start at the beginning again once it reaches the end. All of this happens without any interruption. You can also set the playback marker independently of the playback range by clicking on the lower section of the bar ruler.

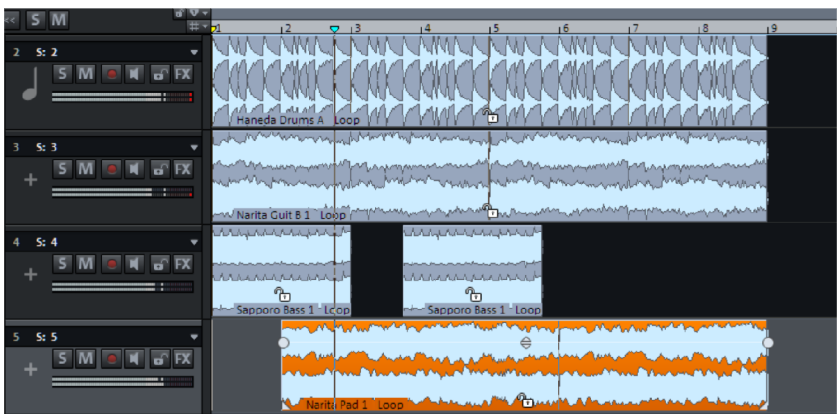
Note: All additional loops can be previewed during playback and inserted. This way you can listen to the "candidates" when testing new samples in combination with the arrangement. If continuous playback gets on your nerves after a while, then you can always interrupt it by pressing the spacebar again.

- Next, load a fitting bass. Open up the bass folder, test some of the bass samples there, and then drag a bass loop you like onto the second arranger track



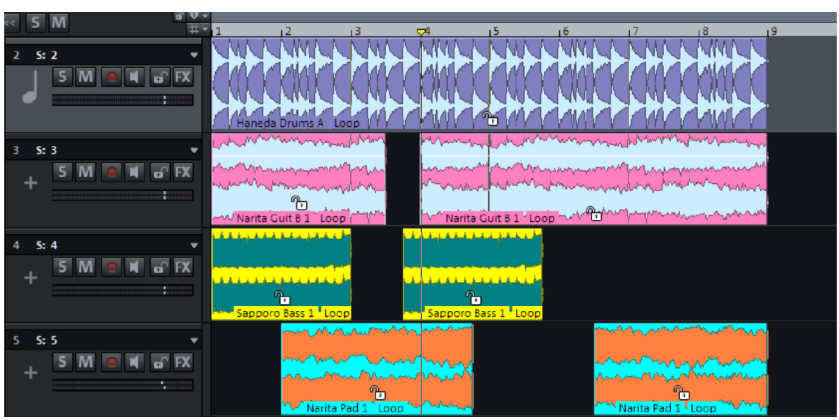
Note: Melody-creating instruments are ordered according to pitch, meaning that you can choose between several variations for each sample that was produced in several pitches. By combining different variations of a pitch, you can produce chords.

- Add new instruments to your drum and bass loops. This way, any number of files can be dragged from any folder into the arranger and positioned on top of one another, on multiple tracks, or behind one another.



This way you can create complete songs or professional bases for own recordings.

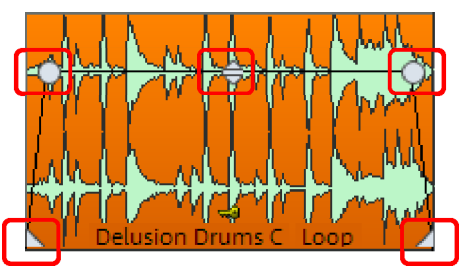
- Because not all instruments are normally looped for the entire arrangement, gaps should be built into the architecture of your song to provide musical variation. To do this, looped objects can be cut or loaded multiple times to create the required empty spaces.



Edit objects

Editing objects is the same for all object types. The following options are equally available for audio objects, synth objects, and MIDI objects

- Many object edits require that the object is already selected. Individual objects can be selected with a mouse click. Multiple objects can be selected with a held-down Ctrl key. If you click on the track next to an object, you can draw a rectangular frame by holding down the mouse key. All objects found inside the frame will be selected ("rubber band selection").
- All objects in VIP can be shortened by dragging one of the lower object handles using the mouse until it turns into a double arrow. Now, the object can be shortened. This way, bothersome regions at the beginning or at the end of a recording can be cut off by simply displacing the ends inward.
- If "Create looped object" is activated under "Edit" in the "Object" menu, you can stretch the object as you wish with the right handle. Use this feature to create entire rhythm tracks from short drum samples by simply stretching the object apart.
- Two fade handles are found on both top corners, which can be dragged inwards in order to fade the object in and out. The handle at the center can be used to adjust the volume of objects.



- Several objects can be combined with others to make up a group, to avoid the objects being unintentionally moved out of relation to each other. To do so, first select the individual objects. Then select "Object" > "Group" > "Create group" (or click in the tool bar on the "Group" symbol).
- All objects can be split into multiple objects. To do so, select the "Split objects" in "Edit" menu under "Split" (or use the "T" key on your keyboard). The selected object will be split at the position where the playback marker is.
- By right-clicking an object you can open a context menu where you can select the object editor. The object editor is also integrated in the docker and constantly available. It can be used to make all important settings for the corresponding object. You can add effects to audio objects or change quantization of MIDI objects.



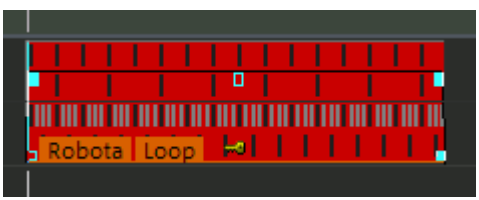
The object editor is always open in the docker for easy access. It changes its settings depending on which object is selected.

Adding synthesizers

There are two types of synthesizers in Samplitude Music Studio.

Synth objects are loaded in the "Object menu" > "New synth object". A menu with the available synthesizers opens. After selecting a synthesizer, the respective control console appears where you can program the rhythms, melodies, chords, and sounds of the synthesizer.

After they are programmed, synthesizers become independent objects that can be moved around as desired just like other objects on the arranger.



Generally, **Track Synthesizers** do not feature sequencers of their own and are controlled via MIDI objects. To do so, they must first load the track synthesizer into a track.



Clicking on the plus icon in the track box opens a menu from which you can load one of the synthesizers included with the program. By using the presets provided in the "Play virtual instrument" tab in the Start Wizard, you can have a synthesizer loaded right when your project is created.

With the keyboard connected and software monitoring (view page 436), you can now already play and record the loaded synthesizer live. However, you can also create a new MIDI object ("Object menu> New MIDI object") and edit the melodies in the MIDI editor (view page 175).



Experiment with the various synthesizers in Samplitude Music Studio to discover the possibilities.

MIDI recordings

You can make MIDI recordings using a MIDI keyboard, virtual instruments or external synthesizers. When you do this, the sound of the instrument isn't recorded to an audio file; rather, the instrument is controlled remotely via the MIDI file format. The specific elements of this remote control—every keystroke, every note, the velocity of every note—can be retroactively edited and corrected via the MIDI Editor. For more on this, refer to the "MIDI editing (view page 28)" section.

What is MIDI?

MIDI is a standardized command language that helps control synthesizers. In addition to the command to play a note (Note On, Note Off), there are control commands (Ctrl Ch) for internal parameters of the synthesizer (volume, panorama, the pedal for piano, filter settings and others), program change commands (Prg Ch) to activate saved sound programs, and others. These commands are called MIDI events. An MIDI object containts a series of events and the times at which they occur.

You can create MIDI objects by loading MIDI files, playing and recording with an external MIDI keyboard, or by drawing notes in an empty MIDI object with the MIDI editor.

MIDI objects do not contain audio material. They are used to control synthesizers that then create corresponding sounds. They are comparable to notes that still have to be brought to life by a musician.

MIDI is thus a kind of remote control for synthesizers. This has some advantages:

- MIDI files need a lot less memory than wave files.
- MIDI files can be adapted to any tempo (BPM) without affecting the sound. The playback tempo is simply changed.
- Transposition of MIDI files to other pitches is also easy. As a result, a section in a song does not have to be saved in several different keys. The version in C major is perfectly sufficient. It can then be transposed to any key easily.

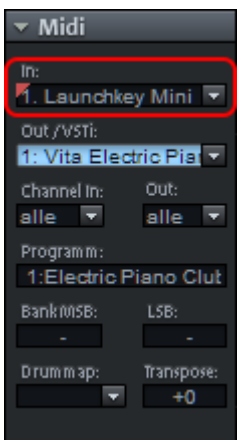
The disadvantage of MIDI files: The audio is not yet determined and is only produced during playback.

Preparing a MIDI recording

Loading a software synthesizer to a track automatically switches that track to MIDI recording. If you activate recording for the track, you can tell that the track is set to MIDI recording by the fact that the recording button in the track box is pink instead of red.



The peak meter works as an indicator for incoming MIDI signals.



In the event Samplitude isn't responding to MIDI input, check to make sure the MIDI keyboard is correctly set as the MIDI input device.

To do this, open the Track Editor via the "View" menu (Shortcut: Ctrl + Shift + Alt + E) and open the "MIDI" section with the small triangle.

"In" should be set to the MIDI port of the connect keyboard.

The MIDI device that gets used by default is the one selected in the global MIDI settings (view page 440) in the "MIDI" subdialog of the system dialog.

"Out" displays the loaded software instrument that will be used to play the MIDI notes generated by the MIDI keyboard. To switch instruments, click on the small triangle next to "Out" and select a different instrument.

MIDI recordings are started just like audio recordings—by clicking on the record button in the transport console.

MIDI recording modes

MIDI recordings can be made in several different ways. You can choose the MIDI recording mode you want to use in the transport console.



- **Normal:** This recording mode equates to audio recording (i.e. a new MIDI object is created above the existing object each time you record). The old object remains untouched.

- **Overdub**: The data is recorded into an already existing object. The newly recorded MIDI data is mixed together with the data that is already present.
- **Replace:** The recording is written to an existing object, and the new MIDI overwrites any previously existing MIDI data.

Edit MIDI

MIDI Editor

Use the MIDI Editor to edit MIDI files. You can open it by double-clicking on a MIDI file (or via the "Object" menu > "MIDI Editor").

You can also use the MIDI Editor to program melodies. To do so, create an empty new MIDI file (Object menu > New MIDI file) and then open the MIDI Editor to input notes.

The MIDI editor displays the MIDI data of the selected MIDI object. You can click the MIDI objects in the arranger one after the other and get direct access to the corresponding MIDI events.

MIDI files can be displayed and edited in the MIDI Editor in five main areas.


List Editor (Event List)


Matrix Editor (Piano Roll)


Drum Editor (toggle between the Drum Editor and Piano Roll possible)


Controller Editor (for example, velocity, MIDI volume...)


Score Editor (Note display)

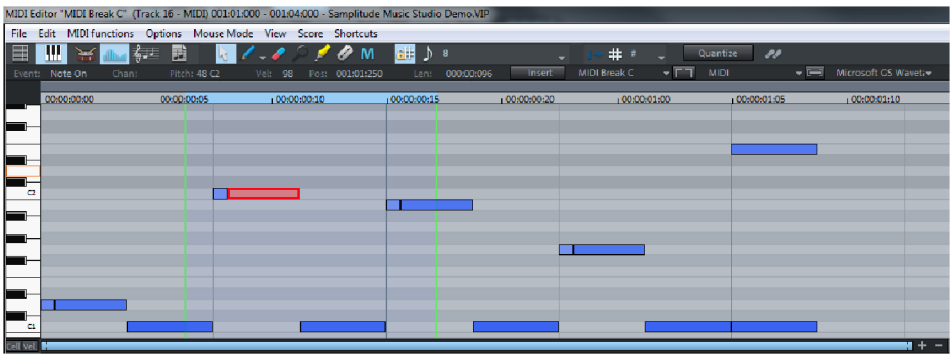
Ever areas offers corresponding tools: pencils or eraser-tools.

Fundamentally, changes, for example, moving or deleting notes, refer to all selected MIDI events (red) with just a few exceptions. You can, for example, select a group of notes in the Piano Roll and then change the attack velocity for this group of notes in the Controller Editor, modifying all selected notes simultaneously.

Note: The MIDI Editor has a menu of its own. When it is integrated in the docker, at first it remains invisible, but can be accessed with a right-click on the grey area between two tools as a context menu. If the MIDI Editor is dragged and dropped form the title bar docker, the menu will appear as usual with an own menu bar.

Working with the matrix editor

The matrix editor is particularly useful for conveniently arranging MIDI notes (piano roll).



In the matrix editor, you can edit MIDI notes for controlling sound generators like synthesizers, drum machines, and virtual instruments (VST instruments). If a MIDI instrument is activated, you can play it via the keyboard at the left of the screen. Clicking on a key makes the synthesizer create the corresponding sound.



Now select the pencil tool and paint the notes into the score sheet. MIDI notes can also be sustained by holding the left mouse button or double-clicking.



The "Eraser" tool deletes notes from the note field.



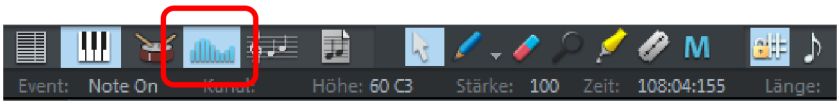
The "Step recording" button enables step-by-step audio recording.

Tip: The tool for drawing the pattern is particularly interesting. Use the selection tool to select specific notes and press the key combination "Ctrl + P". The selected notes are played as a sound pattern. Switch to the pattern drawing tool. You can now easily sketch the sound pattern with only one click.

Tip: Pressing the "left" and "right" arrow keys on your keyboard moves forwards/backwards in the notation, respectively. The cursor up/down keys adjust the note pitch in stages.

Using the Controller Editor

In the Controller Editor your can adjust MIDI parameters such as velocity. A simple click on the Controller button of the MIDI Editor opens or closes the Controller Editor.

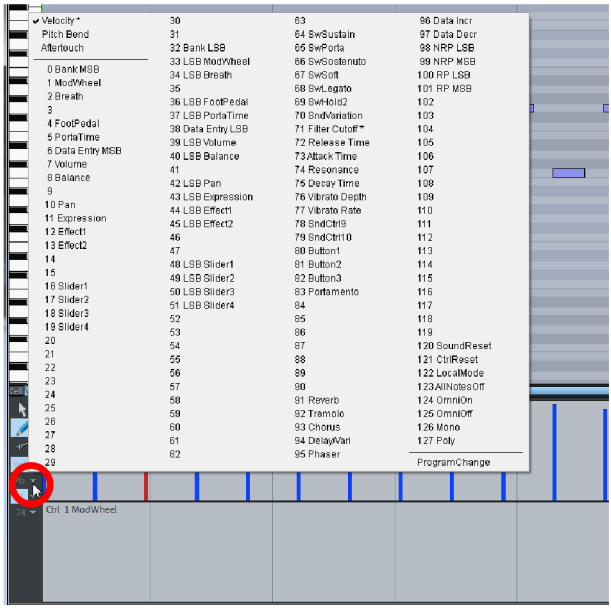


It appears below the Piano Roll.



Tip: If you can't see all buttons, you can enlarge the view by clicking on the scroll bar between the piano Roll and the Controller area and dragging the Controller Editor.

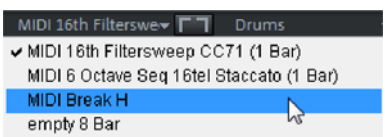
On the left you can choose from various drawing tools as well as determine the MIDI parameter to be controlled (such as velocity, foot pedal, vibrato, filter cutoff). By clicking on the small arrow button you can open a context menu with further options.



The Controller Editor can simultaneously control up to four different parameters that can be selected using the four small arrow buttons.

Multi-object editing

You can edit several MIDI objects together in the MIDI editor. In an opened MIDI editor, you can include additional MIDI objects by clicking on them while holding down the "Shift" key. The MIDI events of these objects are displayed together.



In the MIDI editor, you can access the displayed MIDI objects via the flip menu next to the name.

The current object range can be highlighted by clicking the button behind the name. Areas lying outside the current object will be grayed-out and the notes of other objects will be paler, but still selectable. For more information on this, please consult the MIDI chapter in the PDF manual.

Effects

You can considerably enhance your music productions with effects. Clever use of effects adds depth to your song and simply sounds better. Samplitude Music Studio has plenty of effects. Experiment with the various effects in Samplitude Music Studio and learn how to use them.

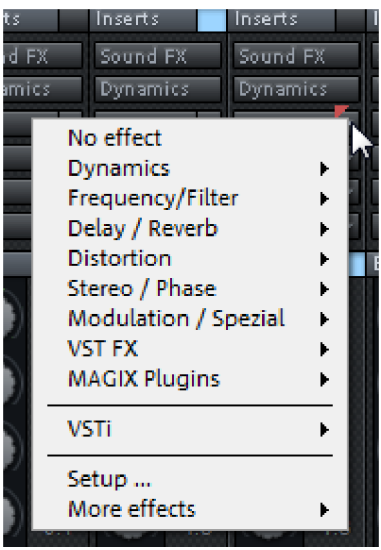
Calculating audio effects

You can add audio effects in three different levels: audio objects, tracks, and in the master. When played, effects are first calculated in the audio objects. Track effects are then added. The master effects are added last.

First, start with the object effects to distort individual objects while other objects in the same track remain the same. For instance, if you have saved a groove consisting of several audio objects on one track, you can edit the last object of the groove with a distorter.

Use track effects like reverb, etc. on any objects located on a single track. Finish off your song with powerful master effects that have an effect on the entire song.

Effects in audio objects: Right-click on an object to open the context menu and add an object effect. You can access the object effects directly via the context menu. Object effects can be selected and subsequently edited via the object editor.



Effects in tracks: To adjust track effects in the mixer, open the mixer by clicking on "Mixer" in the lower part of Samplitude Music Studio. In the "Ins" section, click on the arrow symbol of an effect slot in the corresponding channel.



Effects in the master: Open the mixer to add master effects. You will find the master section at the right edge of the mixer. Here you can install the desired master effects.

Hint: Track effects and master effects are always real-time effects.

Mix

If you got every element of your song together and at the right place, mixing is the next step. The goal here is to adjust loudness, panning (the left and right distribution of sound in the stereo field) and the sound of individual tracks in such a way so that you end up with a well-balanced overall sound.

To do this, open the mixer (Shortcut: M).



Each track in the arrangement corresponds to one channel in the mixer. The pan control and the equalizer are located above the channel faders for loudness.

- Use the sliders to adjust the loudness for each individual track until you get a balanced sound and each instrument can be sufficiently heard.
- You can also use the equalizer for this. By trimming away less important frequency ranges (e.g. the highs on the bass guitar or the lows on the hi-hats) you can create "space" for other instruments in these frequency ranges.
- Use the pan control to distribute the tracks in the stereo field. Vocals and bass, however, should always be kept in the center.

The rest of the track effects are located in the "Inserts" section of the equalizer.

- You can also load track effects in the mixer by clicking on the arrow next to an empty insert slot.
- The track compressors can be used to amplify the sound of the track while also reducing individual instruments that feature sounds that are too loud.

Mastering

Mastering is the final step, the one in which we optimize the overall sound of the song.

- To do this, right-click on the "Mastering Suite" button up and to the right in the mixer.



The Mastering Suite contains five effects which are stacked on top of one another like in an effects rack. Which device is used for what purpose?

Auto Mastering: This lets you change the overall sound of your project to fit specific music styles.

Equalizer: For regulating the sound characteristics. You can set four frequency bands separately in the graphical control panel.

Enhancer: A stereo effect processor for adjusting the stereo width. In "Multiband Mode" only the mids are edited.

Multimax: A multiband compressor for editing the volume and the sound impression.

Limiter: To prevent clipping.

Export

Once you've made it successfully through the above steps, you should have a perfect song before you. It's now time to put it to good use.

There a few different options to do this:

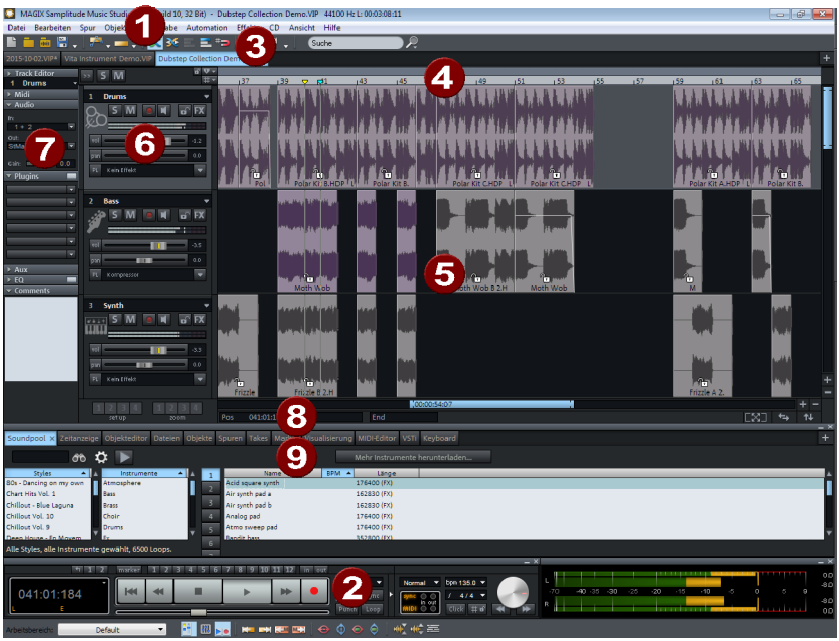
Burn CDs: You can burn an audio CD by going to "CD" > "Create CD". This is the traditional approach.

Export file: You can save your song in a variety of file formats by going to "File" > "Export". The most important of these are **Wave** and **MP3** files. The WAV format is the standard for audio production. It can be played back with different software and on multiple devices and features crystal-clear sound. MP3 is the space-saving alternative to WAV. It can be played using any MP3 player and features subtle losses to sound quality.

Note: Don't forget to save your project! Saving it will allow you to edit it again in the future and export new versions.

Program desktop overview

Project window (VIP)



1. **Menu Bar:** You can find the menus in the Samplitude Music Studio main window directly below the title bar. A keyboard shortcut can be assigned to each menu item.

2. **Transport Console:** The transport console has buttons for controlling playback, recording and positioning. It contains four areas that can be shown or hidden: playback control, time display, markers and MIDI options.

3. Toolbar: Toolbars are made up of buttons that provide access to the most frequently required functions. They are located above and below the project window. They can be expanded with additional buttons.

4. **Grid/Marker bar**: The grid/marker bar is positioned above the first track in the VIP. In the upper half, you will find the marker bar where markers and playback marker can be positioned. The lower half displays the grid list which displays the project time in relation to the selected unit of measurement. You can also define various ranges.

5. **Section:** This refers to the visible section of the project window. The part of the project that is displayed depends on the position of the section and the zoom level. There are many commands for moving (scrolling) the visible section and customizing its size (zooming). These can be opened using the menu view, the grid/marker bar, and the shortcut keys.

6 **Track Header**: The track header is the front section of a VIP track. It contains various control elements which range from mixer functions and monitoring commands to other track parameters. More information about the individual controls of the track header can be found in the Track header overview.

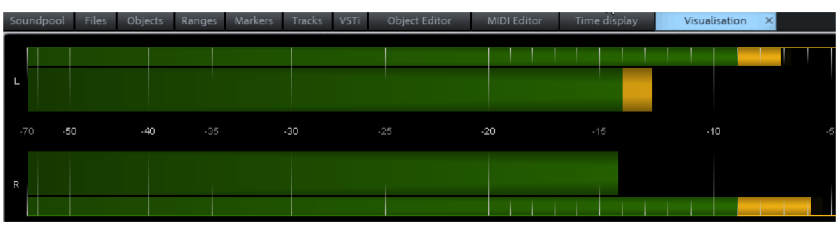
7 **Track Editor**: The left border of the arrangement window provides access to all the important parameters of the selected track. Recording and monitoring status, volume, panorama, MIDI/audio inputs and outputs, plug-ins, AUX sends and EQ settings are displayed in well-arranged sections and can also be edited directly in this view.

8 **Position & Parameter Fields :** The fields "Pos" for position/range start, "Len" for range length and "End" for range end can be configured using the right mouse button. In the context menu that opens you can also display additional parameters in up to 5 fields, e.g. the current mouse position or the last edited mixer setting.

9 **Docker:** Here you will find different manager windows and the visualization, time display, keyboard, object editor, and MIDI editor windows. You can take each of the windows from the title bar in the docker and position or dock them elsewhere. Click on "+" (far right) to open or close the displayed windows.

Managers/Docker

In "View" menu you can open the so-called "Docker", which offers a useful combination of various editing windows. In addition to various Manager windows (view page 286), the docker also unites visualization, time display, transport console, Soundpool, object editor and MIDI editor in a tab window.



The docker can be minimized by clicking on the "minimize" symbol in its top bar or into the tab that is already open. If you click a tab again, the docker will be maximized again.

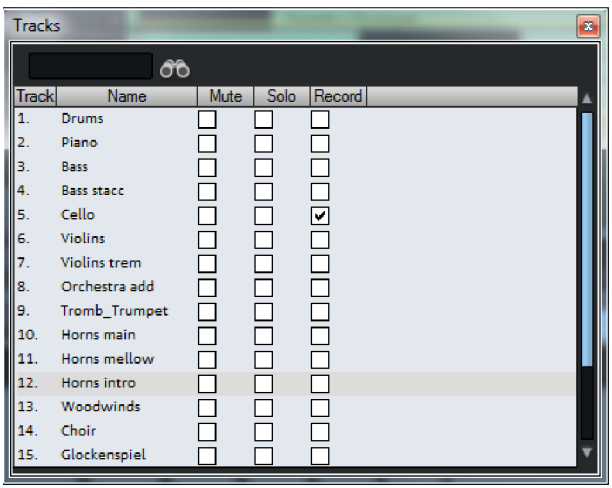
Using the "+" key, you can open a new tab in the docker. The editing windows can be individually turned on or off in the "View" menu. To remove a listed tab window again, just drag this out of the Docker lead or double-click on the appropriate tab window. The corresponding dialog window will now appear in its own window.

You can return the window to the docker through repeated double clicks on the individual window or by dragging the window onto the tab bar.

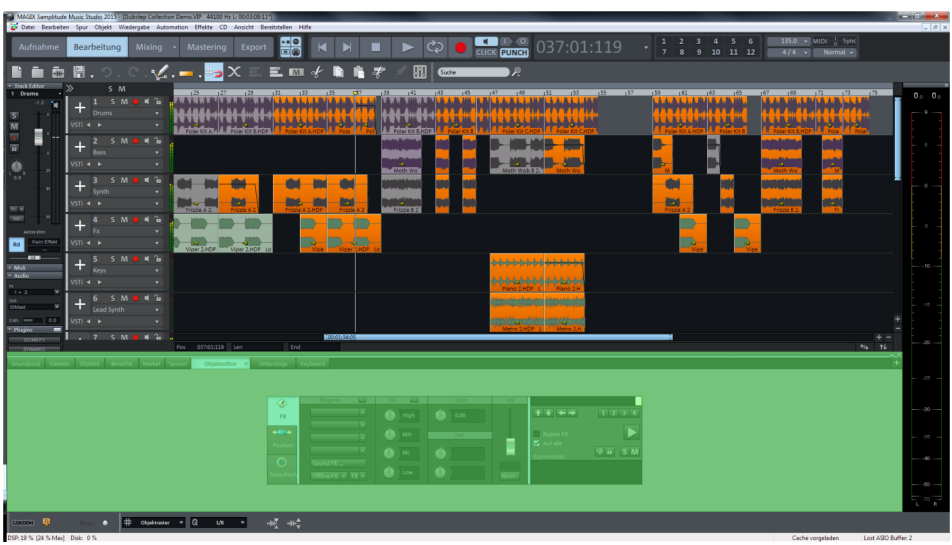
Docking

In Samplitude Music Studio you can couple certain dialog and display windows to pre-determined areas on the VIP window or the docker, or use them as freely-floating windows.

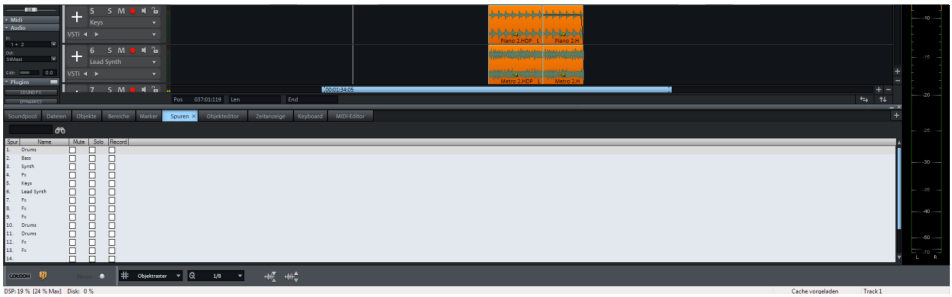
In an undocked state, the corresponding dialog appears with a conventional title bar.



If you move the title bar of such a window into the docker area, the docker will turn light green, indicating that the window has been docked.

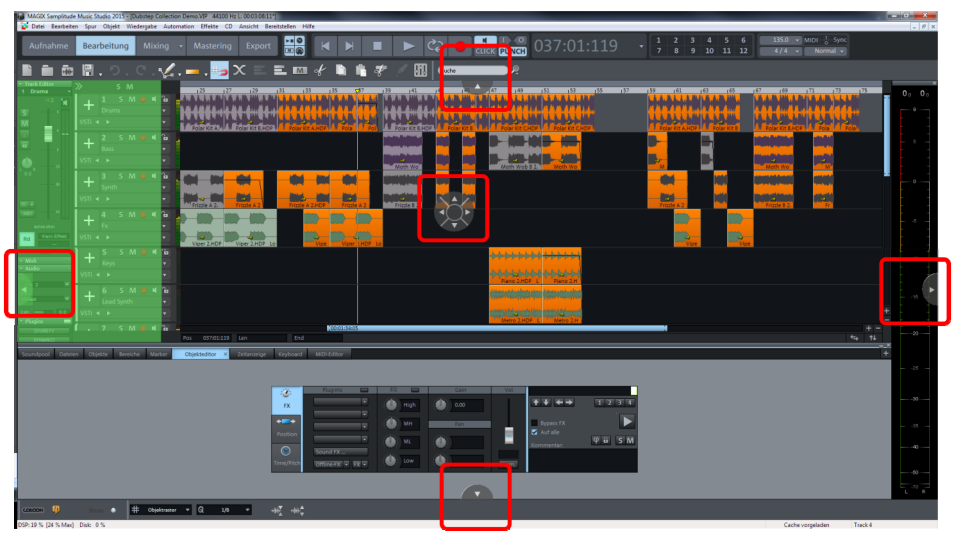


After releasing, the window will appear integrated into the docker.



The window can also be docked in other VIP areas. Moving is always accomplished by drag & dropping the title bar.

During moving, the arrow symbols appear on the surface, to show the area where the window may be docked. The area above the dockable range will become light green to indicate that the window may be docked here.



Transport console

Shortcut: Ctrl + Shift + T



The transport console features buttons for controlling playback, recording, and positioning.



Transport console, left side

1. **To Start**: The playback marker jumps to the beginning of the project.
2. **Faster return**
3. **Stop:** Stops playback
4. **Play:** Starts playback. Another click on Play stops it at the current position of the playback marker (Pause).

   Right-click on Play: This opens the window for the playback parameters (view page 487). Here you can set the playback device as well as the autoscroll and scrubbing options.
5. **Faster advance**
6. **Record**: Starts the recording for all activated tracks, i.e. tracks with a red "R" button in the track header.

   Right-click on Record: Opens the window with the recording parameters. Adjust recording settings like "Play while recording" here. You can also start a mono or stereo recording straight from this window.
7. **Marker buttons 1...12:** The current playback position can be saved to one of the 12 marker buttons by clicking on it. If one position has been saved, the marker will appear colored. Another click on the same marker moves the playback position to the corresponding marker. You can delete a marker by right-clicking on it. The marker can then be reassigned.
8. **L/E time display**: Displays the length and end position of a range. The value can be edited by double-clicking.
9. **Area buttons:** Using the "1" and "2" you can save areas. Using the arrow symbol you can open previously used ranges.
10. **"Marker" button:** This button opens the marker manager for further marker editing.

> More information about this is provided in the chapter "Tools and assistants > Manager > Marker manager" (view page 293).

11 **Marker buttons 1...12:** The current playback position can be saved on each of the 12 marker buttons. If one position has been saved, the marker will appear bright. Another click on the same marker moves the play position to the corresponding marker. Right-clicking deletes the saved marker again, making it available again to be allocated.

12 **in/out:** Sets the start/end points for punch recording (see below). Additional Punch In/Out markers can be set by holding down the **Alt key**.



Transport console, right side

1 **Recording modes:** Here you can set up the appropriate recording mode.

Standard mode (playback while recording): This is the typical recording mode for multitrack productions. Here, the currently active tracks are recorded. The already existing tracks are played back in sync.

Recording without playback (read after write): If you have selected this option, playback of already existing audio is deactivated and the playback marker will remain at the recording start position. Playback can be started manually, e. g. if "read after write" is required. Set the playback marker at a different position and start playback by pressing the "Play" button. This will not interrupt the recording. This way, changes to previously recorded material can be made without affecting the recording process.

Punch marker mode: In this mode recording takes place only between punch start markers and punch end markers. This mode can also be activated using the "Punch" button (see below).

2 **"Mon" button**: This button activates the Samplitude Music Studio's record monitoring feature, i. e. all tracks with an active "R" button display the relevant input signals in the peak meters. Right-clicking on the "Mon" button opens a selection of monitoring modes.

> Detailed information about monitoring can be found in the chapter "System settings > Monitoring options (view page 436)".

3 **"Sync" button**: This button opens a dialog with the Synchronization options (view page 312).

4 **"Punch" button:** This button switches Samplitude Music Studio into Punch Marker mode. In this mode, only the range between the punch starter marker and the punch end marker is recorded.

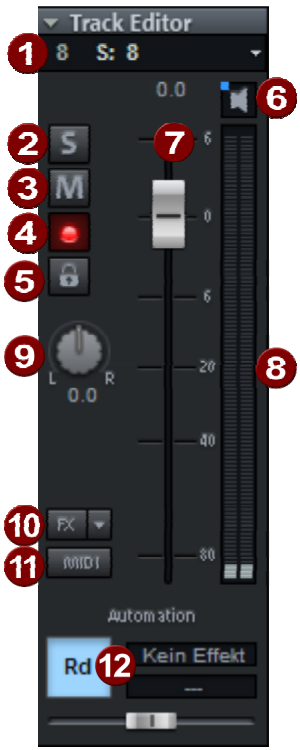
If you have not previously created a punch marker, one will be set automatically when you press the record button. If the recording is started when punch markers have been set, the recording button will flash until the start marker has been reached and again when the end marker has been passed. It will light continuously during the actual recording between the markers. End the punch recording by pressing the record button again; playback will not be interrupted. If, however, you press the "Stop" button, playback will stop.

5. **Loop button**: Use this to switch to Loop Mode, i. e. to play a specific range over and over.
6. **MIDI record modes**: The following MIDI record modes are available: normal, overdub, multi-overdub, and replace. These determine how newly recorded MIDI files are inserted into the VIP.
7. **MIDI/Sync I/O Displays:** To assist with control, these displays blink when Samplitude sends or receives MIDI or synchronization data.
8. **Tempo Section**: You can adjust playback speed and time signature of the entire arrangement in the tempo section of the transport control. The objects in the VIP are then optionally adapted using time stretching.
9. Use the "CLICK" button to switch on the metronome click. Right-clicking the "CLICK" button opens the metronome options window to configure the pre-counter and click volume.
10. The "Beat grid/snap" button (view page 48) activates the beat grid.
11. **Scrub Control:** Using the Scrub Control wheel you can variably set playback speed. This is helpful when searching for specific audio passages.
12. The buttons beneath it can be used to start playback forwards and backwards at a slower speed. This is very practical for locating clicks, pops and other errors in the material.

Right-clicking on the Scrub Wheel opens the scrubbing and Varispeed options.

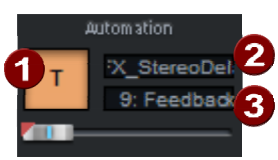
Track Editor

The track editor shows the settings options for the selected track. It can be shown and hidden with this icon above the track header.



1. **Track Number Display and Track Name:** By right-clicking the track name you can open the "Track Settings" dialog.
2. **S**: Mutes all tracks except the selected track.
3. **M:** Mutes the selected track.
4. **Record symbol:** Activates the track for recording.
5. **Lock:** Prevents the objects in the track from being accidentally moved or deleted.
6. **Volume symbol:** Enables the input signal to be previewed.
7. **Volume entry field** and **volume control**
8. **Peak Meter:** Both LED rows display the input and output signal for the track.
9. **Panorama:** Controls the positioning in the mix.
10. **FX:** Opens the track effect settings of the activated track.
11. **MIDI:** Sets the track to MIDI recording and opens the MIDI section in the Track Editor.
12. **Automation:** Is for the automation of MIDI controllers, VST parameters and certain effects in the track.

Automation



1. Right-clicking opens the context menu
2. Select the plug-in you would like to automate here.
3. Select the parameter you would like to automate here.

The slider controls the selected parameter while automation is drawn.

MIDI



1. **Arrow**: Opens and closes the respective dialog box.
2. **In device**: Opens the MIDI input device menu.
3. **Out device**: Opens the MIDI output device menu.
4. **Channel in**: Set the MIDI input channel here.
5. **Channel out**: Set the MIDI output channel here.
6. **Program**: This slot is responsible for selecting the program for the MIDI instrument.
7. **Bank MSB**: Set the device-specific control change messages for controlling your external instrument here.
8. **LSB**: Set the device-specific control change messages for fine-tuning your external instrument here.
9. **Drum map**: Select a drum map for allocating MIDI notes to the device-specific sound here.
10. **Transpose**: Transpose the notes of the respective MIDI input or output up or down here.
11. **Velocity dyn**: This button activates velocity dynamics as a realtime track effect.

    Detailed information about this **MIDI effect**, which processes the MIDI velocity dynamics, can be found in "MIDI editors -> MIDI functions -> Velocity dynamics (view page **Fehler! Textmarke nicht definiert.**)".

12. **Input Q:** In this case, the MIDI quantize settings (view page 205) are used to quantize every recording offline. The original position can be restored by going to "Object -> Quantize -> Reset Quantization".

Audio

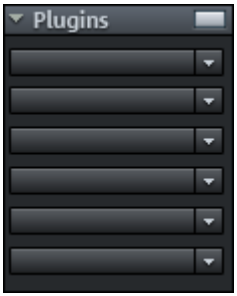


"In" slot: Specifies the audio input device, i.e. a sound card.

"Out" slot: Specifies the audio output device. This may be a sound card output or (in "MIDI" mode) a VST instrument, for example.

Gain: Set the sensitivity of the input here.

Plugins



The various track effects are activated here.

In the first slot, you can also select a MAGIX synth to be controlled via the track. A simple click on a slot deactivates an effect, while right clicking opens its interface. The button beside the "plug-Ins" activates or opens the entire effect rack (view page 99) for this track.

AUX



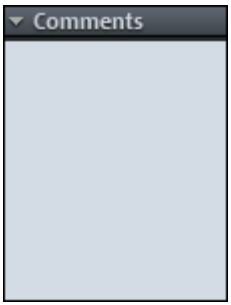
Here you can specify the AUX send feed for which you can then select the desired effects in the AUX return channel in the Mixer view.

EQ



Contains the parametric EQ for this track. Right-clicking opens a convenient input window.

Comments



Track info section for quickly adding notes on tracks.

Track Header

The track header for each track offers a summary of all the track editor settings.



1. **Track Icon:** When included loops and software instruments are loaded, a corresponding icon is displayed here. You can change the icon by right-clicking on it. Left clicking opens a menu for the available software instruments and their sound programs.
2. **Track Name:** Right-clicking the track name opens the "Track Options" dialog.
3. **Track Number Display**
4. **S**: Mutes all tracks except the selected track.
5. **M:** Mutes the selected track.

   The M and S buttons above the track header of the first track can be used to switch all solo and mute states on and off together.
6. **Record symbol:** Activates the track for recording.
7. **Volume symbol:** Enables the input signal to be previewed.
8. **Lock:** Prevents the objects in the track from being accidentally moved or deleted.

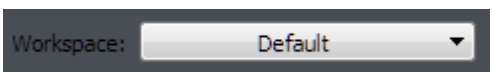
9. **FX:** Left clicking opens the effect rack of the track, while right clicking access a menu with effect presets.
10. **Peak Meter:** Both LED rows display the input and output signal for the track.
11. **Volume Fader:** This controls the track volume. The button in front of the fader activates a curve that can be used to automate the track volume.
12. **Panorama Slider:** This controls the position in the mix. The button in front of the slider activates a curve that can be used to automate the panning on the track.
13. **Plug-in slot:** Access the effects and instruments of the track directly. A simple click on a slot deactivates an effect, while right clicking opens its interface.

Workspaces

The purpose of workspaces is to sort menu entries and toolbars in such a manner that you have a good overview of the functions of Samplitude Music Studio. Workspaces bundle commands for certain tasks like mastering, editing, or recording.

Besides the option **hiding menu entries** ("File -> Program Preferences -> Edit Keyboard Shortcuts and Menus -> Hide Menu") and **redesigning toolbars** (right mouse click on the toolbar), you can also save your **settings as a preset**.

You can see the selection field for the workspace in the bottom toolbar on the far left. Some workspaces are already predefined. The "default" workspace is preset.

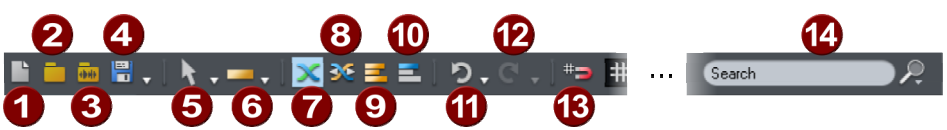


Adjusting the workspace: Open the context menu and click on "**edit workspace**". Here you can select which toolbar you want to have displayed in your new workspace. **You can activate or deactivate each bar individually, or add/remove individual symbols.**

Toolbars

Toolbars provide quick access to important functions in Samplitude.

Top Toolbar



1. New virtual project
2. Load VIP

3. Load audio file
4. Export/Save
5. List Field Mouse Mode (view page 74)
6. List Field Object Mode (view page 85)
7. Auto Crossfade On/Off
8. Crossfade Editor (view page 277)
9. Group
10. Ungroup
11. Undo (Undo)
12. Restore (Redo)
13. Grid On/Off
14. Search for Command or Help Topic

Tempo tab/tempo buttons



The tempo tab is found in the tool bar. Here you can change important beat settings (view page 498) without having to always open project options. Click the magnet button to activate the snap grid. Below the button next to it you will find a menu for the following beat settings:

Object grid: This option activates the object grid. This lets objects snap exactly to the edges of other objects.

Area grid: This option activates the area grid and lets you use the current area as a grid basis.

Time grid: This option activates a grid, which uses beat settings as its basis.

Time grid (relative): This option also activates a grid, which takes beat subdivisions as its base. The selected object will maintain a relative distance to the snap markings when moved.

Frame grid: This option activates a frame-based grid.

Specify the snap length (for beat snapping only). Values range from **every 4 beats, every 2 beats, every beat, musical measure** and **same as quantization**.

The setting **Musical measure** means that, signatures based on quarter notes serve as a quarter snap unit, and time signatures based on eighth notes serve as a eighth snap unit. The snap therefore follows the time signature and observes any time signature changes.

Warning: When the grid is active, the playback cursor jumps according to the set grid value when forward and rewind buttons are used in the transport console. If you would like to temporarily shut off the transport controls, press the "Alt" key simultaneously.

Activate grid: Here you can globally turn the grid on or off.
Shortcut: Ctrl + #

Grid and snap settings: This option brings you to the **Project options - General** (view page 498) dialog, where you can change additional grid and snap settings.

In the field labeled with **Q** you can set the quantization value, which will be used for MIDI Quantization (view page 205) and can serve as the grid if the corresponding grid setting "**like quantization**" is selected. Right clicking the field opens the MIDI quantize settings.

Note on "Input Q": In the **button skins** (e. g. "**Camo**") you can also find the button "**Input Q**" in the MIDI area of the Track Editor. If this function is active, then recorded MIDI notes will be quantized according to the current settings immediately. The original position may be restored at any time via the menu item "Object -> Quantize -> Reset Quantization".

Lower toolbar



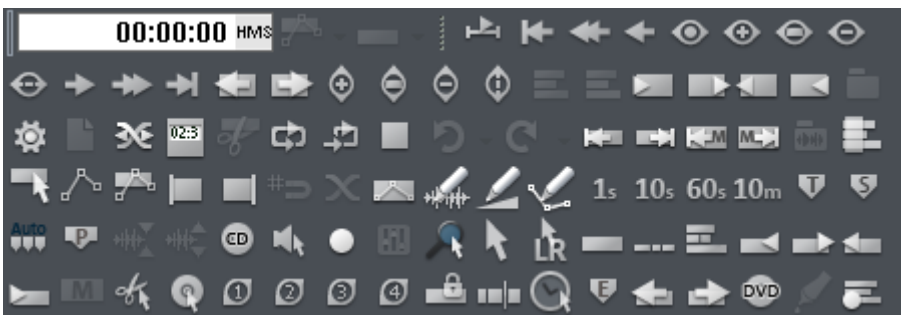
1. Workspace: (view page 47)
2. Track Editor
3. Open Mixer
4. Display transport console
5. Playback marker to previous object edge
6. Playback marker to next object edge
7. Playback marker to previous marker
8. Playback marker to next marker

9. Show all
10. Show all vertical
11. Zoom to range
12. Section as zoom step
13. Zoom out of waveform
14. Zoom into waveform
15. Overview mode

Customize Toolbar

You can customize the toolbars to fit with your requirements by adding icons, changing their positions or removing the ones you don't need. To do this, right-click to open the context menu and select the option "Edit Toolbar".

This opens the "Customize Toolbar" window which contains all of the available icons.



The icons that area already on the toolbar and grayed out in the display. The others can be added by dragging & dropping them onto one of the toolbars.

To remove an icon from a toolbar simply drag it off. To change the position of the icons simply drag & drop them onto new positions on the toolbar.

Note: When the "Customize Toolbar" window is open, clicking on the icons has no effect. This helps to prevent unwanted changes to the project.

Functional overview

Audio files

One of the main applications for Samplitude Music Studio is the import of audio files, e.g. WAV or MP3 files, to create an audio CD or MP3 collection or to edit your own recordings from other sources.

There are three possibilities for loading an audio file:

Option 1: The "Load Audio File" dialog

You can import audio files using the "Load Audio File" dialog. This can be opened by going to "File" > "Import" > "Load audio file" (Shortcut: W).

In this dialog you can preview each file. Multiple objects can be selected by holding down the Ctrl key and clicking on them. Ctrl + A selects all of the files in the folder. Alt + Click enables you to load an entire block of files listed after each other.

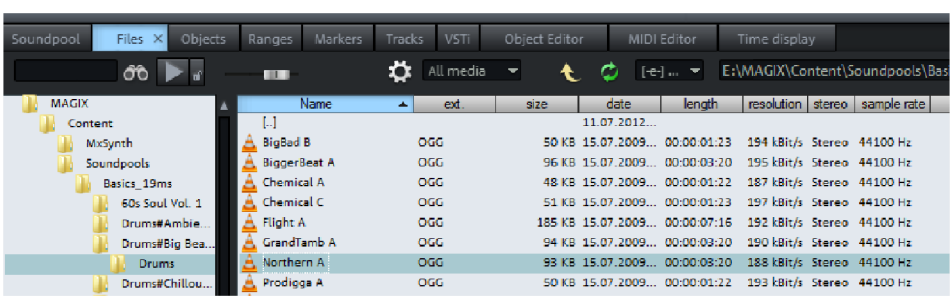
The audio files appear in the selected track as new objects after the playback marker.

Option 2: Drag & Drop from Windows Explorer

For this option you first have to open Windows Explorer. Then you can arrange the Explorer windows and the Samplitude Music Studio windows in a way that allows you to drag and drop audio files from folders on your computer into Samplitude Music Studio.

Option 3: Integrated File Manager

Activate the integrated File Manager in the Docker by clicking on the "Files" button on the lower screen border or go to "View" > "Manager" > "File Manager". In the File Manager you can access all of the folders and drives on your computer. Audio files can be dragged and dropped into a track.



Synthesizer, VST plug-ins and MIDI

A further main application is to use the included synthesizers or own VST plug-ins to play music.

There are two different sorts of synthesizer in Samplitude Music Studio. Synth objects are loaded in the "Object menu" > "New synth object". Generally, track synthesizers do not feature sequencers of their own and are controlled via MIDI objects.

MIDI objects serve to control track synthesizers, VST plug-ins or also external synthesizers and samplers. All melody and control commands are entered in the various views of the MIDI editor. You can also create a new MIDI object ("Object menu > New MIDI object") and enter the notes in the MIDI editor (view page 175) with the pencil tool.

All other information about this can be found in the chapters "MIDI in Samplitude Music Studio (view page 165), VST plug-ins (view page 216) and Synthesizer.

Playback

To play the project, click on the playback icon in the transport console with the mouse or press the space bar on your keyboard. During the playback, a vertical line – the playback marker – runs across the screen from left to right.

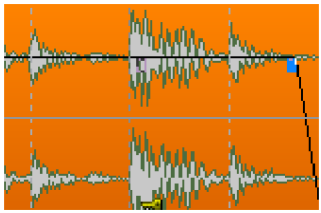
The playback settings can be accessed quickest by pressing the p key.

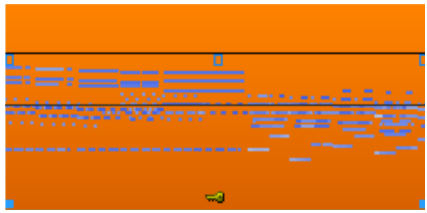
With "Global playback device", you can select the driver of the sound card which you wish to use for playback. This is especially important if you have multiple sound cards installed on your computer.

Note: You can select different recording and playback devices for the single tracks in the "Track settings" dialog, which can be opened by right clicking on the track header.

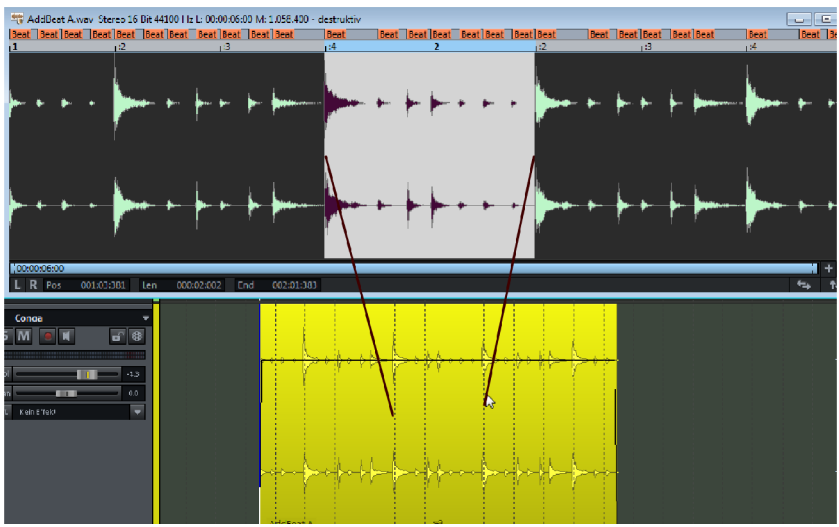
Objects

The object is a unit in the Samplitude Music Studio arranger window. Objects are created when you record audio or MIDI data as well as when audio or MIDI files are imported into Samplitude.





Audio objects are references to underlying audio files. Typically, people say that an audio file is being referenced by an object. These are essentially playback instructions that determine what parts of what audio files should be played in the arrangement and when they should be played. The starting point of an object is assigned to a specific point in an audio file. The length of the object determines the length of the part of the audio file.



When you edit objects (by adding transitions, loudness adjustments, effects, cuts, etc.), new instructions are defined which then get carried out in real time during each playback. The actual audio file is not changed ("non-destructive editing") but the adjustments to the settings are saved permanently.

Since objects are merely playback instructions and only refer to audio material, they can be moved, copied and deleted without affecting the audio files themselves.

The audio material being referred to by the audio object is displayed as a wave form.

MIDI objects to do not reference MIDI files. They do get created when you import MIDI files, but the MIDI data is saved entirely to the object and is therefore directly linked to it.

Moving and duplicating objects

Once one or several objects have been selected, they can be shifted vertically (by track number) and horizontally (in the timeline) while holding the left mouse button. As soon as you let go of the left mouse button, the object will be placed at the current position.

If several objects have been selected in different tracks, the selected group can be moved vertically only so far that all objects remain within the tracks.

If "Shift" is pressed when moving the objects, the time position is retained and you can only change the track.

If "Ctrl" is pressed while moving the object selection, then a copy of the object selection is created. In this case, the copy of the original object selection is placed at the destination. The original objects maintain their position.

Changing object borders in virtual projects

The lower object handles of a selected object can be used to alter the object borders. The mouse can be used to change the object beginning or end. The object length can only be changed within the confines of the physical wave project window.

This means that the beginning of the object can not be extended beyond the beginning or end of the corresponding wave project. Conversely, the end of the object cannot be extended beyond the beginning or end of the corresponding wave project.

Fade In / Fade Out and Object Volume

The handle at the top center can be used to adjust the volume of the objects. The exact level in -dB is displayed in a tooltip window.

The handles in the top corners of the object can be used to fade in and out.

Because these adjustments are made in realtime, i.e. occur immediately during playback, the original audio file itself is not changed. So you can easily try out the optimum fades or volume settings, without risking data loss.

The curve types when fading in and fading out can be set in the crossfade editor (view page 277).

Overlapping objects

A track (channel) can only play back one object at a time.

If one object is moved over another object, then the previous object is partially or completely taken out of the playback list (much like one sheet of paper covers another partially or completely). The invisible part of a covered object will not be

audible. By moving the covering object out of the way, the covered section or the complete object can be made audible again. To create a crossfade between two objects that are intersecting each other, the crossfade editor in the "Edit" menu can be used.

Looping objects

Looping repeatedly plays an object or object range. You can change the length of objects by dragging out the length handles.

An object is normally played back between the object start and end. A loop object also starts from the beginning of the object, once the loop starting point has been reached only the set loop range will be repeated until the object end.

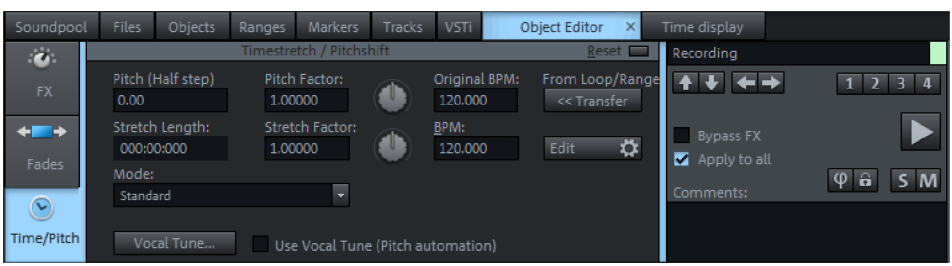
The easiest option to loop is to open the object's context menu and choose the option "**Create looped object**" (shortcut: Ctrl + L). The entire object is treated as a loop. If you now drag the length handle at the back to the right, you will see a vertical dash at the previous object end. For this marking onwards the object will be played back again, it is looped and can be stretched out to the right.

An object loop may be edited in far more detail by using the object editor. In Loop Mode you can set and customize the loop start, loop length as well as the loop end within the object. Skilled looping omits time-consuming cutting.

Object editor

The core of the object-oriented work is the object editor where all important settings can be made for the selected object. To open the object editor, select an object and press "Ctrl + O" or double-click on the object. The object editor can always be left open to edit objects - the view automatically adjusts to the selected object.

Note: For MIDI objects, there is a separate MIDI object editor (view page 172).



The object editor is divided into three sections: "FX", "Position" and "Time/Pitch". You can switch between the sections on the left side of the editor.

Object editor: Basic functions



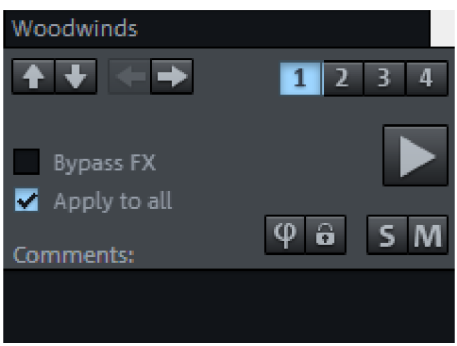
The selection options for the three different dialog windows of the object editor are displayed to the left.

FX: Here you can set the gain, plug-ins, sound FX rack, EQ, panorama and volume.

Position: Here you can set the wave position and object position.

Time/Pitch: Here you can set timestretch/pitchshift algorithms.

The section on the far right is the same for all three dialog windows:



The object name is displayed in the upper text field and this may also be edited. In the square field to the side, you can select the object color.

Using the **arrow keys** you can "jump" up or down to the object of a neighboring track. Use the **double arrow buttons** to jump to the previous or next object. If multiple objects are selected, these buttons will not be active.

1-4: You can save the various object editor settings in **4 snapshots**. These snapshots apply to the entire project, so that you can easily transfer the effect settings of an object to another (or multiple) object(s).

This can be done by **left clicking** on the corresponding button. If a snapshot has been saved in the respective button, you can overwrite it by holding down the **"Shift" key + left clicking**. Clicking the number keys loads the snapshot. You can quickly compare the various object editor settings by switching between the snapshots.

You can also access these functions via the context menu of the snapshots. You can also delete snapshots there.

To all: If the "**To all**" option is active all selected objects are updated when the object editor is opened. No matter in which of the three object editor windows, all recently applied settings that have been made in a selected object, will be applied to all other selected objects.

Note:

- **Volume changes** are **transferred relatively** in an object, i. e. they are increased or decreased relative to the volume of other selected objects.

- The **EQ settings are always completely transferred**, in contrast to previous versions where only the edited bands were transferred.

Bypass FX: This deactivates all object effects, EQ/panorama settings, and AUX sends.

Play/stop: This button corresponds to the normal playback function (shortcut: space bar).

Phi: The Phi button causes a 180 degree phase rotation. By right clicking on the Phi button you can invert the left and right channels individually.

Lock: The activated "Lock" button corresponds to the key button's switch in the object. The object is then protected against any inadvertent horizontal movement. Additional locks against vertical moving, volume adjustment, fades, length adjustments, ripples or deletion can be set in the **system settings** (shortcut: "Y") under "Program > Object lock definitions". Locking can be temporarily cancelled by pressing the "Alt" key.

Solo: This button moves the play cursor, during playback, to the start of the selected object and plays that only. Track-dependent busses and AUX paths are also observed at playback.

Mute: This button mutes the selected object. By right clicking you can also mute the left and right channels individually, too.

Commentary: You can type comments relevant to the selected object in this field.

Object effects



In the "FX" area of the object editor you can apply effects to audio objects. The available effects are the same as those in the "Effects" menu. All settings are retained when moving or copying objects.

Plug-ins/EQ

The plug-in section provides you with quick access to installed effect plug-ins on the object level. Here, plug-ins and insert effects can be selected by clicking the arrow symbols on each plug-in slot.

To remove a plug-in or an effect, select the "No effect" entry from the corresponding plug-in slot in the menu.

Under "EQ" you can set four frequency bands. The blue button in the header switches the equalizer on and off. By right-clicking on the controller/blue button, you can access the dialog window for the fully parametric 6-band equalizer.

Gain

Use **gain** to control the level of the object at the beginning of the processing chain, before all other effects.

PAN

Here you can edit the **panorama** as well as the **stereo width** of the active object.

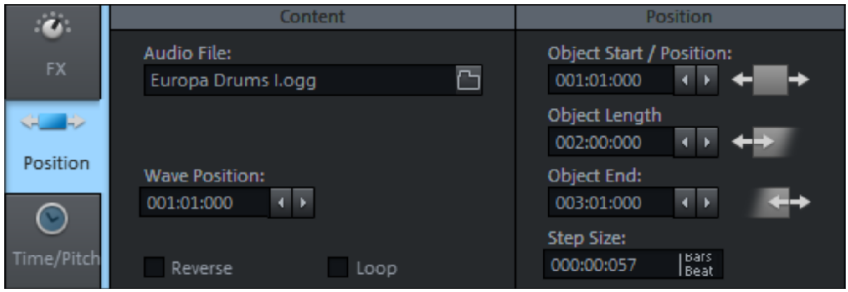
Vol

Vol.: The volume can be controlled using this fader.

Double-clicking on the fader sets it to 0 dB.

Norm.: The **Norm.** button normalizes the maximum level of the object to 0 dB.

Fades



Use this dialog to set object-related time positions (start, length, end) for the selected object. In the entry field "Step size" the measurement unit can be changed on the far right just by clicking. The following units are available: samples, milliseconds, hours/mins/secs, SMPTE (24, 25, 29.97 non drop, 29,97 drop, 30), SMPTE/milliseconds, CD-MSF, feet and frames 16 mm (40fpf) and feet and frames 35 mm (16fpf), noise reduction (meter).

Contents

Audio file: The referenced wave project can be exchanged, copied, and renamed directly in the object editor. Open the file exchange dialog by clicking the folder symbol beside the name of the audio file. If the audio file is used by multiple objects, you can indicate whether it should be exchanged with the currently selected object or with all referenced objects.

Wave position: The arrow buttons do not affect the position of the object or its length but instead move the audio material in the object left or right.

The **Reverse Playback** option allows an object to be played in reverse. This process does not change the audio data.

Note: Please note that there are some limitations when using additional effects on an object that is played in reverse. This refers to wave editing or using time stretching effects, especially Elastic Audio. Reverse playback also requires more resources as track speed cannot be used here.

Loop: This option allows you to create a loopable object which can be extended to any length using the object handles. This function can be accessed through "Object" > "Edit" > "Build Loops Object".

Position

The starting time of the object on the timeline, object length, and object end can be set here by entering a number or using the arrow buttons.

Using the arrow buttons beside **object start / position** the object can be moved forward to the start of the project or towards the end of the project.

The arrow buttons beside **object length** move the start of the object, they work just like the front lower object handle.

The arrow buttons beside **object end** shorten or lengthen the object, they work just like the back lower handle.

The **step size** shows the position/length adjustment made upon clicking on the arrow button. The unit of measurement to the right beside the input value can be changed in the context menu (right-mouse click to open).

The lower part of the menu features corresponding presets for each selected measurement, e.g. for the unit of measurement "Bar/beats", the following step sizes are used: 1/64, 1/32, 1/16, 1/8, 1/4, 1/2, 1Beat, 2Beats, 1Bar, 2Bars, 4Bars.

Time stretch/Pitch shift



Pitch shifting and time stretching can be used in parallel independently of each other, except in the **Resampling** mode.

Pitch shifting: You can shift pitch either in half tones (mouse wheel + Ctrl), in cents (mouse wheel + Shift) or enter it as a **pitch factor** of the original value.

Time stretching: Speed correction can be made either as new object length/**stretch length** or as **stretch factor** of the original value, or you can indicate the desired tempo as BPM (Beats Per Minute).

The button **"<< from loop or range"** makes it possible to extract the BPM value from one selected range or the object length and enter it as the **Original BPM**. Enter the number of quarter notes in the dialog box that opens and then confirm with "OK". This is important if the object tempo is not entered correctly and another tempo needs to be compensated.

Adjustable modifications to the values can also be made using the knob.

If you want to change the original speed (**Original BPM**), you will see that the speed of the object you want to correct adapts to that of the set stretch factor. The modes that can be selected are **Resample**, **élastique Pro, élastique Efficient** and **Monophonic Voice**.

"**Edit**" opens a clear display of the already named parameters. If you move through the individual modes with the mouse, a detailed explanation window will appear for each mode.

Note: You can learn more about individual algorithms in the menu reference under "Menu Effects > Time/Pitch > Resampling / Time stretching / Pitch shifting (view page 162)".

"**Reset**" restores all pitch shifting and time stretching settings.

The option **Vocal Tune** adjusts the pitch change using the Vocal Tune (view page 138) feature.

With the **Use musical tempo adjustment** option active, the object follows all tempo changes (view page 311).

Ranges

Ranges are selected parts of an arrangement which are defined for editing or accessing later on.

Example 1: A certain section of a song is to be completely removed from the arrangement. To do so, first define a range that contains the material to be removed. Next, activate the defined range for all tracks by double-clicking twice in the beat bar of the range. If you press the Del key now, the material will be deleted from the arrangement. Parts located behind the range will be automatically moved forward, closing the gap.

In a similar fashion you can also copy the material inside the range to the clipboard in order to insert it at a different location. First, create a range for all tracks as described above and press Ctrl + C ("Edit" > "Copy"). Now, set the playback cursor at the position where the material should be inserted. Select the first track and press Ctrl + V ("Edit" > "Insert" > "Insert from clip"). Now the material will be added to the track as new objects.

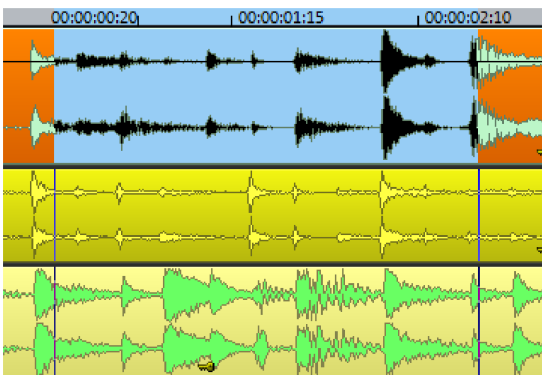
Example 2: A selected range can be played back in a loop, in order to create loopable sequences. Activate the "Loop" button in the transport console. During playback the range borders can be moved in order to find the optimal loop.

Selecting a Range

Step 1: To select a range, set the mouse mode (view page 74) to "Range Mode" or move the mouse pointer to the top half of an object and press the left mouse button.

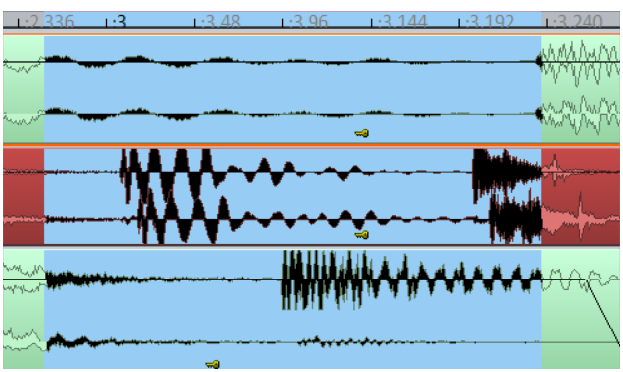
Step 2: Move the mouse pointer within the object while holding down the mouse button. Now you can see an inverted rectangle between the starting point and the current mouse position. If you have activated the grid function, the range will automatically be adjusted to the set grid value.

Step 3: Once you let go of the mouse button, the range will be selected.

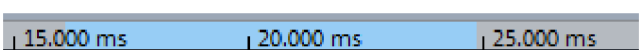


The playback marker always automatically remains at the beginning of the range, even if you can't currently see it.

Step 4: To expand the range onto other tracks, click on the top half of the selected object again and drag the mouse down vertically while holding down the mouse button.



You can also select a range by dragging in the grid bar. This will then be indicated by a different color.



Double-clicking this area of the grid bar selects a range in the selected track; double-clicking again selects the range over all tracks, and double-clicking once more restores the simple grid bar selection.

It is important to note the following when doing this:

- Playback can be started before or within the loop.
- If you start playback behind a range, the loop button in the transport console will turn off.
- Range ends can be adjusted during playback as well.
- Click the range borders in the grid bar to position the playback marker at the playback borders either at the beginning or end of the range.
- The current playback range can be deleted by dragging to size 0.
- The current range can be deleted by double-clicking the grid bar outside of the range.
- The range remains in Loop Mode even if the playback marker is repositioned
- In Loop Mode the entire project is looped if you haven't marked a range.

Leaving a Range

To select a different range, click somewhere in the project other than the current range, and simply draw a new range.

Reactivating a Range

To reactivate an earlier range, use the key combination "Shift- + Back arrow" (or "Edit" > "Range" > "Reactivate last range"). By clicking on this command repeatedly you can restore the last five ranges.

Change Range Borders

You can change range borders by placing the mouse pointer on the edge of a range in the grid bar until it turns into a double arrow. Now you can reset the range borders by dragging in the horizontal direction.

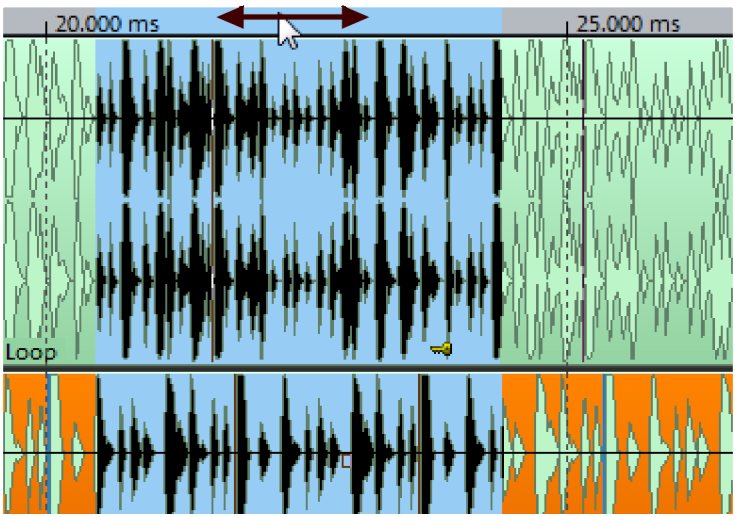


If the existing range stretches over several tracks and you only want to adjust one border (start, end, upper or lower border), click in the range and hold down the mouse button. Now drag the mouse pointer in the direction you want to change. As soon as the edge of the existing range has been crossed, the range edge will follow the movements of the mouse pointer. After you have redefined the range, you can release the mouse button.

You can also adjust the range start using the left and right arrow buttons. To adjust the range end you can use the arrow buttons while holding down the Shift key.

Horizontal Movement of a Range

Click with the left mouse button while holding down the Shift key inside an existing range on the grid bar. Hold the mouse button down and move the range in the horizontal direction.



Save/recall range

Selected ranges can be saved and recalled using "Edit" > "Range" > "Remember range" or with Alt + Function key F2-F10 and reopened with "Edit" > "Range" > "Get range" or Ctrl + F2 to F10.

Note: Alt+ F4 is excluded since it is a Windows shortcut for closing windows.

Using Alt + F11 you can save unlimited ranges and assign them names.

Additional special functions for defining, changing and using ranges can be found in "Edit" > "Range".

All saved ranges are displayed In the Range Manager, where they can be numerically edited and recalled. The manager is found in the docker or can be opened via "Edit" > "Range" > "Range editor".

Tip: All menu commands for range editing can be found in the menu reference "Edit" > Range".

Zooming

Use the zoom functions to adjust the sections of a virtual project. The higher the zoom level, the more precise the display will be.

Samplitude Music Studio also supplies you with the following zoom functions:

- **Buttons of the position bar**
- **Keyboard**: The "Ctrl + right arrow" key combination zooms out of the project; "Ctrl + left arrow" zooms into the project. "Ctrl + up arrow" zooms into in the waveform display of the objects, "Ctrl + down arrow" zooms out of the waveform display.
- **Buttons on the scroll bar**: In the lower right-hand corner of the VIP window a "+" and "–" button can be found for precise adjustment of the horizontal and vertical zoom levels.
- **Scroll bar**: You can also expand or contract the scroll bar to zoom the project. To do so, move the mouse pointer to one of the edges until it becomes a double arrow, then click and drag.
- **Mouse wheel**: The key combination "Ctrl + mouse wheel" provides simultaneous horizontal and vertical zooming – even during playback. The keyboard shortcuts "Ctrl + Alt" and the mouse wheel provides simultaneous horizontal and vertical zooming. You can zoom in/out by rolling the mouse wheel upward/downward.
- **Mouse**: An elegant method of zooming, which does need some practice and skill, is to left-click on the timeline, hold down the mouse button and drag the mouse vertically. By dragging the mouse up you can zoom out of the project and you can zoom in when you do the reverse.
- **Zoom mouse mode**: Selecting the magnifying glass icon in the mouse mode bar accesses "Zoom" mode. Use the right mouse button to zoom out of the project, and click with the left button to zoom into it.

Marker

Position marker

Position markers serve to "remember" position points. They are visible as in a special line at the top edge of a project as named orange bars. Markers can be placed during playback as well as during recording.

- Markers in wave projects are saved in the audio file (*.wav) as so-called audio markers and are available in this form in other applications as well.
- Wave project markers can also be displayed in VIP objects (VIP display options).
- A project can contain any number of markers. The first ten can be called up directly using the number keys and are assigned names "1" to "10". You can save them using the "Shift + Number Key" key combination. By pressing the corresponding number key you can jump back to the marker once again.

- By going to "Playback" > "Marker" > "Marker by the name..." you can define and name additional markers.
- To delete a marker, click on it and press the Del key. You can move markers by grabbing and dragging them. The mouse cursor will turn into a double arrow.
- If you right-click within a marker line, a context menu will appear from which you have access to all important commands.
- Manage and name markers in the Maker Manager ("View" menu or in the marker context menu).
- To stretch a range between any two markers, click on the first marker. Then, click on the second marker while holding down the Shift key. This selects a new range.
- To move quickly between marker positions, use the keyboard shortcut ("Playback" menu > "Move play cursor" > "Marker left/right".

CD Markers

CD markers are triangular markers for various CD burn functions. They can be set in the "CD" menu. There are

- CD Title Markers
- CD Subindex Markers
- CD Pause Markers

You can find additional information on tempo markers in the Burning CDs" (view page 274) chapter.

Tempo markers

Tempo markers serve to change the arrangement's tempo.

- Tempo markers for tempo change at a certain position.
- Tempo markers for changing the tempo type starting from the marker position (e.g. from 4/4 to 3/4 beat)
- Grid position markers assign a musical position to a certain position on the grid. This way, the bar frame/grid and MIDI events can be easily synchronized with existing audio material.

You can find out more about beat markers in the "Changing the beat" (view page 299).

Mixer

You can use the mixer (keyboard shortcut "M") to adjust the volume and panorama of the mixer channels. Each track corresponds to a channel on the mixer. In addition, plug-ins, submixes and AUX buses, a four-band parametric equalizer as well as inserts for the integration of effects and VST instruments are available not only for each individual channel, but also for the complete stereo track.

More information about this can be found in the chapter "Mixer" (view page 87).

Volume

The volume levels of objects and tracks/channels can be changed at various stages.

Object level

You can assign each object new settings for the volume. Among other options, this is possible for overlapping objects using fades or volume changes, virtual normalizing ("Effects" > "Amplitude" > "Normalize") and auto crossfade set by object handles.

The audio data remain unchanged. The calculation takes place in realtime during playback.

Track level

The volume of every track can be changed dynamically with the volume automation curve and the volume fader in the mixer or the VIP.

The audio data is not changed. The calculations are performed in real-time during playback.

Master layers

In addition, there is the option of setting the total volume of the project in the master section of the mixer.

Record

Hard drive recording

The device used to digitize audio signals is already included on the sound card and is called an analog/digital converter (A-to-D, ATD or A/D). In order to record, the A/D Converter gathers samples of the signal to be digitized in determined time lapses and measures its frequency. The rate is called "sample rate" and normally lies in the kHz ranges. KHz means a vibrating frequency of several thousand times per second. The higher the rate, the more samples are taken by the A/D converter and the more natural the digital transformation of the sound will be.

The precision with which the A/D converter measures the analog signal is determined by the sample resolution. The finer the resolution, the better the digital transformation.

CD-quality audio recordings are recorded with a sample rate of 44.1 kHz and 16-bit resolution.

Recording source

First of all, the recording source must be connected to the sound card. There are several ways to do this, depending on your equipment.

Microphone: Microphone signals must first be amplified before the sound card modifier can record them. Most sound cards have separate microphone inputs that pre-amplify signals, but the results are rarely professional.

Quality: Connection to an external mixer or external microphone amplifier produces far better results.

Amplifier: If, for example, you possess a guitar amplifier that has a line-out output, you can connect it with the line-in input on the sound card.

Stereo system: The stereo system's amplifier usually has a separate line-out. If instead, you see "Aux. out sockets," then you should use these. Connect them with the input on the sound card (usually shown in red). Normally, a high-fidelity (hi-fi) amplifier has cinch sockets and sound card mini-stereo catch sockets. You must have the corresponding cable to connect these properly.

If the amplifier doesn't have separate outputs (other than the loud speakers), then you can use the headphones socket for recording. In this case, you need a cable with two mini-stereo headphone connectors. This process has an advantage: you can control the signal level through the phones input. The disadvantage is that phones outputs are normally not very good. With cassette recordings, always use the cassette deck line out. Record transfers often leave you no other choice... Never connect a record player's outputs directly to the sound card, because the phono signal must be pre-amplified first. If you don't have a pre-amplifier, the only way to do this is via the phones output or an external amplifier

Balancing the signal

Optimum peak control is essential also when recording digitally via sound cards in order to achieve the best possible sound quality.

If the recording source is connected to the sound card, open the record dialog by right-clicking on the record button (keyboard shortcuts: Shift key + R) and start the recording source.

You can now adjust the peak control with the help of the LED display in the record dialog ("Visual" option).

If it is too high, the incoming signal has to be reduced accordingly. If you have connected the sound source through either an amplifier or tape deck to the soundcard via line out connections, you can only reduce the signal level in your soundcard's

mixer window. You can access it directly from within the recording dialog via the "Info" button.

Reduce the input level here by means of slider (fader) until the signal no longer moves into the red area. The loudest part of the material is the yardstick for an optimal level. The loudest part should be adjusted to the maximum.

Digital transfer

With the record function, you can also transfer digital audio data to hard disk via a digital interface (e. g. S/PDIF or ADAT).

ADAT or DAT recorders usually deliver data at a sample rate of 48 kHz. For a CD project with 44.1 kHz, the sample rate therefore first has to be converted. Samplitude Music Studio does this in realtime. The digital signal is imported at 48 kHz, converted automatically and inserted into the project at 44.1 kHz. However, the sample rate of the file to be read in has to be selected beforehand in the record dialog. Click the "Info" button in the record dialog to get started. The sample rate of the sound card can now be set in the sound card dialog.

Then all you have to do is connect the digital output of the recorder to the digital input of your sound card and to record.

24-bit audio support

Not only can audio data be recorded in Samplitude Music Studio in 16-bit CD quality, but also in higher-quality 24-bit resolution. To do this, select "24 bit" for the record mode in the recording options (keyboard shortcuts: Shift key + R). 24-bit recording requires a high-quality audio card with 20-bit or 24-bit conversion, plus a 24-bit capable driver. Audio cards with SPDIF digital interfaces can also record audio material in 24-bit quality.

The high-resolution audio data are saved and edited by Samplitude Music Studio in 32-bit floating point data format. This ensures full 24-bit quality regardless of the level. The dynamics increase to more than 140 dB, the signal-to-noise ratio of the recordings drops to 110 dB and more depending on the sound card. With internal editing, there is no fear of overshoots thanks to "Floating Point Processing". A floating point signal first becomes saturated at approx. 1500 dB over 0; in contrast, a 16-bit signal saturates immediately if the 0 dB line is exceeded by the smallest amount.

Even if the audio material is to be burned on a 16-bit audio CD in effect, it pays to use a 24-bit audio resolution for the recording because all effect calculations also then run with a higher quality and do not generate any rounding errors in the audible 16-bit range.

Compared with 16-bit recordings, 24-bit recordings take up double the memory on the hard drive (by saving them as 32-bit float data), but this should be a good

compromise in regard to the achievable increase in quality with today's hard drive capacities.

High-resolution audio data can be imported and exported as 24-bit WAV files so that the data exchange with other high-quality audio systems – e. g. MAGIX Samplitude – is not a problem.

Further options in the recording dialog

In addition, the recording dialog offers:

- a tuner (per right-click on the open visualizatioa6
- n window > "Tuner") for string instruments, which can be used to ensure the best tuning before recording. Deviations from the standard pitch are displayed graphically.
- the option to set CD track markers during recording.
- the option to record directly in various audio formats, e. g. to save hard drive memory.

For the individual options of the recording dialog, please see the "Recording options (view page 389)" section in the "Playback menu" chapter.

Folder tracks

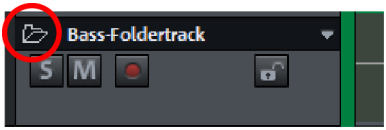
Multiple tracks that belong together can be combined in a folder track in order to bring more order to your multitrack arrangement.

You can add a new folder track via "Track" > "Add new tracks" > "New folder track".

Now you can drag and drop other tracks into the folder track. The contained tracks will be displayed inside a frame.



A folder track can be recognized by a folder symbol in its track box.



The folder track can be opened and closed by clicking on the folder symbol.

Individual tracks can be gotten out of the opened folder track via drag & drop. A "(F)" is attached to the folder track number in the Track Manager. If you would like to delete a folder track, you will be asked in a dialog window whether all tracks contained in the folder should be deleted as well.

Mute, Lock and Solo of the folder track affect all tracks contained therein.. Volume regulation of the folder track scales the individual faders relative to each other.

Audio Editing in Samplitude Music Studio

Audio objects in the VIP reference corresponding audio files that are open in the background. They reference solely the audio data and receive working instructions as to what the computer is to do with these data.

All audio edits normally take place directly in the VIP and are "virtual" or "non-destructive". This means that they are saved to the hard drive as a file only during export. In some cases, however, it can be desirable to edit audio material directly during the editing. For this case, the corresponding audio file for each object can be accessed through the "Edit audio file" command in "Object".

In this case, the data saved on the hard drive is edited directly. This type of audio editing is called "destructive", although the editing steps can be reversed with Ctrl+Z (or "Edit" > "Undo").

You can also load audio files without VIP and edit them in a virtual Wave Editing Mode. To do this, the "Open wave projects in destructive mode" option must be deactivated in the program settings (Y). Files loaded via "File" > "Load audio file" will be opened in a new window which works virtually, similar to a VIP.

Tips & tricks

A few tricks that help make working with Samplitude Music Studio easy:

Working in projects

- The A key selects the "entire range".
- By pressing the Home key, you can set the playback marker to the beginning of the selected range, a range marker will disappear.
- This lets you set an area precisely between two markers: Click on the first marker; Click on Shift + 2nd marker.
- With Shift + mouse movement, a range can be moved "softly".
- With Shift+Ctrl + cursor key, a range can be folded to the left or right in order to test out a loop at a different position, for instance.
- You can use Tab to switch between 2 types of visualization for objects in VIPs; these types of visualization can be selected with Shift + Tab.
- The "Set Objects" function allows objects to be saved so that unintentional movements can be restored easily. This is very useful for multi-track recording where it is important to have correct positioning of the tracks.
- To determine the tempo of a marked area in BPM, open the grid editor with the I key. There, enter how many beats the area contains under "Beat/BPM", and click on "Fetch BPM from selected area". Now you can read the exact tempo on the BPM display.
- Try out the function of the right mouse button in various regions of the VIP. A context menu always appears with useful functions, e. g. by using the recording and playback buttons or the scroll bar.
- The delete key (Del) deletes a marker if the playback marker (position line) is exactly on a marker. Selected objects can also be easily removed with the delete key. If a range is selected, this will be deleted.
- The T key can cut a selected object at the position of the playback marker. If a range was selected within this object, two cuts are performed at the range edges. When Auto Crossfade Mode is activated, crossfades will be inserted at all cuts, which can be optimized later, for example, by using the Crossfade Editor.
- Multiple objects can be selected by clicking on them while holding down the Ctrl key.
- All objects, which lie between the first and the second selected object, can be selected with the Shift key and clicking on them.
- Wave, HDP, and RAP files and objects can be dragged out of Windows™ Explorer directly into virtual projects (Drag & Drop). It is best to open Explorer and arrange the Explorer window, for example, at the right next to Samplitude Music Studio.
- A dialog for configuring the presentation in the virtual project can be displayed with Shift + Tab.
- The object editor which can be used to numerically edit the important settings, e. g. position and length, can be opened by double-clicking on the object.

Mixer

- The corresponding effect dialog opens by right-clicking on the effect buttons in the mixer window.
- The knobs or faders are set to the zero position by double-clicking on them. A further double-click will return it to the former active position.
- Clicking in the left and right outer area of a knob/fader field increases or decreases this value incrementally.
- With Master Normalization the mixer has a feature which allows you to quickly set the output level to 0 dB. If the limiter in the master section is active, the output level is also monitored, thus preventing level clipping.

Performance

If errors occur during playback, the following options are available:

- Increase the VIP and HD buffer in the "System" dialog ("Y" key).
- Zoom fully out so that the whole project is visible (keyboard shortcuts: Ctrl + Alt + arrow up)
- Deactivate the "Autoscroll" function in the "Playback parameters" dialog ("P" key).
- Reduce the number of displayed image elements of the VIP window in the dialog "Object display in virtual projects" (keyboard shortcuts: Shift + Tab).
- Bounce several tracks by mixdown and mute the original tracks.
- Reduce the real-time effects used in the object editor or mixer.
- Do not use plug-ins as they increase the CPU load.

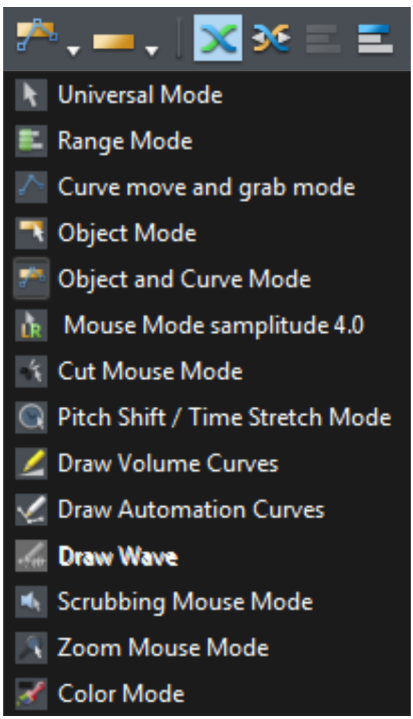
Mouse Functions and Mouse Modes

"Mouse modes" are your tools for working in the project window of Samplitude Music Studio. For most tasks the default Universal Mode is sufficient but there are other mouse modes specifically for editing objects, ranges and automation curves.



A small arrow next to the mouse pointer symbol allows different modes to be set.

Depending on the mode, the function of mouse-clicks in the project changes. The current mouse mode is indicated by the appearance of the mouse pointer in the track window.



Universal mode

This is the preset mouse mode for Samplitude Music Studio. Different functions can be used depending on the relative position within a track. Right-clicking opens a context menu.

The vertical mouse position within the track serves to differentiate between object handling and area manipulation: In the upper half you can mark areas and set the playback marker. In the lower half, objects can be selected and moved.

Clicking makes the following mouse functions available to you:

Mouse functions for the upper half of the track:

- Stretches and moves ranges (with the Shift key)
- Places the start position of the playback marker

Mouse functions for the lower half of the track:

Selecting objects

- Selects individual objects by clicking
- Multiple objects can be selected by holding down the Ctrl key and clicking on them.
- All objects between two selected objects can be selected by holding down the Shift key and clicking on them
- Stretches a rectangle by dragging the mouse pointer to the right. All objects touched by the lasso are marked (see "Lasso function" (view page 75))

Moving objects

- Moves an object (or a group of objects) by dragging to the desired position

Holding down the Shift key means that when moving onto a different track, the horizontal position remains the same.

Holding down the K key means that the objects behind the object are also moved backward together with the object.

Duplicating objects

- Duplicates one or more objects by dragging while holding down the Ctrl key

Holding down the Shift key means that when duplicating the selected objects on another track, their position remains the same.

Lasso function

Object lasso: Stretches a rectangle by dragging the mouse pointer to the right. All objects touched by the lasso are marked and can be moved together.

Curve point lasso: Stretches a rectangle by dragging the mouse pointer to the left over an activated automation curve. All automation points touched by the lasso are marked and can be moved together.

Setting object volume and length with the object handles

You can adjust the volume and length of individual objects using the five object handles.

Middle handle (top): Changes the object volume. The exact value in dB is displayed in the tooltips.

Side handles (top): Set a fade-in or fade-out for the object.

Lower handles: Sets the start and end position of the object.

Defining the volume and panorama progressions for a track

Automation curves can be used to draw in the automation progressions of the tracks graphically. To do this, handle points are created on the curve, which you can then move.

Creating and deleting handle points: Double-clicking on the automation curve creates a new point; double-clicking it again deletes it. Selected points can also be deleted by selecting the "Delete" option in the "Edit" menu or by pressing the "Del" key on your keyboard.

Selecting handle points: An automation handle point is selected by simply clicking on it. Select several points by holding down the Ctrl key when clicking.

> You can make a multiple selection of start and end points including all curve points in between by holding down the Shift key at the same time.

Moving a handle point: Automation handle points can be moved simply by dragging them with the mouse pointer. Several selected handle points can also be moved by holding down the Ctrl key at the same time.

Automation points lasso: Clicking next to the object and dragging to the left activates the object lasso (view page 75) for selecting multiple automation points.

Range mode (safe mode)

Right mouse button: Displays context-sensitive popup menu.

Left mouse button: Selecting ranges and moving ranges ("Shift"). Objects or automation curves cannot be changed by accident (i.e. "Safe mode").

Create ranges

In range mode, ranges are sketched by clicking and dragging the mouse pointer while holding the mouse button.

The range mode is a "safe" mode, since objects or curves cannot be moved accidentally.

Setting playback markers

In range mode the start position of the playback marker is set by clicking in the arranger.

Zoom

Clicking in the arranger and holding down the Z key increases the horizontal zoom step while right-clicking and holding down the Z key reduces the horizontal zoom level.

Temporary switch to other mouse modes

Period key "." - Press this button to temporarily switch Samplitude Music Studio to "Object" mode. You can select and move objects by holding down the key.

Hyphen key "-" - Press this button to switch Samplitude Music Studio temporarily to "Curve" mode. You can edit volume or panorama curves by holding down the key.

These two special functions ensure you can reach basic editing functions quickly.

Curve mode

This mode is strictly for editing automation curves. It can be opened temporarily from "Universal/Range" mode by pressing and holding down the hyphen ("-") key.

Set a new curve point on an existing automation curve by clicking. Curve points that have already been set can be moved easily using drag & drop.

If you want to simultaneously select several curve points for editing, simply span a range in the desired length. This is similar to using the object lasso, but for curve points. You can also select curve points vertically over multiple tracks.

Left mouse button:

Dragging to the right or left:	Activates the curve point lasso function for selecting multiple automation points.
Clicking once on a curve point:	Creates a new point; a **double-click** deletes it again. Another option for deleting curve points is to select them and press the "Del" key.
Clicking on a point:	Selects a point.
Click on a point + "Ctrl":	Allows selection of multiple points.
Click on a point + "Shift":	Multiple selection of start and end points including all curve events in between.
Dragging a selected point:	Moves the point.
Dragging a selected point + "Ctrl":	Moves multiple selected points.
Right mouse button:	Context menu

Object mode

This mode moves objects and edits the end and start positions, fade in and out phases, and object volume.

Object mode is especially useful together with range mode which can be accessed temporarily from within it. Press and hold the period key (.) while using range mode. When you let it go, Samplitude Music Studio switches back to range mode.

Left mouse button:

Click:	Selects objects.
Click + Shift:	Selects two objects, including all objects in between the two objects.
Click + Ctrl:	Selects multiple objects.
Dragging objects:	Moves objects in the set grid steps.
Drag + Shift:	Moves an object (or a group of objects) onto a different track; the horizontal position remains the same.
Drag + Ctrl:	Duplicates one or more objects

Drag + Shift + Ctrl:	Duplicates one or more objects while allowing the objects to be moved up or down the track list without changing the time position.
Double-click on an object:	Opens the object editor.
Lasso function:	Clicking next to an object while dragging to the right or left across multiple objects selects the object's lasso.
Object handles	
Mid handles (top):	Changes the object volume. The exact value in dB is displayed in the tooltips.
Side handles (top):	Fade in or fade out of the object can be set here.
Lower handles:	Sets the start and end position of the object.
Right mouse button:	Context menu

Object/Curve mode

This mode is a combination of Object mode and Curve mode. In this mode, you can move objects and edit curves using the left mouse button. The playback marker and ranges are set in the bar ruler above the first track.

Left mouse button:

Click:	Selects objects.
Click + Shift:	Selects two objects, including all objects in between the two objects.
Click + Ctrl:	Selects multiple objects.
Dragging objects:	Moves objects in the set grid steps.
Drag + Shift:	Moves an object (or a group of objects) onto a different track; the horizontal position remains the same.
Drag + Ctrl:	Duplicates one or several objects.
Drag + Shift + Ctrl:	Duplicates one or more objects onto a different track without changing the time position.
Double-click on object:	This opens the object editor.

Lasso function:	Clicking between objects and dragging to the right activates the object lasso for selecting several objects. Clicking between objects and dragging to the left activates the point lasso for selecting several volume or panorama points.
Object handles	
Mid handles (top):	Changes the object volume. The exact value in dB is displayed in the tooltips.
Side handles (top object edges):	Fade in or fade out of the object can be set here.
Lower handles:	Sets the start and end position of the object.
Clicking on the curve:	Creates a new point; a **double-click** deletes it. Another option for deleting curve points is to select them and press the "Del" key.
Clicking on a point:	Selects a point.
Clicking on a point + Ctrl:	Allows the selection of multiple points.
Dragging a point:	Moves the selected point.
Dragging a point + Ctrl:	Moves several selected points.
Right mouse button:	Context menu

Cut mouse mode

Left mouse button:	Click on the object to separate it at the corresponding position. If the grid is switched on, the scissors tool which appears will move according to the grid settings.
Right mouse button:	Context menu

Left/Right Mode

Use this function to switch to the Left/Right Mode. The right mouse button then controls object functions and the left mouse button controls range manipulations.

Left mouse button:

Double-click on automation curves:	Creates a new curve point; another double-click on the same curve point deletes it again.

Right mouse button:

Click:	Selects objects.
Click+Shift:	Selects multiple objects.
Dragging objects:	Moves objects in the set grid steps.
Drag + Shift:	Moves objects onto a different track, the horizontal position remains the same.
Duplicating objects:	Dragging + Ctrl duplicates one or more objects.
Dragging + Shift + Ctrl:	Duplicates one or more selected objects on a different track; the horizontal position remains the same.
Clicking on an automation point:	An automation point is selected
Clicking on an automation point + Shift: points	Allows multiple selection of automation
Dragging selected automation points:	Moves selected automation points

Pitch shift/Timestretch mode

In this mode you can quickly and effectively carry out pitch and time adjustments on the object. The function of the object handles differs from that of the other mouse modes:

Mid handles – Pitch factor: The object pitch can be changed in the range by +/- 6 semitones. The process used can be selected in the object editor.

Lower right handle – time stretch factor: This handle controls the change in length of an object through time stretching. The same duration (starting length of the object in the audio file) can be extended or shortened by time stretching. Select the stretching mode used in the object editor.

This means that the object handles on the lower right and those in the object center can be used for directly setting the playback speed and pitch.

The time stretch mouse mode simplifies working with tempo markers in the timeline. Create BPM markers (tempo changes) by directly clicking the desired playback position and holding down the Shift key. You can adapt the tempo "in one go" by moving the mouse vertically.

You can create grid position markers in "Time stretch" mouse mode by clicking the desired playback position and holding down the "Alt" key. You can move the grid with a horizontal mouse movement to manipulate the snap grid and adjust it to existing MIDI or audio objects.

Detailed information about how to use "Time stretch/Pitch shift" mouse mode can be found in the menu reference, help file, or documentation "manual.pdf" under "Tempo editing > Tempo Map dialog..." (view page 302).

Right mouse button: Context menu

Volume Draw Mode

This mode allows volume automation curves to be drawn with the left mouse button.

Automation draw mode

In order to draw an automation curve or a MIDI controller curve, select "Draw automation curve" mode. Selected curve points can be deleted using the "Del" key. If you move individual points using the "Alt" key, the bounds can be lifted using the neighboring points to the right.

This mode allows automation curves to be drawn for the selected track (view page 266) using the left mouse button. Activate the automated parameters of the embedded plug-in beforehand with the keyboard shortcut "**Ctrl + Alt" + movement of the corresponding control element of your plug-in**. Now you can draw in the curve of the selected parameter in the track in Automation Draw mode.

The selected parameter's curve can be seen in the track in the foreground; all other curves may be displayed as thin lines by selecting this option in the context menu.

This mode also enables panorama curves etc. to be drawn with the left mouse button. The panorama curve on the respective track can be activated and deactivated again at any time with the "Pan" button to the left in the track head.

Wave draw mode

If you are in audio editing mode, you can edit the waveform of a file using the pencil tool. The waveform display shows a suitable zoom level and the mouse pointer becomes a pencil. Changing the waveform in the wave window is useful if you want to remove very short impulse disturbances manually.

Scrubbing Mode

This mouse mode enables you to monitor and control the playback speed. In this case, the project can be played back in a forward or reverse scrubbing direction.

Left mouse button: Clicking the project activates monitoring with control of the playback speed.

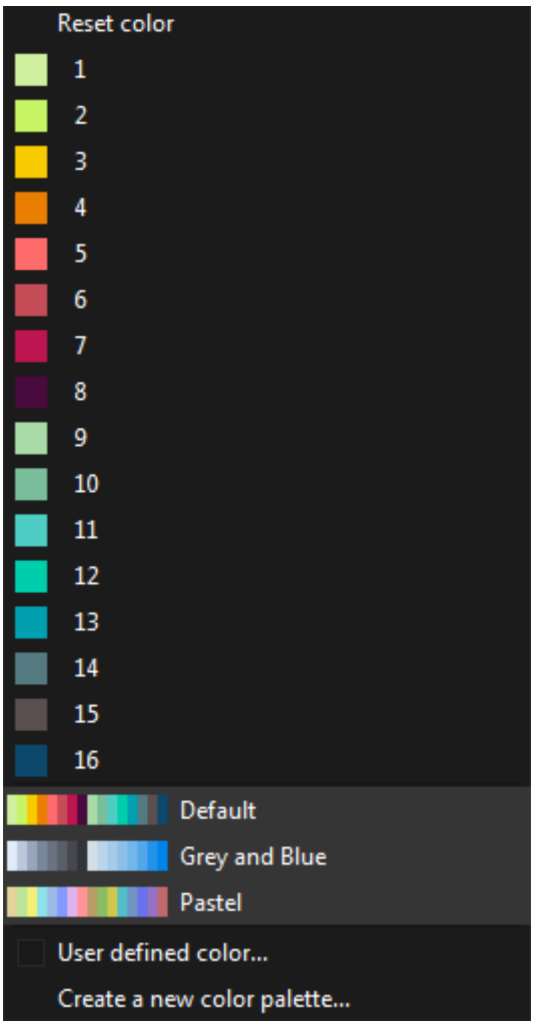
Right mouse button: Context menu

Zoom Mode

Use the right mouse button to zoom out of the project and the left button to zoom into it.

Color mode

In Color Mode you can color objects or entire tracks. Click on the **arrow next to the brush symbol** first. Next, select the desired color. Now move the mouse over the objects and tracks in the arranger: the pointer turns into to a paint bucket. Click on the object or track box you would like to color.



You may also apply color to multiple objects across different tracks by **dragging the lasso over the desired objects** (the lasso appears when you drag the paint bucket). Release to color all selected objects.

If you hold down the "**Shift**" key while doing this, you will color the **wave form** instead of the object.

If you hold down the "**Ctrl**" key while doing this, you will color the **object background** instead of the object itself.

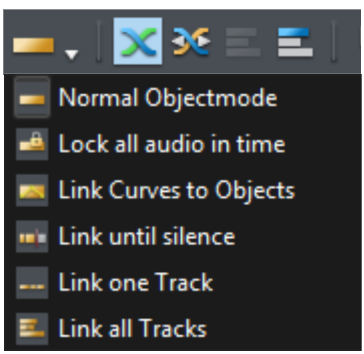
If the preset color selection is not sufficient, you can also **select your own color** or even **create your own personal color palette**.

You also have the option of accessing the color palette for each track by clicking the color selector on the right edge of the track header. This also allows a new color to be assigned to a track. If multiple tracks are selected beforehand, the color selection will apply to all of these.

Left mouse button:	Changes the background color of the object
Right mouse button:	Changes the wave form color of the object.

Object modes

The object mode determines the behavior of objects while moving.



The various object modes can also be accessed through "Edit" > "Object mode".

Normal Object Mode

In this mode you can move objects and edit the end and start positions, fade in and out phases, and object volume.

Lock All Audio in Time

This mode locks all objects to stop them from being moved accidentally. Object mode "Lock all audio in time": Holding down the "Alt" key at the same time temporarily deactivates the mode for the selected objects.

Link Curves to Objects

In this mode when you move an object you also move all track automation data together with the object. If you delete an object, also all automation data will be deleted.

Link Objects until Pause

The means that the chosen object is selected and moved together with all subsequent objects on this track. This ensures that the pauses between the objects remain intact when moving a particular project range.

This function also applies to multiple selected objects arranged along various tracks.

Link One Track (Link Objects on Active Track)

In this mode, all objects on the current track are selected and moved together.

Link All Tracks (Link Objects on All Tracks)

In this mode, all objects appearing in the arrangement are selected and moved together from the mouse position.

Note: By using the object modes "Connect objects until pause" and "Connect objects on a track" together, the markers in the top arranger track may also be moved when objects are moved. Moving objects in the object mode "Group objects" simultaneously moves the marker independent of the selected track.

Mixer

You can open the Samplitude Music Studio mixer by going to "Window > Mixer"(Shortcut: "M"). This is largely equivalent to a hardware mixing console. The integration of the Samplitude Music Studio mixer into the digital environment is still much more flexible than an analog mixer.

All settings that you make in the mixer are calculated and edited in realtime. This includes track and master effects, panorama and volume settings, initial assignments for single tracks/busses as well as initial assignments for the master section.



Operating the mixer

Every VIP track has its corresponding mixer track. However, you can hide any VIP or mixer track in the track manager.

Mixer - keyboard shortcuts

- **Arrow keys:** The arrow keys on your keyboard can be used to navigate through the individual mixer elements and to select the active mixer element (fader, knob or switch).
- **Page up/Page down:** Changes the value of the active mixer element. Hold the "Ctrl" button at the same time to change the value in large increments and hold down the Shift key for smaller increments.
- **Home:** Sets the mixer element to its preset value. If you press "Home" again, the element is reset to the last value, providing a simple comparison between the edited and preset states.

- **End:** Opens the assigned sub dialog of an element, e. g. the EQ window for one of the EQ knobs. This function corresponds to clicking on a knob with the right mouse button.
- **Enter:** Opens the numeric entry field for a controller. Switches are turned using the "Enter" key and "Page up/Page down" keys.
- **Del:** An activated plug-in slot can be reset with the "Del" key.

Mixer operation with mouse and keyboard

Left-click: Selects a control element.

Right-click: Accesses either a context menu for the corresponding control element or a dialog with additional settings options.

Ctrl + left-click: You can use this shortcut for multi selection.

Shift + left-click: You can select all similar control elements between the previously selected and the current control element (multi selection).

Ctrl + Shift + left-click on knobs and faders: This keyboard shortcut switches the behavior of corresponding faders or knobs within a linked group (inverse selection).

Some mouse movements create, for example, opposing movements of two grouped faders or move panorama faders of two tracks in the opposite direction.

Alt + Left-click: A single control element can be temporarily positioned within a group by pressing the “Alt” key and operating the element.

Double-click on numbers: Opens the data entry field to allow manual entry of numeric values.

Double-click on knobs: Resets the control element to its preset (initial) value. Double-clicking again sets the value back to the altered value again.

Clicking on value range: Clicking on the area below the faders or on the left of knobs decreases the values. If the mouse button is held down, the value is automatically reduced until the button is again released or the end of the scale has been reached. (Shortcut: Page down).

Clicking on the area above the faders or on the right of the buttons increases the value. If the mouse button is held down, the value is automatically increased until the button is again released or the end of the scale has been reached. (Shortcut: Page up).

The level faders can be adjusted very precisely. If you click on them while keeping the left mouse button pressed and moving the mouse pointer left or right from the fader and moving the mouse in a vertical plane, you can fine tune the settings. The step size of the settings become smaller as the mouse pointer is moved further away from the selected fader.

The step size of the fader movement also becomes smaller if you hold down the "Shift" key while moving a fader.

Knobs (potentiometers) can be set in two different ways. After clicking on a potentiometer you can move the mouse around the knob or move the mouse up and down as for the faders. This makes it possible to reduce the step size value by holding down the Shift key. The way in which the knobs are controlled can be set in the "System Options" dialog (Shortcut: Y) under "Keyboard, menu & mouse > Mouse".

New AUX bus in mixer: A newly added AUX bus is always displayed in the arranger at the bottom and in the mixer to the right with the highest channel.

Drag & drop in the mixer: You can rearrange individual channel strips in the track number field or name field via drag & drop. The mouse pointer turns into a hand. The overall settings of a channel can be transferred to another channel via dragging & dropping the "FX" button. The equalizer settings can be transferred by dragging & dropping the "EQ" button.

The plug-in slots offer drag & drop functionality to copy effects to a different track or between tracks and the master. The effects sequence for VST and DX plug-ins can be changed within the track via drag & drop.

If all you want to do is move effects between the channels in the mixer instead of copying them, simply keep the Shift key pressed while dragging & dropping.

Channels

Each track in the VIP is sent through a specific mixer channel, i.e. the sound settings of the respective mixer channel are applied to the objects on the track.

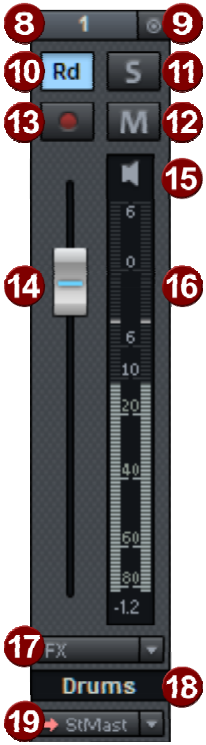
Each channel strip provides the following settings options. Each individual section can be opened and closed by clicking the corresponding arrow symbol on the left edge of the mixer:



1. **In (Input):** Specifies the audio input for the recording.
2. **Track name:** Shows the name of the VIP track. This name can be edited by double-clicking.
3. **Gain:** The mixer adjust the input amplification for the respective channel.
4. **AUX sends:** In this section you can activate and set up the AUX components for a maximum of 4 different AUX buses using the slider. The "AUX" buttons 1-4 serve as AUX bypass buttons, all AUX sliders can be reset by right-clicking.
5. **Inserts:** Here you can add effects to the channel strip.
6. **Equalizer:** This area makes it possible to influence the frequency response of the track with a parametric equalizer. The knobs change the volume of the corresponding frequency range.

   You can numerically edit the gain and frequency of the corresponding filters.

   For fine-tuning, right-click one of the knobs. Samplitude Music Studio shows the equalizer dialog for you to specify more exact settings.
7. **Panorama:** This adjusts the signal alignment in the stereo panorama. The settings of the knob have a different effect on mono and stereo tracks. In a mono track, depending on the control setting you can place the signal more left or right in the stereo panorama. In contrast, in stereo tracks, this lets you control the balance between the left and right channel.



8 **Track number**: Right-clicking a track opens a context menu to make adjustments to the track settings or to insert a new track or aux/submix bus.

9 **Link**: This button connects the corresponding channel with the one to the right of it. All level, panorama, gain, AUX send and equalizer adjustments now affect both channels. The two panorama controllers are inversely linked, i.e. the more the left fader is turned to the left, the more the right one moves to the right. With the keyboard shortcut **Ctrl + Shift + left-click on knobs** you can invert the behavior of corresponding panorama knobs within a linked group.

10 **Automation:** This button gives you access to the channel's automation functions. Detailed information about automation is available in the chapter "Automation (view page 265)".

11 **"S" (Solo):** The solo button mutes all tracks with the exception of the selected one. Right-clicking enables the selection of the output device for the track.

12 **"M" (Mute):** The mute button mutes the track. Right-clicking enables the selection of the output device for the track.

13 **Recording:** This button activates the track. Right-click to determine the record mode for your input signal, audio (mono/stereo) or MIDI and to select the corresponding recording device.

14 **Volume fader:** Controls the levels of the tracks.

15 **Monitoring:** Clicking the button activates the track's monitoring function, i.e. transmission of the input signal on the input of the sound card to the output. The button has priority over the preset "Tape device monitoring" monitoring switch behavior (view page 438) (automatic monitoring in the stop status and during the recording). In "manual monitoring", the monitoring behavior of the tracks is specified only with these buttons.

More details on monitoring can be found in the chapter "System settings > audio settings > monitoring settings (view page 436)".

16 **Peak Meter:**

17 **FX menu:** Here you can open the Track Effects menu. In it you will find presets for track effects sorted according to the instrument type. You can copy track effect settings (i.e. the entire combination of equalizers, SoundFX and any plug-ins) as a whole, and insert them in other tracks. You can save such effect "chains" in their own preset files in order to use them again in other projects.

18 **Track name:** Shows the name of the VIP track. Clicking opens the track settings dialog where you can change the track name, among other things.

19 **Out:** Sets the audio line-out for the channel. This can either be a submix bus in the mixer or a wave out device.

Master section

The master section can be found to the right of the channel strips.



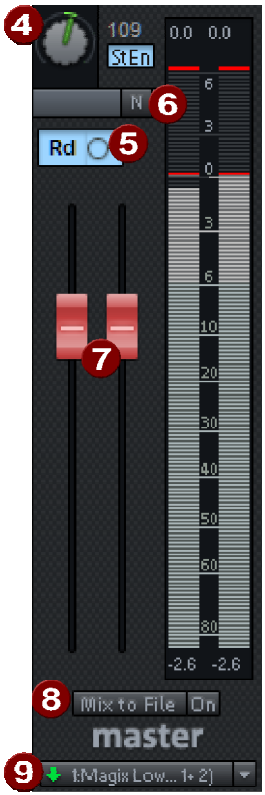
1 **Plug-ins:** Here you can use included (essentialFX, Vintage effects (view page 126) ...) and external plug-in effects for the master output signal.

2 **Master Effects:** "Sound FX" opens an effect rack with a variety of standard effects.

The **MAGIX Mastering Suite** is a special effect rack for use with the mixer master channel. The effects in the Mastering Suite are used as part of the mastering process, in which the mixed music piece is given a final polishing.

Dynamics (Limiter) and **Vocoder** can be activated **as other master effects.**

3 **Master equalizer:** Provides access to the 4-band equalizer for the master signal.



4 **Stereo enhancer:** Edits the stereo image of the total signal. The slider controls the stereo base width between mono (0%) unchanged base width (100%, normal stereo) and sets the maximum base width ("Wide", 200%). **StEn** opens the stereo enhancer interface.

5 **Link:** This button couples them via the two master faders and is active as standard. Deactivate it if you want to change the right and left channel independent of one another.

6 **Normalize (N)**: This is the master normalization. Clicking this button adjusts the output level so that the loudest parts of the signal reach 0 dB. The maximum level reached during the last playback process will serve as the basis during this process and will be displayed on the peak meter.

> **Note**: If the level display is clicked in the stopped state, the play cursor will jump to the position indicated by the level.

7 **Fader:** These two faders adjust the master signal. Reset them to the 0 dB position by double-clicking.

8 **Mix to File/On:** The "**Mix to File**" and "**On**" buttons make it possible to conduct a mixdown quickly in realtime and to change your mix during the playback. Just like it was mixed in the analog studio: The mix is played back and the necessary controller dragged live onto the mixer.

1. You can specify the name and the storage location of the WAV file with a click on the "Mix to File" button. As soon as you click on "On", the master output of the mixer can be written to a wave file during the following playback.
2. Now start playback of the VIP.
3. On playback, any parameter can be changed in order to record any live adjustments that are made.
4. At the end, stop the playback of the VIP.

> **Important:** Make sure that the "On" button is deactivated if the master signal should not be mixed into a new file. Otherwise, in each playback process, the WAV file is written again (thus overwriting the previous mix).

The "Mix to File" function does not necessarily need to be used to record mixer movements during playback. Effect automations can be controlled by the automation functions, along with AUX buses and volume and panorama curves.

9 **Device/Master Out:** Enter the playback device for the entire signal here; this can also be set in the system/options dialog under "Audio devices".

Global buttons

Some additional buttons for adjusting the global settings of the mixer window and mixer handling can be found to the right side of the mixer window.



Start Track: If the VIP has many tracks, only a section of the corresponding mixer channels are generally displayed in the mixer window. The visible section can be moved using the scroll bar at the bottom of the mixer. Hold the Shift key down and click on one of the “Start Track” buttons to save the current section (a left-click is sufficient the first time). You can recall the previously saved section by clicking again on “Start Track”.



Setup: The mixer setup dialog can be opened by clicking the "Setup" button. You can select various mixer setups in the preset menu underneath.

> Please read the section "Project properties > Mixer Setup" in the "Menu options" chapter.

MIDI Learn: Opens the hardware controller settings dialog in order to quickly assign control elements of the mixer.

Resets

Reset (Mono): Resets the entire mixer to its standard settings for mono tracks. This means that the panorama setting of the tracks are set alternately to the left or to the right.

Reset (Stereo): Resets the entire mixer to its standard settings for stereo tracks. The panorama controllers are brought in the mid position in all tracks.

Reset EQ/AUX/Peaks/FX: Various individual functions of the mixer can also be separately reset.

Snapshots: The snapshot function is particularly useful for comparing various setups. Thus you can switch between settings without any problem. Hold the “Shift” key down and click on one of the snapshot buttons to save the complete mixer settings (a left-click is sufficient the first time). You can recall the previously saved settings by clicking again. The naming of snapshots is possible by double-clicking the name field. The two buttons on the bottom enable you to save and load snapshots. A right-click on a snapshot opens a context menu where snapshots can be saved, loaded and deleted.

Solo/Mute: All solo/mute functions can be activated and deactivated globally using these buttons (**S** or **M**).

Bypass: This button switches off all mixer effects globally for comparing settings.

AutoRec: This display indicates recording of automation data such as volume and panorama on at least one track.

Play/stop: Playback of the VIP can be started and stopped with this button. Right-clicking opens the transport console.

Hide Tracks/Hide Master: Right of the master volume control, individual sections of the mixer window can be switched on and off globally.

Phones: Here, you control the volume of the monitoring.

Buses and routing

AUX buses

An AUX bus is a collecting bus combining all signals of the corresponding "AUX sends" of the individual channels. AUX buses are usually used for controlling real-time effects via the volume curve. For this purpose, part of the signal of the desired mixer channel is sent to the AUX bus ("AUX send") and effects are added. The AUX bus fader represents the "AUX return". This means that the higher the volume of the AUX bus, the more effects in the mix will be audible.

Hint: The AUX tracks contained in the VIP tracks are usually not objects. They only provide dynamic effects to other tracks.

Submix buses

A submix bus combines several tracks. It controls the volume, panorama, and effects settings of all tracks that are “routed” to the submix bus. For example, all drum tracks (hi-hat track, bass drum track, etc.) can be combined to one submix bus so that the entire drum kit can be controlled via the volume controller of the submix bus.

Working method

- An AUX/a submix bus can be created in the mixer at any time. To insert a submix bus after all channels, right click on the number of the last channel shown in the mixer. In the appearing context menu, select "Insert Tracks -> New submix bus". If the output of several previous channels is now routed through this bus, the volume of all of these can be controlled centrally through the new bus. If you have created an AUX bus with "Insert Tracks -> New AUX bus", you can channel the signals of the previously created AUX sections into the the newly created AUX bus. AUX buses are also the target for AUX sends with a lower channel number.
- Right clicking the number of a channel allows the option to select between the properties "AUX bus", "Submix bus", or even both for the according channel strip.

- Submix or AUX buses are always stereo buses.
- Submix buses can be fed from tracks with a lower channel number just as a physical output device.
- Submix and AUX buses can be used for all channel effects, including volume, panorama automation, and AUX send. You can align your output to output devices or submix buses with a higher channel number the same way as any other channel.
- Automation of volume and panning for AUX and submix buses are the same as for all other channels.

Embedding external effects devices

In order to include external effects devices you require an audio interface with several in- and outputs, whereas one input/output pair is reserved for the external effects device.

Routing the signal

- You can loop the signal either as an effect or insert.
- **Insert send:** Route the channel output directly to the physical output of the card that is to feed your external device.
- **Insert return:** Select a mixer channel (insert return channel) which the effects signal should be sent back to. In the input section of the channel, select the sound card input connected to the output of the device you want to loop in.
- **External send effect:** Create an AUX bus that is fed from the corresponding AUX send from different channels. The output of the AUX bus has to be routed to a physical output of the sound card. Connect the output of the effects device to the desired input of the sound card. The sound card input is connected to the mixer channel by selecting the corresponding input section of the sound card in the dialog window of the input section of the AUX return channel.

Tips and tricks

- Master normalization is a mixer feature which allows you to quickly set the output level to 0 dB. If the limiter in the master section is active, then the output level is also monitored, thus preventing level clipping.
- Clicking on the displayed top peak level numbers of the master sets the cursor to the VIP peak position. This can be controlled with the function "Play over cut".
- The mixer function "Mix in file" (to the right below the mixer) writes the master output of the mixer to a wave file (or HD wave project). If parameters are changed during playback, the sound that was changed live can be recorded. If you use the live input of Samplitude Music Studio, then all mixer effects can be used in the mix file while recording. Warning: the mix file is overwritten at every play start. Therefore, if you want to keep the result, you have to rename this file or save it under a different name.

Effects and effect plug-ins

Samplitude Music Studio contains many high-quality effects and effects plug-ins (MAGIX plug-ins) as well as interfaces for external VST plug-ins and DirectX plug-ins.

What effects are there and how are they used?

Effects in Samplitude Music Studio differ in terms of their application and the location where they are used.

Real-time effects / Virtual effects / Non-destructive effects

(accessible in track editor plug-ins, object editor plug-ins, the track, the "Effects" menu - in which case a check cannot be placed next to "Process Effects Offline" - or in the "Insert" section of the mixer)

These effects are calculated during playback or export. The effect settings can be changed at any time to optimize the sound. Real-time effects differ according to where they are applied:

Object effects (access via the object editor or via the "effects"): Object effects do not affect the arranger track, but rather only the individual objects. The advantage to this is that effects which are only required at a specific point in the project only use up processing power at that particular point.

Track effects/mixer channel effects (access via the track editor, track header FX button, or the insert section of the mixer): Track effects always affect the entire audio output of a track. They are used when software synthesizers serve as audio source, instead of audio objects.

AUX effects (accessed via the track editor, track header FX button, or the insert section of the mixer): Aux effects are also track effects, but they are loaded especially into aux tracks. You receive the audio signal of multiple tracks via the aux controller of the tracks, which also affects multiple tracks simultaneously.

Master effects (accessed via the master-section in the mixer): Master effects affect the sum of all audio tracks mixed together.

Internal offline effects/destructive effects

(accessible in the "Effects" menu. A check must be placed next to "Process effects offline")

These effects are calculated into the original wave file or a new wave file once. After this initial calculation, the settings cannot be changed. In contrast to real-time effects, no additional CPU resources are required during playback of the effect.

Plug-in effects

Along with internal effects, additional effects can also be applied as plug-ins.

Samplitude Music Studio supports plug-ins in the following formats:

- MAGIX Plug-ins: A selection of integrated VST effect plug-ins including essentialFX (eFX), Vandal SE and am-track SE.
- VST effects (VST FX): These include all external VST effects.

These effects can be accessed through the track editor plug-ins, object editor plug-ins or in the insert section of the mixer.

Using audio effects

Audio effects can be added at different positions in the project, to individual objects, to a complete track, or to the master (i.e. everything you hear).

Object Effects

Object effects do not affect an entire track, but rather individual objects. The advantage to this is that effects which are only required at a specific point in the project only use up processing power at that particular point.

To activate an effect for an audio object, double click on the audio object to open the object editor (view page 55). Change to the FX tab if necessary. Under Plugins you can load the effects into a plugin slot by clicking the small arrow at the slot. This opens a menu of effects to chose from.

The object FX rack is shown with the loaded effect. With the + button you can open the plugin menu again and add more effects directly from the rack.

Via effects in the Samplitude main menu (also available in the object's context menu) you can also reach specific audio effects.

Track effects

Besides the object audio effects, a separate effects rack for every track mixer channel can be used.

Track effects always apply to the entire audio output of a track. They are used when software synthesizers serve as audio source, instead of audio objects.

Note: The Vocal Tune, Tempo-Pitch/Resample, MultiMax, DeClipper_SE and Vocoder effects cannot be used as track effects!

Plugin slots and track FX rack work in the same way as for objects, you'll find plugin slots in the mixer channels and the VIP's track editor and, for already loaded effects, also in the arramnger track header. To open the track FX rack click the FX buttons in the track header, track editor or mixer channel (below the channel fader).

Master effects

Master effects influence the mixed sum of all audio tracks. The master FX are accessed in the mixer window where you also have plugin slots above the master volume control.

The controls work similarly to the object and track effects racks. Additionally there's a special MAGIX Mastering Suite for perfect sound.

Effects rack

One or multiple Samplitude effects may be loaded in the effect rack. Open the rack via the **FX** buttons in the track editor or track header of a VIP track, in the object editor, or in the mixer by clicking the **inserts** buttons in the channels or the **master effects** in the master. Even when inserting new effects via the slots (mixer, object editor, track header, etc.) or the effects menu, the rack will also open.



Clicking this button lets you insert effects. A menu opens that display the available effects at this position (view page 97). After selection of the effect, it is immediately active, and the associated interface is displayed on the right.



You can tell an effect is active if the on/off button is lit. You can also use this button to temporarily bypass effects without losing their settings. The corresponding button at the top deactivates the entire rack.



This button removes effects from the rack. Since deactivated effects don't use up any computing power, this option is used mostly for maintaining an overview.

The effects unit interfaces are controlled by using slider controls, knobs and buttons. The individual effect descriptions provide more detailed information. Several effects contain two special features:



Sensor fields: Sensor fields allow you to control two parameters at the same time by moving a circle around on a flat surface. The horizontal and vertical positions correspond to the parameters.



A/B: If you have selected a preset for the effect and make manual changes to it, you can compare the original preset sound with the new settings using the A/B button.

Effects presets

Presets are useful because they prevent you from having to change effects settings every time you use an effect. If you need to find fitting setting quickly, presets can be very helpful.

Presets for individual effects

Each rack effect has a range of presets that can be easily loaded by clicking on them. You can scroll through the list with the mouse wheel. Some lists also contain subfolders. Each list contains the "Reset" subfolder, which in turn contains the entries "Standard setting" and "Settings before opening the dialog". You can use these to completely reset the effect or reset it to its last value.



The list can be hidden using the arrow to the right.

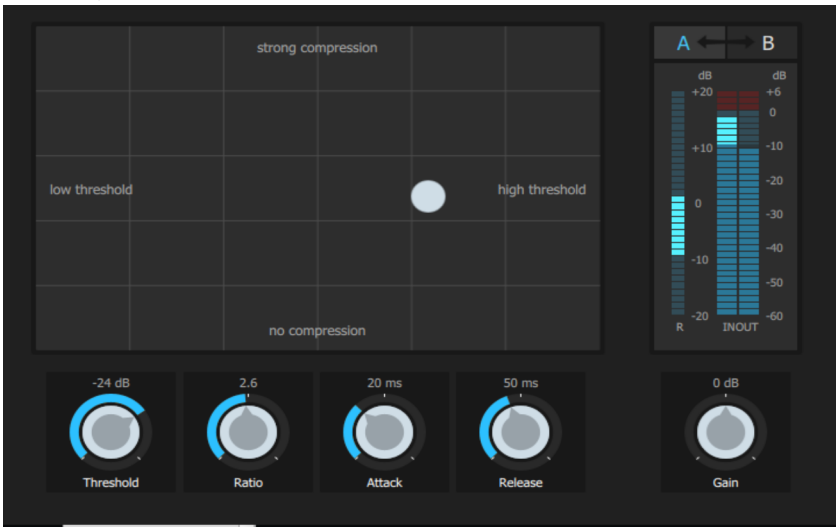
Tip: Presets often contain more effect parameters than are normally accessible through the control elements of each effect. It's worth spending some time turning the knobs and trying out the available presets.

Track effect settings

The context menu opens by right clicking the FX button in the track editor, header, or mixer. You can copy, reset, save, or load current track effect settings here. There are also a wide range of presets available, which offer you possible effect combinations and instruments for various applications.

The track effect settings are .TRK files.

Compressor



The compressor is an automated dynamic volume control. It limits overall dynamics, maintains the volume of loud passages so they stay loud, and increases the volume of low passages.

Processing is carried out using a "look-ahead" method, similar to high-quality studio appliances. There are no peak overmodulations or other artifacts as the algorithm can never be 'surprised' by sudden level peaks.

Threshold: Sets the volume threshold. Compression will be applied above and below the threshold.

Ratio: This parameter controls the amount of compression.

Attack: Sets the algorithm's reaction speed to increasing sound levels. Short attack times can create an undesirable "pumping" sound, as the volume is quickly reduced or increased correspondingly.

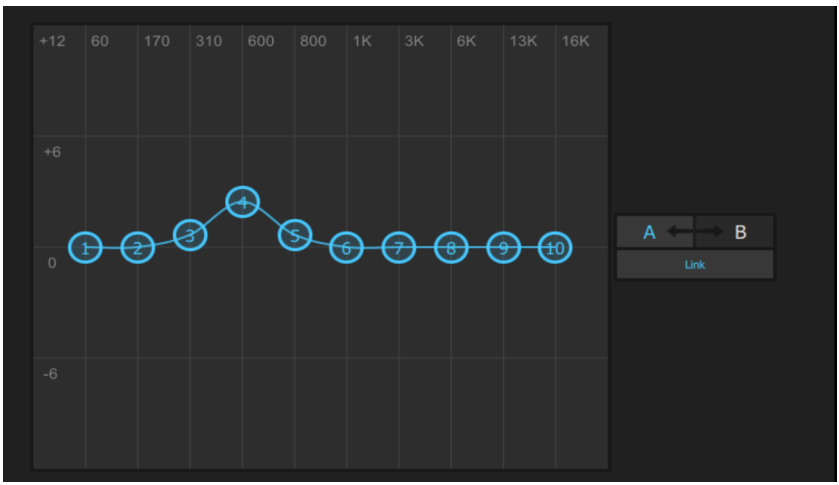
Release: Sets the algorithm's reaction speed to falling sound levels.

Gain: The gain controller amplifies the compressed signal.

A/B: If you have selected a preset for the effect and make manual changes to it, you can compare the original preset sound with the new settings using the A/B button.

Equalizer (graphic)

The 10-band equalizer subdivides the frequency spectrum into ten areas (bands) and equips them with separate volume controls. This way it is possible to create many impressive effects, from a simple boosting of the bass to complete distortion. If low frequencies are boosted too much, the overall sound level is heavily increased, which may lead to distortion. In this event, adjust the overall volume downward by using the "master volume" control situated at the bottom center of the effects rack.



Bullets 1-10: Each of the 10 frequency ranges can be separately made louder or softer with the 10 volume controllers.

A/B: If you have selected a preset for the effect and make manual changes to it later, you can compare the original preset sound with the new settings by using the A/B button.

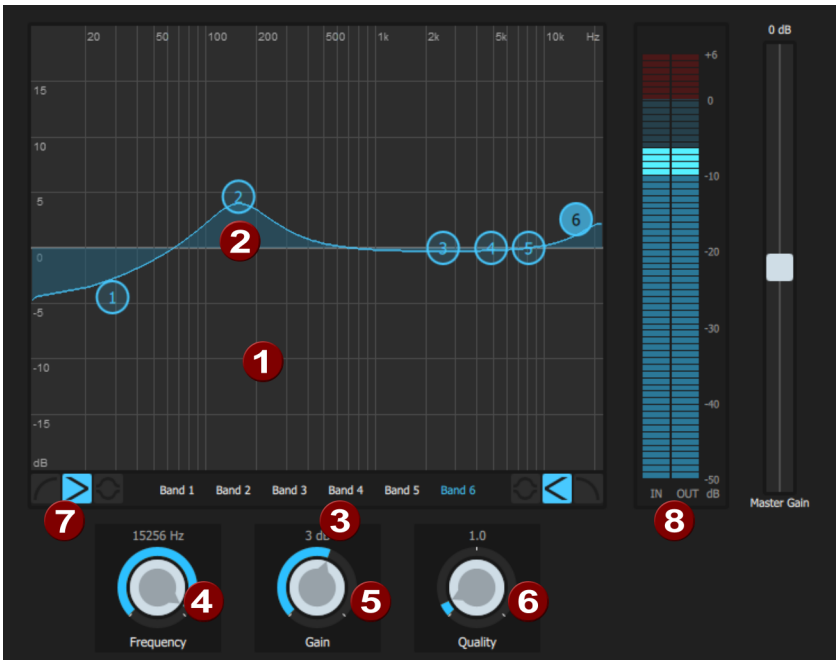
Link: Using this feature randomly combines the frequency ranges with each other in order to avoid artificial-sounding overemphasis of an individual frequency range.

Parametric EQ

The parametric equalizer has six filter bands that you can use to shape the sound of the music track. Each band is a filter with a typical "bell shape". Within a certain frequency range around an adjustable middle frequency, you can increase or reduce the signal level gain. The width of this frequency range is called bandwidth. The bandwidth is defined by the Q value. The higher the Q value, the narrower and steeper the filter curve.

You can influence the basic sound of the mix by boosting or cutting specific frequency ranges (low Q value) to give it more "depth" (lower mids 200-600 Hz) or more "air"

(Highs 10 Khz). You can also decrease very specific frequencies (high Q-value) to remove unwanted noise.



1. **Sensor field:** The sensor field displays the resulting frequency response of the equalizer. The frequency is displayed horizontally and the increase or decrease of the respective frequency is displayed vertically.
2. Bullets 1-6 symbolize the six frequency bands. You can move them around with the mouse until you find the frequency response you want. The bandwidth (Q value) can be adjusted using the mouse wheel.
3. The faders under the filter graphic display the parameters of the currently selected band. You can use the knobs to set the values for each band more precisely:
4. **Frequency:** The center frequency of the individual bands can be set between 10 Hz and 24 kHz with the frequency controller. Freely choosing the frequency enables multiple filters to be set to the same frequency in order to have a greater effect.
5. **Gain:** This controller allows you to raise or lower the filter. Setting the controller to 0 deactivates the frequency band so it does not use any processing time.
6. **Q factor:** Here the Q factor (bandwidth) of the individual filters can be set.

7. Band 1 and 6 are special in that they can be operated using three different filter curves.



Peaking: This is the same bell shape used for the center bands.



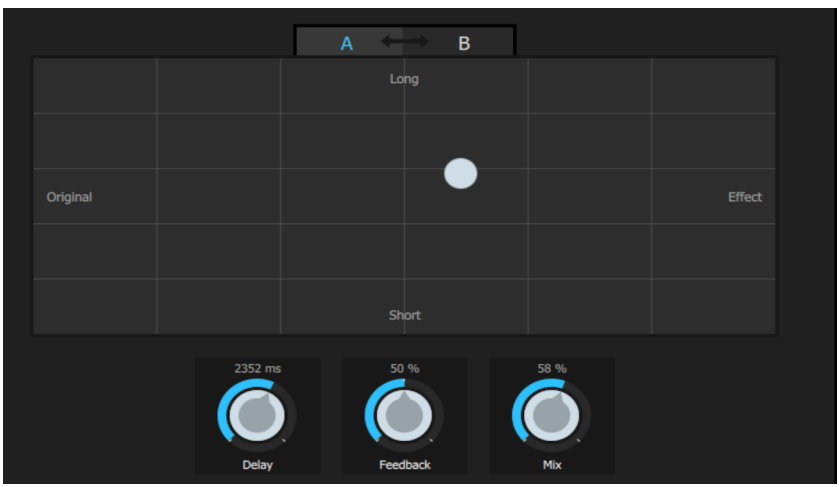
Shelving (basic setting): Starting from the set frequency, there is a gentle increase or decrease in the frequencies.



High-pass and low-pass: Starting from the set frequency, all higher and lower frequencies are filtered out.

8. It is possible to control the output level of the equalizer with the Peak Meter, and with the **output amplification** beside it, you can balance level changes resulting from EQ adjustments.

Echo



This effect creates an echo. This results in the signal being played back with a delay. Since the output signal is sent back to the input of the effect line, the echo repetitions are more or less long.

Delay: This sets the period of time between the individual echoes. The more the control is turned to the left, the faster the echoes will follow each other.

Feedback: This adjusts the strength of the echo. This determines how long the echoes are. If you turn the dial completely to the left, there is no echo at all; if you turn it completely to the right, there are seemingly endless repetitions.

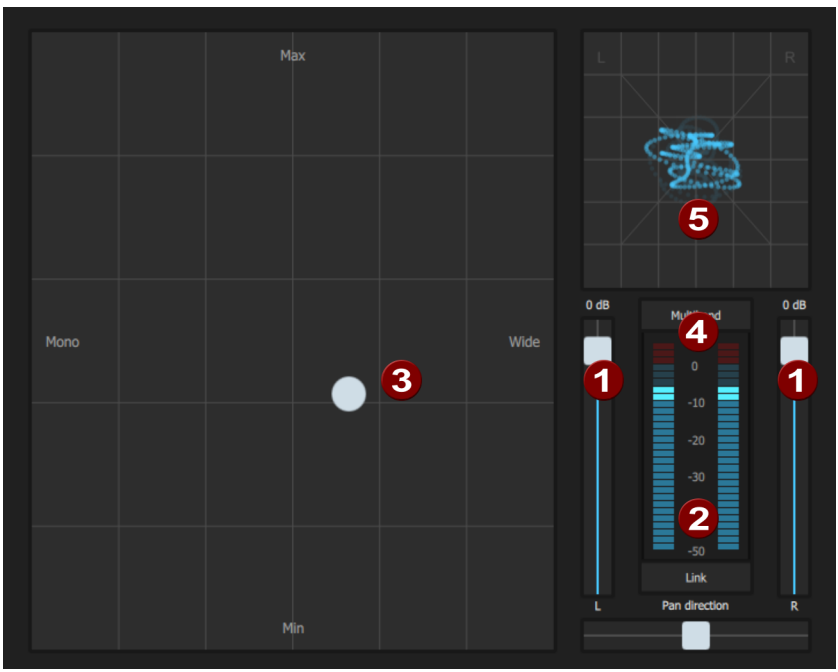
Mix: This fader determines how much of the unprocessed original sound (dry signal) is subjected to the echo (wet signal).

Presets: Presets serve different purposes. In the upper part of the list there are presets that allow the delay time to be set using musical units. This is very useful for adding beat-synced echo to rhythmic material such as drum loops or arpeggios. The other settings can be used for special effects involving very short or very long delay times, e.g. "metallic" or "robotic" sounds. "Simple Echo" can be used to set the echo repetitions between 0 and 4 using the feedback slider.

Stereo Enhancer

With the stereo processor, you can determine the positioning of the audio material in the stereo panorama. If the stereo recordings sound unfocused and undifferentiated, an extension of the stereo base-width can often provide better transparency.

Use the maximize feature to move the echo (e.g. into the foreground) and improve the stereo picture.



1. **Volume controller:** Adjusts the volume of every single channel, thereby adjusting the entire panorama. The reduction of left and right levels is displayed under the control buttons.
2. **Panorama:** Use this controller to move the sound source from the middle into stereo panorama. The signals at the outer edges of the sound picture remain unchanged.

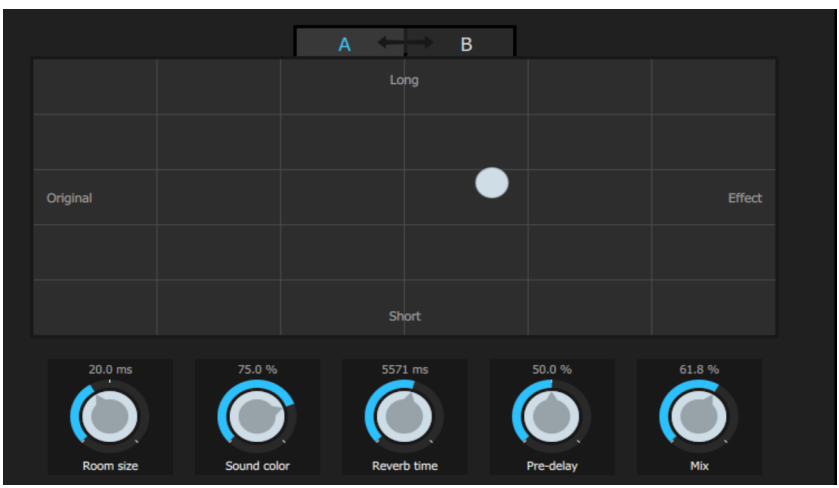
3 **Bandwidth/maximize sensor field**: Adjusts the base width between mono (extreme left), unchanged base width (normal stereo), and maximum base width (wide, extreme right). Raising the base width (values over 100) diminishes the mono compatibility. This means that recordings edited this way sound hollow when listened to in mono.

Maximize strengthens the spatial component of the recording, which also increases the stereo transparency without influencing the mono compatibility.

4 **Multiband:** This can be used to switch Stereo FX to Multiband mode. Stereo editing only applies to the middle frequency, the bass and highs remain unchanged.

5 **Stereo meter (correlation gauge)**: This provides a graphical display of the phasing of the audio signal. You can use it to check the alignment of the signal in the stereo panorama and the effect of the stereo enhancer. To maintain mono-compatibility, the "cloud" shown should always be higher than it is wide.

Reverb



The reverb effect device offers realistic reverb algorithms to add more room depth to your recording. You can control the sound of the reverb effect using the following parameters:

Room size: Defines the size of the room (or the system for the plate and spring). The larger a room, the longer the sound travels between walls or objects. With some low "size" settings you can also reduce the distance between the individual reflections. This allows resonance to develop (accentuated frequency ranges), which can sound oppressive if the reverb sustain is too long.

Tone quality: You may influence the sound characteristics of the effect within certain limits. The effect of this controller depends on the used preset. In rooms, "tone

quality" controls the dampening of the highs in the reverb (from dark to bright) as well as pre-filtering of the signal. With plate and spring presets, this fader determines the dampening of the basses as well.

Reverberation time: With this knob you can adjust the reverberation time and determine how much of it will be absorbed and, simultaneously, the reverb's decay.

Pre-delay: The reverb portion ("Mix") and the early reflections play a big role in the spatial perception of the sound. Here the time required for the perception of the early reflection is know as "Pre-delay". For sound sources that are close, the reverb portion is usually low and the early reflections reach the ear noticeably later than the direct sound. In contrast, sound sources that are far away usually have a high reverb portion and the early reflections reach the ear almost simultaneously with the direct sound. The length of the pre-delay can be used to influence the perceived "distance" between the sound source and the listener.

Mix: This controller sets the mix ratio between the original and the edited signal. For rooms you can move a signal further into the room by increasing the effect share.

Presets: The presets contain basic settings for different room algorithms which can be varied with the parameters above. The presets need to be used in order to achieve all the reverb effect variations.

Fundamentals

Our everyday experience shows that not every room matches every instrument. Thus we have designed “virtual” rooms. However, it still remains important to find the correct parameters. Here are some examples of parameters that are decisive for the sound impression in real and virtual rooms:

- **Size of room:** The larger a room, the longer the sound travels between walls or objects. Our brain “calculates” the size from the time difference. The size impression is mainly determined from so-called first reflections and the discreet echo. We don’t notice a (diffused) reverb.
- The **reverberation time** is mainly influenced by the composition of the walls, ceilings and floors. This reverb time is highly frequency-dependent. For instance, the highs and mids are dampened more in rooms with curtains, carpets, furniture and some corners than in an empty and tiled room.
- **The density of the reflection:** The sequence of the first reflection is particularly important. A room with many individually recognizable echoes feels alive, especially if they are quite far apart.
- **The Diffusion:** Simple reverb machines do not take into account that reflections become more and more complex as they develop. They blur the first echoes at the beginning, which sounds artificial and “two-dimensional” for many signals. Our reverb effect works like a real room instead where individual echoes can still be heard at the beginning of the reverb but then reflect amongst each other more and more until they disappear in the signal sustain as a so-called “diffused hiss”.

The 24 presets include many rooms that were designed for certain instruments and applications and whose internal parameters have been optimized for these applications. However, you can influence most of the characteristics of the room using the provided sliders.

In addition to the rooms we have modeled two device types in the reverb effect that allow you to create an artificial reverb for a longer time: Plate Reverb and Spring Reverb.

Plate Reverb: A plate reverb consists of a large metal plate (often 0.5 to 1m² thick or more), that is put into motion by a magnet and coil system (similar to a loudspeaker). On the reverb plate so-called "taps" are positioned at different locations. These are pick-ups comparable to those on a guitar. Reverb plates have a very dense sound (high diffusion); no direct echo can be heard. They are therefore ideal for percussive metal. With vocals a plate reverb generates a smooth "wellness effect".

Spring Reverb: You probably remember Spring Reverb from guitar and keyboard amps, particularly older ones. At the bottom of these amps a unit consisting of two to four spirals is mounted on a vibration-free carriage. As with the reverb plate it uses systems for transforming the electric signal into a mechanical one. There are different designs and sizes of spring reverb; however, they all have the same quite peculiar sound: the typical "bloing" sound when the springs are moved, similar to splashing. When the reverb dies away the basic pitch of the spring(s) can usually be heard quite clearly. Furthermore, the frequency range is considerably limited due to the losses in the spirals and in the used pick-up/transmitter. Despite this, the sound is special and some of the latest music styles (e.g. dub & reggae) would hardly be possible without spring reverb.

Presets

The presets are primarily sorted by instruments; however, you can (and should) choose which preset you want to use for which instrument. The rooms in particular have completely different characteristics which are noticeable for some and more subtle for others. Generally we recommend reverb with many individually audible reflections and slight diffusions for dense projects. On the other hand you can use Plate Reverb for minimally arranged songs in order to create a dense atmosphere.

However, you should avoid adding reverb to too many instruments. Sometimes some extra mixing is sufficient to move an instrument slightly away from the total sound. It is often recommendable to adjust the sustain to the song tempo, i.e. the faster the track, the shorter the reverb. Otherwise the sound easily sounds washed-out and indifferent.

Here is a list of the presets and their characteristics:

Drums and percussion

Drums: Studio A: small room, high diffusion, e.g. for percussion instruments

Drums: Studio B: slightly larger & more lively than A, medium diffusion, distinct first reflections, signals seem closer than A

Drums: Medium-sized room: medium-sized room, moderate reverb, medium diffusion, relatively few first reflections

Drums: empty hall: medium-sized empty hall, medium diffusion

Drums: Snare reverb plate A: plate reverb, high diffusion, relatively bright sound character, typical hissing of a reverb plate.

Drums: Snare reverb plate B: reverb plate, high diffusion, slight dampening of highs & basses, sound moves more to mids with time, stereo panorama narrower than for A

Vocals

Voice: main hall A: standard hall, e.g. for monitoring/recording, medium-sized room, medium diffusion, minimum sustain time

Voice: main hall B: like A, but as a small hall (longer delay times than A), distinct reflection pattern, longer reverb time

Voice: early reflections: medium-sized room, low reverberation share, very distinct early reflection pattern, e.g. for spreading vocals

Voice: warmer room: small, intimate room, dark character

Voice: studio reverb plate A: reverb plate with medium diffusion, slight dark adjustment, comprehensive sound characteristics

Voice: studio reverb plate B: Like A, but more diffusion and bright to medium sound adjustment, slight vintage character

Voice: large hall: large hall, medium diffusion, relatively long reverb time

Voice: cathedral: delayed attack, slight diffusion, complex echo pattern, some hard reflections, dark voice adjustment, long reverb sustain

Guitar

Guitar: Spring reverb mono A: spring reverb simulation, typical oscillating sound of the springs, limited frequency range

Guitar: Spring reverb mono B: Like A, slightly broader frequency range, greater diffusion

Guitar: Spring hall stereo A: similar to spring hall mono A, but one spring/transmission system per channel (L/R)As a result of the mechanical interlinking of the systems, the reverberations meet at the middle of the stereo field

Guitar: Spring reverb stereo B: Like stereo A, slightly broader frequency range, greater diffusion

Keys (Piano, Synthesizer)

Keys: Stage reverb: Larger room with stage, high amount of complex first reflections, slightly delayed attack, medium reverberation

Keys: piano reverb: concert hall, long reverberation, medium diffusion, minimum dark adjustment

Aux (to be used as a send effect in a mixer FX track)

Aux: Room: Standard room for the aux path, mix 100%, medium-sized, medium diffusion, some distinct first reflections, low reverberation

Aux: Hall: Medium-sized hall (100% wet), medium diffusion, short reverberation

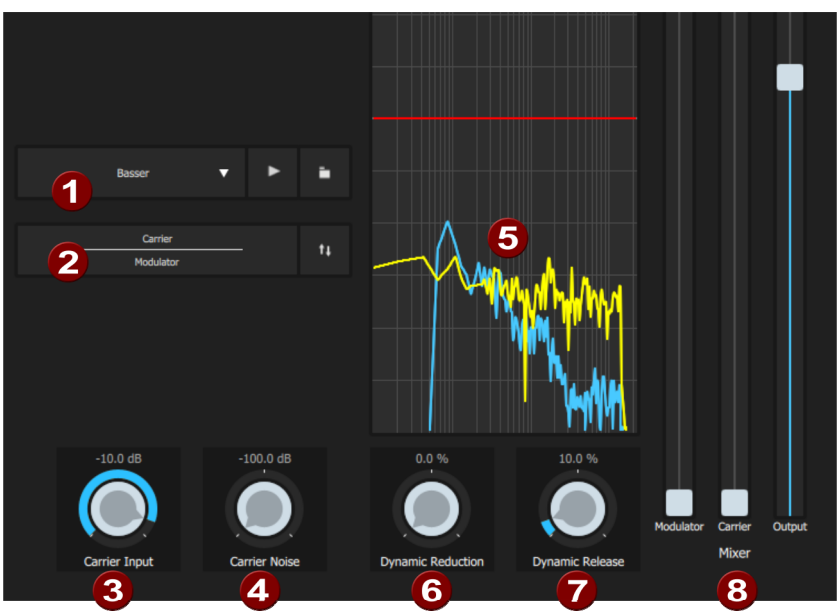
Aux: Reverb plate: Reverb plate (100% wet), high diffusion, light bright adjustment

Aux: Spring reverb: Reverb spring (100% wet), stereo, high diffusion, slightly medium sound characteristics

Vocoder

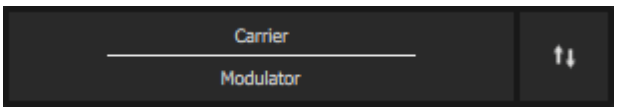
The vocoder works as follows: Carrier material (e.g. a string instrument pad or synth chord) is affected by a modulator (e.g. language or singing) to give the impression that the pad sound is “speaking” or “singing”. In addition, rhythmic pads can be created by modulating an area with a drum loop.

This works by transmitting the modulator's frequency characteristics (language) to the carrier (chord).



1 

Select the carrier signal for the vocoder here. Click the arrow button to select one of the predefined carrier samples in the list field. The carrier sample can be previewed via the small "Play" button. Another carrier sample can be loaded via the folder icon.

2 

By clicking the double-arrow button you can swap carrier and modulator signal. The object's audio signal will then be modulated by the selected sample or track signal.

3 Set carrier signal volume with the "**Carrier input**" in the middle.

4 Material containing all frequencies in equal amounts, such as strings, orchestra chords, broad synthesizer pads, hissing or wind noise, are particularly suitable for carrier samples. If this is not enough, additional white noise can be mixed into the carrier signal with the "**Carrier Noise**" fader to improve speech clarity.

5 **Filter graphic:** Here you can draw any frequency progression you want with the red line in order to optimize the vocoder output. For example, you can get rid of disruptive bass frequencies by adjusting the curve downward in the left area. Or you can boost weak highs by adjusting the curve upward in the right area. The yellow line shows the frequency curve without filters, the blue line the frequency curve with filters.

6 **Dynamic Reduction:** Influences the dynamics of the modulator signal to reduce the modulation depth of the vocoder. This prevents two often undesired side effects of modulation. On the one hand the volume change of the modulator signal is added to the output signal in a slightly more moderate form, which may improve the power of the Vocoder voice. On the other hand, the low-level portions of the modulator signal are ignored in order to prevent modulation of the carrier by breathing or noise.

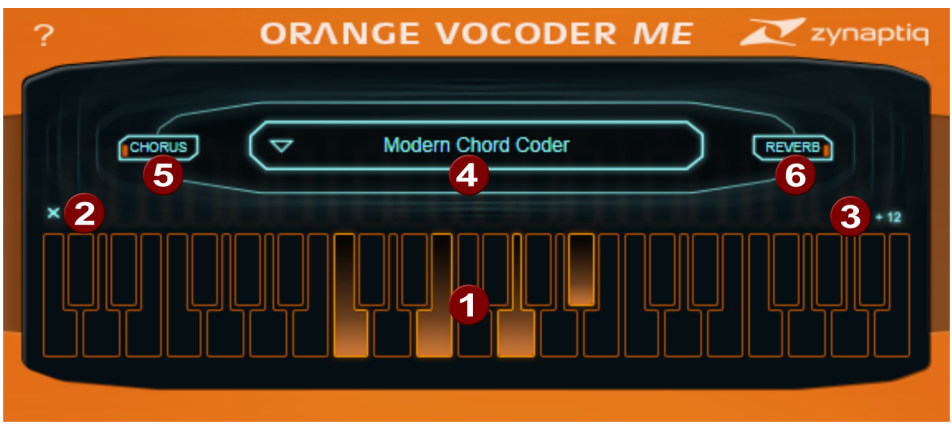
7 **Dynamic Release:** Influences the speed of adjusting the vocoder to the modulator spectrum. As this value increases the vocoder starts to follow the modulator more slowly resulting in softer, reverberated sound changes in the carriers.

8 In the **Mixer** you can also mix parts of the carrier and modulator signal to the vocoder output signal. If the output signal of a track is used as a carrier in the vocoder, this track will first be muted. In the vocoder mixer you can then make it audible again.

Orange Vocoder ME

The Orange Vocoder MAGIX Edition from zynaptiq is a resurrected form of the legendary Prosoniq Orange Vocoder and is available exclusively for MAGIX as a limited ME version for PC. What you get is the best-sounding software emulation of an analog vocoder available on the market.

A vocoder analyzes the frequency components of an input signal (modulator) and uses this to modulate a carrier signal. What this means is that the sound of the carrier signal is filtered using a number of bandpass filters so that the frequencies are either strengthened or weakened according to the frequency distribution in the modulator. For example, you could use a human voice as a modulator signal in order to make a synthesizer (the carrier signal) talk. Additionally, rhythmic pads can be created by modulating an area with a drum loop.



In the Orange Vocoder, the carrier signal is generated with a synthesizer. You can set the notes for the carrier signal via the keyboard (**1**). The x to the left (**2**) deactivates all the keys. +12 (**3**) makes the synthesizer sound an octave higher.

The drop-down menu in the center (**4**) can be used to select a preset for the sound of the vocoder. Eight presets come included. You can purchase an additional two sets containing 25 presets each in the MAGIX Shop.

The sound of the vocoder can be further refined using chorus (**5**) and reverb (**6**).

Tip: You can play different chords with the Orange Vocoder ME by loading it as an object effect on your vocal sample. Then, split the object at the chord changes and use the vocoder keyboard to set the chords you want in each object.

MAGIX Mastering Suite

MAGIX Mastering Suite is a special effects rack for use with the mixer master channel. The effects in the Mastering Suite are used as part of the mastering process, in which the mixed music piece is given a final polishing.

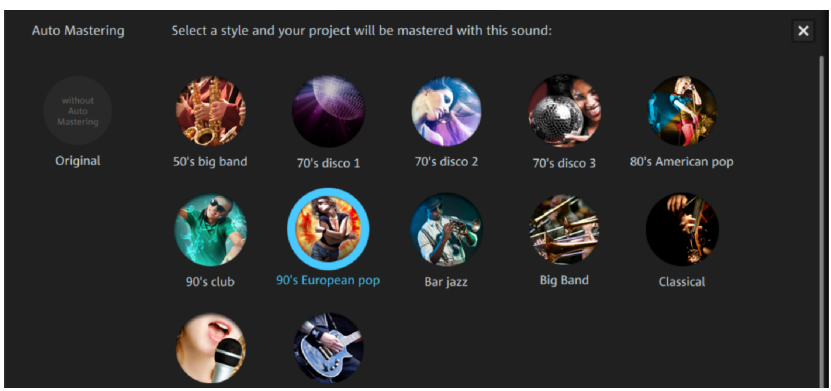


The **On/Off switches** switch the effects on and off individually or the Mastering Suite as a whole.

Automastering

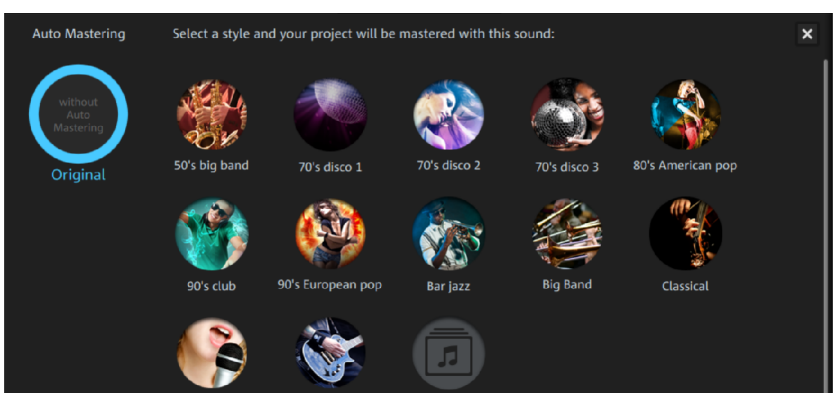
The Auto Mastering feature enables you to automatically apply the sound of typical musical styles from the past and present (e.g. 70s disco, 90s club, jazz etc.). The sound of the source material is analyzed and appropriate equalizer and dynamic effects are applied.

Now choose the musical style.



Samplitude Music Studio will analyze the audio material in the project.

The Auto Mastering results will be played back immediately. You can now click through the different styles to compare them.



Selecting "Original" allows you to compare the edited version with the original.

You can also create your own styles. Select any type of audio file as a template in "Load & Analyze" if you want to emulate its sound. Formats such as MP3 or OGG are converted beforehand into WAV format. After the analysis, your new style is available in the selection list.

Stereo processor / parametric EQ

The stereo processor (view page 105) and the parametric EQ (view page 102) in the Mastering Suite are identical to those in the FX rack for objects, tracks and the master.

MultiMax



MultiMax is a compressor with three independent frequency bands. The dynamics editing is carried out separately for each band.

The advantage of a multi-band compressor in comparison to a "normal" compressor is that the "pumping" tendency and other disturbing side effects are dramatically reduced during dynamics editing. For instance, it can prevent a bass level peak from "dragging down" the entire signal.

Multiband technology also lets you specifically edit individual frequency ranges.

Setting the frequency bands: The settings of the frequency bands are changed directly via the graphic. Simply click on the separator lines and move them.

Bass/mid/high: These knob controllers define the level of compression for each frequency band.

Link bands: When this button is activated and one fader is adjusted, all faders are changed in the same ratio. However, the way the dynamics are edited is not affected.

Presets: In MultiMax, you can use the presets to open 2 further special functions:

- **Cassette NR-B decoder**: Samplitude Music Studio simulates decoding of Dolby B + C noise reduction if a Dolby player is not available. Cassettes recorded with Dolby B or C sound more muffled and slurry if played back without corresponding Dolby.
- **De-Esser:** These special presets help to remove overstressed hissing sounds from speech recordings.

Analogue Modelling Suite AM-Track SE



AM-Track SE is a purely analog compressor simulation. The tape simulation contained in the full version (Analog Modeling Suite AM-Track) is not included. This is used primarily for so-called "tracking", i.e. editing individual channel strips or subgroup signals. The compression takes place in the "vintage" setting, whereas an additional "vca" setting is available in the full version. The plug-in recognizes the number of incoming signals and, if necessary, edits the signal in mono.

Am-Track SE limitations compared to the full version:

- No tape simulation
- No "VCA" mode in the compressor, only "Vintage" operation can be implemented along with the presets.
- Some expert compression settings (view page 120) are integrated in the interface, parameters: "ahead" (pre-delay) and "adapt release" (switchable release automation) are missing.

(Release automation is always activated in the SE version which corresponds to the set value of the mid position of the 'capacity' controller.)

Below, the full version of AM-Track is explained and its features compared to "normal" software compressors and the available parameters.

Compressor Section

Two completely different compressors work in AM-Track, each with their own independent control and sound methods.

You may be wondering why we mention sound when talking about a compressor, since compressors merely relate to control actions. This isn't as simple as the idea of "making loud quiet".

Various designs, algorithms, and topologies for solving the actual problem (dynamic reduction), which all have their own unique character, have come from the history of analog and digital signal processing. For example, pre-filtering in the detector circle and the type of detection have a large influence on the audio results. Plenty of hardware compressors have the same established VCAs (voltage controlled amplifier), but they all sound different and influence a signal, an entire production (or even a genre) with their "signature sound". We intend to provide you with acoustic variation via these dynamic tools in the digital world.

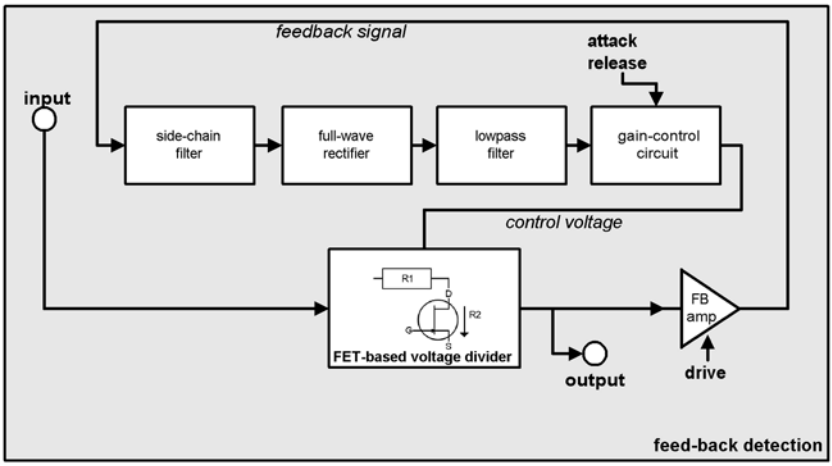
The two operating modes of the AM-Track may be selected using the switch "vca/vintage":

VINTAGE mode



This mode appears as a preset on start-up of the AM-track. It has fewer parameters than the VCA mode and has audibly less of a "surgical" quality, but more of a trimmed sound character.

"Vintage" mode simulates a circuit design from the time when VCAs were not yet or could not be fully implemented. Instead, a FET (field effect transistor) was often used as a controllable resistor. Together with constant resistance at the circuit's gate, this forms a so-called voltage splitter, which is to say it forms a resistance change at the FET (caused by a change in voltage at its gate) which results in a damping of the input signal. A very simple detector circuit is used to activate the FET which obtains its signal from the output of the compressor (behind the whole control circuit). For older designs, this feedback loop provides a stabilization of the work parameters and is one of the decisive factors for the often quoted soft and musical compression of exponents of this design, e.g. the Urei 1176 or 1178. The control circuit sees the layout of its previous work and oscillates to the signal.



The disadvantage is that the set time parameters for attack and release depend somewhat on the program. In some cases, it's actually advantageous for vocals, bass, or even drums (e.g. subgroup, ambience, mics). You should rely completely on your ear for this.

Because of the feedback topology, the maximum gain reduction is usually lower than VCA devices with forwards detection, usually 20 dB. This way, there is almost always a level matching amplifier in the feedback loop. The "drive" controller of the AM-Track regulates the feedback amplification here. This can be so high that the detector may become saturated by a loud input signal, resulting in signal peaks being swallowed up. Simultaneously, the setting becomes more intense as quieter signals also start reaching the threshold. You can creatively implement this according to the situation to create complex signal compression which doesn't much sound like dynamic compression due to the transients that slip through and release at high "drive" levels.

The stated release of the signal, technically known as a ratio reduction, is also caused by the centerpiece of the circuitry: the FET. Level reduction works entirely as a function of its characteristic curve, resulting from the non-linear behavior of this element. The FET virtually comprises part of the input resistance of the compressor circuit. As a result, the input/output response curve does not create a plateau when "drive" is high, which would be the case for a reference line featuring a high ratio or even limiting. A saturated FET may no longer complete the job it was marked out to do, i.e. to keep its output at low Ohmic values. Once again, signal peaks pass through the entire circuit unaffected, but the average level could be severely compressed. From a technical point of view, the control process appears incomplete, but sounds pleasantly open and airy depending on its application.

The entire detection is dependent on the spectral balance in the virtual AM-track circuit, the highs are automatically compressed less so that even extreme settings sound less flat and more lively.

It's the same story with deep bass. On closer listening, you'll find that with strong compression the signal still retains its power which would otherwise be lost if the envelope were to follow shortly afterwards.

"Vintage" mode has another feature to offer: At the output of the compressor in the signal path, an emulation of a transformer-coupled matching-level amplifier can be found. This contributes to some subtle, non-linear distortions at high levels, but is very much frequency-dependent.

VCA Mode

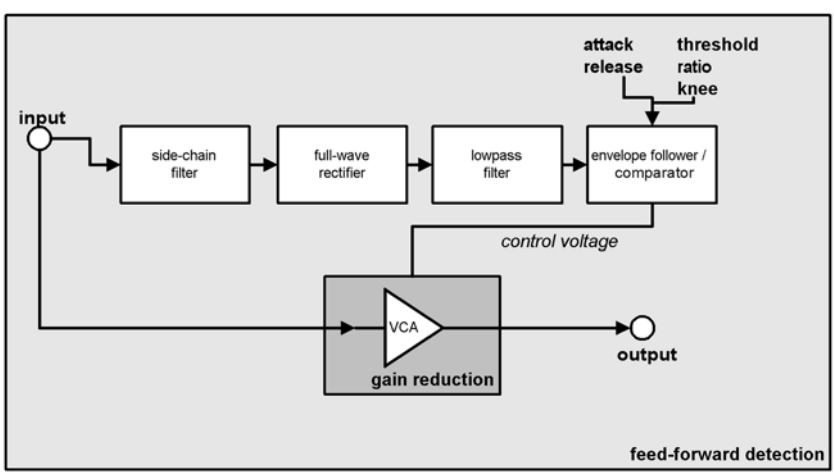


In VCA mode, the parameter selection and the circuitry design correspond to a modern compressor with a VCA element as the control circuit and a forward automatic gain control in the detector section ("feed-forward design", i.e. the controlling signal for level reduction is taken from the input signal).

The typical basic sound for this category is accurate, largely neutral and, in relation to the adjustable parameters, easily predictable.

In VCA mode, the control signal is accessed at the input where it firstly executes a controllable low-cut (which may be set up via "detector hp freq" in "Expert" mode). The filter makes sure that deep-frequency signals have less influence on the adjustment settings; this is a popular trick for more power, e.g., when using drums in a sub-group.

The filtered signal then arrives at the detector. With the forward gain control, previously set parameters apply fully and affect the adjustment settings immediately.



In contrast to this, there is a "feedback" method which provides a second compressor mode.

Compression Parameters

Vintage Mode

In this mode, you can intuitively (by ear) use the dynamic editing features with just three knobs. Do whatever you want, but keep in mind: less is sometimes more...

- **Drive**: You can use the "drive" potentiometer to control the amplification factor in the feedback loop, i.e. the signal strength which the detection circuit calculates. Furthermore, the internal "ratio" changes within a limit, the more "drive" there is, the higher the compression ratio.
- **Attack** and **release**: The same basic conditions as VCA mode apply here. However, not only do you change the actual control response time after detection, but the "temporal window" in the detector must be adjusted as well. Additionally, the feedback method does cause a certain amount of unpredictability. You should expect less control over the device in this mode, but more leniency on its part.

VCA Mode

The regular set of parameters of dynamic compressors is available in this mode:

- **Threshold:** The threshold above which dynamic reduction begins.
- Check the threshold display if necessary (**thr**): If the input signal reaches the set threshold, the blue dash will move around the arrow symbols. If this dash moves upwards, the threshold is below the average level and compression is active. Inversely, if the dash moves below the marking, the input signal becomes too quiet to be able to reach the threshold; compression will be applied.
- **Ratio**: This ratio (1:n) specifies by which factor the signal should be reduced once the threshold has been reached. For example, if the threshold is set to -20 dB and the ratio to 1:4, an input signal of -10 dB will only be amplified by 2.5 dB (10 dB : 4 = 2.5 dB).
- **Attack**: This is the response time, e.g. how long the project takes to execute the required level reduction. Short attack times intercept level peaks, and longer ones let them through unimpeded (compression only starts past this value).
- **Release**: This is the time allocated to the circuit to reach the normal amplification factor.

Note on attack & release: In general, short attacks are used for moderate compression and making the transient response softer; longer times retain the "bite" of a specific instrument at larger compression rates or make the sound a bit snappier. With more difficult sources, like a very dynamic vocal track (ballads), for example, you can use a longer attack so that the project runs more smoothly and quietly; the release time may be trimmed audibly to match the pauses or the song speed.

Shorter release time may be used for modern, aggressive "close up" vocals, e.g. when breathing sounds are an important stylistic device and the voice should sound very full and compact.

- **Knee**: Use this parameter to specify the shape of the characteristic around the threshold. A "hard knee" means that the transition of 1:1 amplification for level reduction occurs abruptly; a "soft knee" on the other hand starts much lower than the threshold and moves the characteristic softly into the reduction. A "hard" setting is useful for effect-filled, acoustic compression, e.g. individual drum tracks. A softer setting is useful for complex and sensitive sources like guitars, pianos, or vocals. The more complex the signal, the easier it will be to notice a difference. For less sensitive sources, this parameter is usually less important. Note that for "soft knee" settings, the "threshold" value will need to be re-adjusted, since the compression starts at a much lower level.

Compression Expert Settings

Of course, you can efficiently compress a lot of data with AM-Track without having to press the "**Expert**" button or try out additional options. However, we have added a few "handy" parameters behind the front panel. This applies equally to both compression modes.



- **Look ahead**: AM-Track is always ahead of the signal. You can specify how many milliseconds you want to "look ahead". The audio signal path is delayed according to the signal route so that the detection circuit is fed first with the input signal (so-called "look-ahead delay"). You can increase the attack time and still avoid fast peaks. The latency compensation in the host program ensures that other tracks in the project are adjusted and that no time delay occurs. For percussive signals, you can even set the delay all the way to "0".
- **Detector hp filter**: This high-cut filter is positioned before the two compressors' detection circuit. You can use it to specifically exclude basses and mids from these rules. Complex signals with bass and hi information like a subgroup or complete mixdown produce fewer "pumping" artifacts. This is because low-frequency signals feature the most power and therefore always trigger regulation and modulate other frequency ranges in the volume
- **Auto makeup gain**: Normally, you have to continuously adjust level reduction to generate "compression" at the same maximum level. This is done by activating auto makeup gain. The volume difference expected from the set working parameters is determined and applied as an output factor after master regulation. If you prefer to adjust the "classic" level reduction and amplification manually, you can deactivate this function.
- **Adaptive release**: This is "semi-automatic", i.e. you can roughly adjust the release time, and AM-Track reduces it according to the current signal power from "a little (1%)" to "considerably slower (100%)". In "Vintage" mode, this regulation method is particularly intense, since it affects the feedback loop

process. For instance, if you are editing vocal tracks or dense, complex material, it can sound "calmer" or more "musical" if adaptive release is activated.

- **Capacity**: Adjusting the "capacity" controller sets the time response of the "adaptive release". The greater the capacity, the more sluggish the release adjustment. You can therefore influence larger parts of the compensation response. For instance, if you want to use vocals that have been "moved forward", you should use a short release time (maybe 80-100 ms) and a greater value for semi-automatic (e.g. 80). Vice versa, you can reduce automatic feed by switching the relation (smaller capacity, generally greater release time).
- **Comp mix**: Parallel compression is a popular "studio trick", particularly with complex material. Adding the original signal retains the transients and spectral balance of the source. You can add compression by turning the mix controller. A mixed signal is particularly discreet, more transparent, and less "squishy" with vocals, whereby the compressed portion usually has a higher level reduction than without adding the original.

Vandal SE



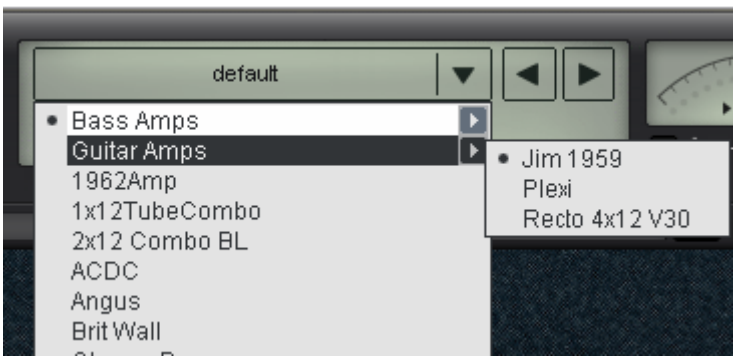
Virtual Guitar & Bass Amplification

VANDAL is a complete simulation suite for guitarists and bassists. The plug-in is capable of simulating the entire signal chain, from input to stomp boxes, amplifiers, microphone loudspeaker boxes and post-processing studio effects, all in top quality.

Quick start via preset selection

Would you like to know about everything that's possible with Vandal SE? Play yourself or use some of the presets. These are available via the list in the upper edge of the interface.

A preset includes all settings for the main elements of Vandal SE: Stomps, amp settings, cabinet simulation, and studio effects.



Tuner

The best amp or the best simulation is useless if the guitar is out of tune. VANDAL offers its own chromatic tuning device for this. You can use it like any analog device: It automatically displays the note that has been struck (in octave) and the display visualizes deviations (in cents).



The following describes the major components of VANDAL. The stations are described according to their position in the signal chain.

Input

The station that you will most likely want to activate first is the input controller. Just like with a genuine guitar or bass setup, it's important to ensure the highest possible input level, in order to work optimally. This is even more important for distorted sounds and natural high-gain playing styles. Use metering for this, too.
As required, activate the noise gate and adjust it so that it lightly suppresses the input signal during pauses in playing. VANDAL does not cut the input on classic gates too hard, but rather regulates them finely via the signal energy beginning at the highs (where noise is most audible).



Stomp boxes

The real world has produced a series of effect devices popular with guitarists and bassists in the "stomp box" format. We've also included a rich palette of these devices. Vandal SE includes four "stomp slots" that can be equipped with effects from the list. The signal flow within this chain runs from left to right. Since all of the controls are self-explanatory, we won't describe them here.



Vandal - Amplifier

Vandal SE basically offers 2 different amplifiers: Guitar Amp and Bass Amp. The amplifier type depends on the selected preset.

During development, a large selection of famous amplifier brands and models were not included. To guarantee that you are nevertheless able to get a number of different sound characteristics out of your Vandal SE amp, the amplifiers are set up variably. Internally, circuit designs work absolutely the same as the real devices. In several ways, however, Vandal SE goes in its own direction in terms of the sound it offers.

Guitar amp

The Vandal SE guitar amp offers three different pre-amp modes and two switchable end stage models. These basic configurations differ according to the selected preset.

The guitar amp is set up with three channels. These may be set up with the pre and post gain controllers per channel (**Clean**, **Crunch**, and **Lead**) for the desired mix ratio. Don't worry about switching things around: The amplifier will remember the gain settings when channels are changed. These are the gain presets for the different playing styles within a song.



Voicing: We have provided Vandal SE pre-amps with something that we call Curve EQ. For example, if you take a simple EQ pedal and shape the signal a little before the amp, then this may change the sound quite drastically. Curve EQ does something similar: It's located (in some cases multiply) at strategically important points between individual amplifier stages and filters the signal, before it is distorted by the next stage. Move the curve in both directions and navigate through the spectrum using the "Freq" controller. This will give the amp a completely different character...

Equalization: The actual sound control (the "tone stack") functions rather conventionally: Vandal SE offers low, mid & high settings. Everything functions like the passive sound regulation network in genuine amps, so that the controllers influence each other to produce numerous variations.

Reverb: Surf and twang simply need on-board spring reverb. We relied on well-known reverb springs for modeling. Everything sounds natural with complete authenticity.

Bass amp



After roughly setting the **Gain controller**, the bass signal will first be treated with the **Contour** circuit. This filtering stage works similarly to the "Loudness" function by cutting the (lower) mids and lifting the deep bass and highs. It's sort of like an "instant slap".

Next, the signal passes through the compressor stage **(Comp)**. This is a simple but extremely musical, visual design: The bass triggers a light source that is coupled with a photo resistor which dampens the signal. This may already be familiar to you from the most famous studio compressor for bassists, i.e. Urei LA2A, which functions according to the same principle.

After any possible compression, **Drive** provides the option to take the bass sound to the next level. Saturating the signal takes place depending on the frequency: In spite of a possibly high level of distortion, the basses remain relatively clean and contoured.

The equalization stage offers 4 frequency ranges, whereby the two mid bands are variable. The final master volume controller specifies the volume of the final stage. As with the guitar amp, the end tubes are also engaged in this case as much as remains sensible.

Rack effects (FX1/FX2)

There are effects that don't always work well before the amp, e.g. reverb or delay, especially when they are distorted. Normally, these effects are better placed at the end of the signal chain.

For final processing and enriching, we offer two separate studio-quality effects units just like real 19" rack devices.

Many algorithms create a stereo signal. Take care that the sequencer track operates the duct in "stereo" mode.



Effects units may be selectively operated one behind the other (serial) or parallel. Switching may be changed via the mode switch.

The following algorithms & effects are available:

- **Mono delay** (msec & tempo sync): Possibly a simple delay with free selection of delay time or synched to the sequencer tempo with a musical raster. In case of high feedback values, a reduction of the damping frequency is required to provide naturalness to echoes.
- **Stereo delay** (msec & tempo sync): Like mono delay; features two models. Repetitions may take place on separate channels (feedback controller to the right: dual delay) or in ping-pong mode (controller to the left), whereby the signal alternates between the sides.
- **Chorus:** Produces a typical "floating/shimmering sound" by modulated detuning of a signal to "thicken up" its sound or spread it across the stereo field. Detuning is achieved by a short delay, the length of which can be varied by the modulation. This produces the so-called "Doppler" effect and broadens the signal.
- **Flanger:** Algorithmically similar to chorus, but different in that the delay time is significantly lower and delay works with repetitions (feedback). A flanger sounds more "cutting" and up-front than a chorus.
- **Phaser:** A modulation effect just like chorus & flanger, but in this case no detuning takes place. Filter components periodically alter the signal's "phase response" (principle of the "phase shifter"). Characteristic notches are produced in the frequency spectrum response (comb filter effects).
- **Room reverb/hall reverb:** Reverb offers realistic simulation of realistic reverberation. **Room** creates the impression of a small to mid-sized recording room, while **Hall** produces the sound impression of a concert hall. A particular is

that both effects algorithms provide a **modulation** parameter, which may remove possible resonance at low dosages and can produce a soft chorus effect at higher values.

- **LoFi:** This algorithm gives the sound a little bit of "grit", or a certain measure of signal destruction depending on its setting. Turn down the internal sample rate as much as you like to steal a few bits from the sound's resolution. This is definitely unconventional...
- **Vintage compressor:** Ideal for thickening up the signal a little. The algorithm emulates an older popular circuit design that is similar to studio legends like the Urei 1176 or simple compressor pedals. A so-called "FET building block" controls the volume via the input level simply, effectively, and quite musically, as well as the set compression ratio and the attack and release.
- **3-band EQ:** This sound controller works like a conventional mixer with controller for bass, highs, and two controllers for the (variable) mids. This adds the final polish to your sound.

Vintage Effects Suite (track effects, mixer channels, mix master)

The following options are available for launching the "Vintage Effects Suite":

- "Effects" menu
- "Track" menu > "More" > "Track effects"
- Track Editor (plug-in section)
- Mixer (insert section of the channels and in the master section)

Filter



"Filter" is a "modulation" effect like chorus and flanger. However, it controls the frequency response of a modulation source as well as the pitch. There are various filter types and modulation sizes available for this.

Possible areas of application are synthesizer sounds (filter sweeps on pads) or creative distortions of drumloops (e.g. for variations, fills, etc). With guitars you can create typical 'wah' effects: either by tempo modulation or in a special mode, modulation via the envelope curve. The decisive factor is the current signal strength above the frequency set for the filter.

Filter parameters

Speed: The modulation speed is set by note values ranging from 1/1 to 1/16 (even or dotted). Similar to analog delay, the tempo information is automatically provided by the project.

A peculiarity of the final position of the controller: 

Tempo synchronization stops and modulation is controlled via the signal level.

Freq: This is the base frequency for modulating the filter, and generally takes place above this frequency, i.e. the modulation increases the filter frequency.

Depth: This control determines the modulation depth, i.e. the amount by which the speed control (or envelope mode, as described above) increases the base frequency. For extreme effects, turn “Freq” all the way to the left and “Depth” all the way to the right.

Filter modes

Low-pass 
A filter with a slope of 24 dB/octave and a small amount of resonance. The treble frequencies above the base frequency (cut-off frequency) are filtered steeply. This is great for filter sweeps on synth pads and drum loops.

Band-pass 
Only the frequencies around the base frequency are passed through the filter (24 dB slope with resonance). Use this mode to create wah-wah effects for guitars.

Band elimination („Notch-Filter") 
Two parallel filters (–36 dB) with linked base frequencies create two ‘notches’ in the frequency spectrum. This allows you to create interesting sounds (e.g. guitar chords), and it sounds similar to a phaser.

High-pass 
This mode achieves the opposite effect to the low-pass filter. Frequencies below the base frequency are filtered steeply. If you ‘thin out’ sections of your track (for example, a drum track) with a tempo-based modulation, this can sound very effective when contrasted with the full-range frequency spectrum (for example, if the filter is turned off for the next object).

Analog Delay



This delay offers creative playing along with common delay effects. "Analog" in this case means, for instance, that you can change the delay times while playing without the risk of typical, scratching artefacts developing. Instead, the times are softly faded out, similar to the old tape echo machines that used the tape speed to change the delay and where the system also had a certain sluggishness.

"analog" in terms of this delay also means that typical tape echo sounds can be mimicked, e.g. tape speed fluctuations and reduced highs during playback ("feedback"). The feedback has a two-band filter that can be used to create dark, high, or mid repetitions depending on the settings.

These properties can be useful, for example to create "wild" dub/reggae-style delays that move towards the center of the sound with each repetition and even grind slightly. In this case, "analog" means that you cannot digitally overdrive the delay. Even in a 'looped' repetition, the signal cannot be distorted indefinitely, but it is compressed by an increasingly slight degree and distorted similar to a tape.

Analog delay parameter

Analog delay has the following parameters:

Delay type

Delay type (l + r): Left and right delay times can be controlled separately (see below). You can choose a note value for the control pots to snap to. Even and syncopated note values from 1/2 to 1/32 are available. Note that the delay times are always in relation to the project's current tempo.

Link button (lock symbol): Press this button to control the "delay type" pots for both channels simultaneously.

Mix: Adjusts the ration between the original signal and the echo.

Modulation

Speed: The tape warble speed. Low values result in very light fluctuations, high values result in drastic warbling.

Depth: The warble intensity. When this control is turned all the way to the left, there is no pitch modulation. For a subtle "analog" feel, we recommend a setting between the 9 and 11 o'clock position.

Filter

"Low"  This control progressively reduces the bass frequency as it is turned to the right, making the signal sound "thinner".

"High"  Once turned all the way to the right, the control only attenuates the treble very lightly; turned completely to the left, the delay repetitions become progressively less treble.

Feedback

Width: This controls the stereo width of the delay repetitions. When you turn "Width" to the right, an additional effect is produced: the panning of the delays increases. This is commonly referred to as a "ping-pong" delay.

Drive: When this control is turned all the way to the left, the delayed signal is repeated only once. Turned all the way to the right, the feedback is seemingly endless and the repetitions continue for a long time.

The actual strength of the effect is dependent on the material, since the feedback loop (as explained earlier) is addressed via compression and uses a "tape saturation" effect. If you send a "loud" signal to the delay, then the feedback will sound longer than at a lower level as compression "brings it up" to a certain level. If you are used to "purely digital" delays, then this might take some getting used to, but it will probably sound "livelier".

Distortion



The distortion pedal is a "high gain" distorter for crunch and lead guitar sounds. If you like typically "British" amp sounds and want to quickly record a guitar track with little effort, this pedal is for you.

An entire valve pre-amp circuit has been modeled, including the typical EQ curve. The amplification is "valve-typical", i.e. it doesn't start quickly but is harmonic and soft. Even at full power the pedal still reacts softly to a guitar and its settings (e.g. pick-up choice and tone controller). For instance, you can influence the distortion even more by using the volume knob on the guitar.

There are only three parameters on this effect; however, these interact with each other and can thus generate quite a variable sound:

- **Low:** The "bass" controller. This allows you to set the share of basses, even after the distortion. The type of prefiltering is important for guitar amps in particular, and is characteristic for the basic sound. You should set the bass controller depending on the basic sound of the guitar and the sound you are aiming for ("powerful" or "cut").
- **High:** Mainly controls the share of highs before and after the distortion. If you are not using an external guitar speaker as a monitor, we recommend setting the controller to the middle position or even moving it slightly to the right. This way the "sharp" highs disappear, which all guitar amps generate without the suitable loudspeaker. At the same time the mids stand out more, which gives the sound more "kick". On the other hand you can further emphasize the highs if you want the sound to be more neutral.
- **Drive:** The level of distortion. This controls the amplification used to operate the "virtual valve circuit" (max. 60 dB). As the level increases, the valve goes into overdrive and generates typical distortions. For a slightly distorted sound ("crunch"), it's sufficient to set the controller to 10-11 hours at maximum; the modeled circuit also provides the usual "weight" for power rock chords, and more. The further you turn this controller to the right, the more the mids of the signal move to the fore so that the "high-gain" lead sound is better heard.

You can also use the distortion effect in combination with the amp simulation!

BitMachine



Audio material can always be edited into high quality with Samplitude Music Studio. Nevertheless, there are some situations, for example, a more imperfect lo-fi sound would perfectly suit a drum loop or a synthesizer sound.

Remember, for example, the first hardware samplers from the 80s that usually only ran at 8 or 12-bit rates and at low sample rates. With the BitMachine, changing the sound with such an "antique" device is no problem.

You can use the BitMachine to bring back to life the times when minimalist and scratchy soundchips in home computers were commonplace.

The BitMachine opens up a gateway to "acoustic time travel" where you can encounter bit and sample rate reduction and downstream filters based on analog models.

Furthermore, the effect has a modulation section with which you can control individual parameters using an oscillator (LFO) or the input signal.

We have designed a range of "typical" presets to demonstrate the time travel abilities of the BitMachine. These can be opened at the top right of the interface

The following section describes the details of BitMachine:

"Filter" section

The filter in the BitMachine is a digital model of one of the most well-known filters in music electronics, i.e. the "Chamberlin 2-pole" filter used in old Oberheim synthesizers. These types of filters sound exceptionally musical. They can also be used quite creatively in the BitMachine, but should not be used exclusively to smooth out existing artifacts.

The filter works in the so-called "high-pass" mode, i.e. it lets through deep frequency (or medium) material according to setting, and dampens highs and medium areas.

Freq:

You can specify the cut-off frequency of the filter using "Freq". Filtering starts above this frequency.

Reso:

The signal in the area around the cut-off frequency can be strongly elevated to just below self-oscillation. Sharp, cutting sounds are possible at this level, and the effect becomes even clearer when you vary the cut-off frequency.

Drive:

Both of the individual filters of the connections mentioned above have the ability to overmodulate themselves internally. With the "Drive“ dial, you can regulate the amount of overmodulation. The more you turn this dial up, the more the signal is overmodulated. In this case, the parameters of the internal workings of the filter interact with one another. Increasing drive weakens the resonance, but, at the same time, the signal gets more volume, more bass and becomes acoustically fuller.

Note: The two smaller dials from this section are explained under "Modulation".

"Modulation" section

You can automate your effects via the settings in the modulation section.

Here, you'll find the so-called low frequency oscillator (LFO), which resonates with adjustable speed. You can influence the speed and type of resonance.

To influence the resonance, use the two small dials in both the reduction and filter areas. These four dials display modulation targets.

Example: You've left the dial for the sample rate at its default setting. Change the small dial beneath from its middle position to either side. The modulation for the dial value is added to the sample rate: The LFO now controls these parameters proportionately and the sample rate reduction resonates at this modulation.

You can use this technique on other dials as well. You just have to make sure that the main dial isn't turned up to full, because then the modulation wouldn't have any effect. The modulation is always added to the set value.

Example: Turn the small dial beneath the "bits" dial fully to the left (Value: -50) and the one beside it (beneath "sample rate") to the right (+50). You've now assigned a modulation to both parameters with the LFO. They are not changed uniformly, but rather opposite to one another: A negative setting is nothing more than an inversion of the modulation, so you're effectively turning down the control signal.

Waveforms of the modulation section

We've already explained this example with the help of sine oscillation. The LFO can be in:

- Sine form
- Square wave (0 or 1, no intermediate level)
- Random value (an internal randomizer will be queried at the set speed)

Oscillator speed

The LFO speed is specified with the "speed" dial. If the "sync" button is active, then the LFO adapts to the song speed, and the dial locks musical values into place (e.g. ¼ note). Rhythmic paths of the sound distortion are therefore enabled. You can also switch off this synchronization and set the speed manually (in Hz).

Modulation with the "Envelope follower"

In the modulation section you'll find a fourth button, the audio input signal. If this mode is active, then the signal itself can be called upon to extract "modulation tension"; a so-called "envelope follower" continuously scans the volume of the input signal.

Note: The BitMachine doesn't recognize the type of audio signal automatically. For this reason, you should set the input sensitivity roughly with the "gain" dial. To do this, use the control LED: With accurate detection of the signal dynamics, assigning the four small dials to modulation lows is easier and you can use the full control range.

In envelope mode, the "speed" dial is used to control the response speed of the envelope (the display now switches to milliseconds). Lower times result in a faster response, higher times make the envelope rise (and fall) slower. You should experiment with the signal according to its complexity. The presets provided can only point you in a rough direction.

"Reduction" section

Bits

This dial controls the resolution of the audio material. Turning the dial to the left results in 16-bit quantization (CD quality). The further it is turned to the right, the lesser the signal dynamic becomes. In extreme cases (1-bit), there are only "on" or "off" states.

At the intermediate levels, you'll notice an increase in the background noise and a decrease in the dynamics. For example, 8-bit quantization will exhibit dynamics of only 48 dB. Quieter points in the material sound noisy and very quiet points sound

"capped". This effect is amplified the more you turn the dial to the left until it starts crackling or "groaning".

Sample rate

The audio material is "down-calculated" with this dial, i.e. the internal sample rate is reduced. A new separation ratio between old and new rates is created. In relation to this ratio, a sample from the data stream will be "dropped" at the various points.

Note: The two smaller dials from this section are explained under **Modulation**.

Tape simulation (plug-in)

Tape simulation offers you the possibility of giving your recordings an "analog touch" by imitating typical aspects of a tape recording. In a lot of studios, 1" and 2" tape machines are still used because they are thought to create a fullness of sound, "warmth" and "saturation" that contrasts with the more neutral and analytical sound of digital technology.

There are numerous factors that are decisive for the sound expressiveness of tape-based recordings. Some of these are:

- Distortions that occur when the tape is played in the saturation range,
- changes to the frequency response, since recording and playback-side filter steps prepare the signal. All machines also feature more or less pronounced peaks in the frequency spectrum, above all in the bass range (so-called "head bumps"),
- loss of highs through self-erasure resulting from the HF stream ("bias", pre-magnetization) and intermodulation between the wanted signal and the HF signal.



Level: Sets the input level. You decide when the "virtual tape" is saturated and how strong the effect of this color effect should be. The signal will gain more "loudness".

EQ low/hi: Adjusts the frequency response (spectral balance controller). You can choose whether you would like the output signal to have a richer bass level or whether it should have more highs. This adjusts the pre-filtering at the "recording end" as well as playback equalization.

However, please note that the frequency response of the simulation will not be neutral even if the "EQ low/hi" controller is set to neutral. There will always be some slight frequency-selective amplification.

The distortion resulting from use of the tape simulation can quickly create "acoustic fatigue", especially for material that is rich in highs. A direct 1:1 comparison with the tape section switched off reveals the differences more easily. Slight editing with the simulation is generally sufficient to achieve an "analog touch".

Chorus



The chorus pedal creates characteristic "floating" sounds which one typically recognizes from guitar or synth pads. You can add acoustic "depth" to an instrument to add more power to the sound or to create the illusion that it exists multiple times.

The chorus sound is created by using the so-called Doppler effect. You probably have noticed this phenomenon daily life: The sound of an approaching ambulance sounds higher than when it is moving away. This effect is a result of the speed of the sound which first increases and then decreases, thus also changing the sound pitch. If there were a second siren at your location, an oscillation would develop between both sounds (just like when two instruments are out of tune).

Chorus also splits the signal in at least two: direct sound and effects part. The double effect is created by a short signal delay of the effect.

This delay is within the range of 10-30 ms (as in this one), this means that it is short enough to be perceived as an "echo". The times would also be similarly short if you were to double a guitar track for instance. A short delay in the mix already sounds

"doubled" but is not authentic. This is where the above-mentioned "out-of-tune" effect comes in: The pitch of the effect signal is slightly modulated by gently "drifting" forward and backward in the delay curve. The result is a floating effect where the speed is influenced by drifting

Chorus parameters

You can enter the following parameters to control the floating effect:

Speed: Modulation speed. Low speeds create an even, continuous development. High speeds produce vibrato-like qualities, but can also result in an "underwater" effect.

Depth: Modulation depth. This determines how strongly the speed affects the pitch modulation.

Mix: This sets the balance between the direct signal and the effects signal.

Mode: You can choose between **four operating modes** of the chorus effect:

"Normal" is a combination of the direct signal and the detuned delay signal.

"Normal, low-pass" is designed for bass-heavy signals like bass guitar. The bottom end of the signal stays clear and well-defined, the effect is only audible for the mid and treble frequencies.

"Dual" makes the source sound more lively than a single "part". The sound is spread over the stereo panorama, which makes this mode seem "wider". The character of the sound becomes livelier than with a single voice only, and it is also distributed over the stereo panorama, making the mode sound "broader".

"Quad, low-pass" is ideal for creating sounds such as deep synth pads with tight bass frequencies.

Tip: Similar to the stomp boxes our vintage effects are modeled on, there is a "footswitch" below the pedal's logo that can be clicked to turn the effect on or off for A/B comparisons. All the effects of the Vintage Effects Suite have been designed like this.

Flanger



The "Flange" effect is similar to that of the chorus, but does have a different technical and historical background. It came about by chance: Someone (various sources say John Lennon) slowed down one of two running interconnected tape machines in a studio with his hand. The result: The rather brief delay of the second signal compared to the first resulted in cancellations within the frequency spectrum, leading to a so-called comb filter effect (the sum of both signals creates "peaks" and "lows" in the spectrum that look familiar to the teeth of a comb).

Flanging is basically a chorus effect, but it has a lower delay time (less than 10 ms). "Release" or signal doubling is not highlighted here; the result is a much more creative frequency response deformation.

A "complete" flange effect will definitely require feedback: The flange portion is returned to the input to increase the effect. People often talk about the "jet effect", since it resembles a jet on take-off.

Flanger parameters

Speed: Modulation speed.

Depth: The overall amount of modulation.

Feedback: The volume of the internal feedback loop.

Mode:

Normal: Flanging.

Dual: Two parts, panned left and right.

Quad: Four parts, alternately panned left and right.

Quad pan: Like “Quad”, but the “Depth” control also sets the intensity of the signal’s pan movements between left and right.

essentialFX

The essentialFX Plug-in Suite offers high-quality audio tools for all-round tasks. Each plug-in has a number of important properties for producing quick and accurate results in daily use:

- DSP functions with low CPU resource consumption despite extremely high-quality algorithms
- Low space requirements for interfaces
- Easy operation thanks to reduction of functional elements featuring only the most important parameters
- Consistent operation of all interfaces
- Simple, straightforward preset management on a file/folder basis; simple upgrades for users

The following essentialFX are available: eFX_StereoDelay (view page 146), eFX_ChorusFlanger (view page 140), eFX_Phaser (view page 142), eFX_Compressor (view page 148), eFX_VocalStrip (view page 157).

All effect modules have the same preset manager (at the top of the effect graphic).



Behind the display for the current preset there is a menu which contains all of the available preset options. To the right is a prev/next button which lets you leaf through presets.



This button is used for saving presets. MAGIX plug-ins have their own preset save format (*.fxml)



You can return the presets to their initial settings by clicking on the "Reset" button.



Bypass switch: Routes the signal directly to the output instead of through the processing. Internally, processing is continued so that you can switch between processed and unprocessed material anytime.



A/B comparison: Very useful for trying out settings. The status of the controller settings is normally assigned to the "A" memory when the screen is opened.

As this is the initial status, "B" also contains the same settings. If you would like to experiment without losing the current setting, press the "B" buttons and try other settings. To transfer the values to "A", press the copy button between the two letters.



"?" button: This opens the online help for the plug-in.

Console

Some MAGIX plug-ins show a so-called "Console" at the top edge when they are opened – a display bar for managing presets with expanded settings options.



A menu containing available presets is located behind the display. To the right is a prev/next button, which lets you leaf through presets.



This button is used for saving presets. MAGIX plug-ins use a proprietary preset save format (*.fxml)



You can return the presets to their initial settings by clicking on the "Reset" button.



Bypass switch: Routes the signal directly to the output instead and bypasses processing. Internally, processing is continued so that you can toggle between processed and unprocessed material anytime.



A/B comparison: Very useful for trying out settings. The controller setting "A" memory is normally activated when the interface is opened.

As this is the initial status, "B" also contains the same settings. If you would like to experiment without losing the current setting, press the "B" buttons and try other settings. To transfer the values to "A", press the copy button between the two letters.



"?" button: This opens the online help for the plug-in.

Parameter smoothing/ Controller knobs

Each plug-in offers soft controlling. Pot settings are softly faded internally from the old value to the new one. This is particularly noticeable when playing in "Live" mode. Due to performance reasons, switches (e.g. on/off) and some settings of VariVerb II that change delay times directly or indirectly are excluded from this action.

Use the mouse wheel to move the knobs (pots). A combination of the mouse wheel and "Shift" key slows down the increase or decrease by a factor of ten.
Double-clicking resets the knob to the original value.

essentialFX Settings

By clicking on the tool symbol in the graphic display, you can open the presets.

Under "**Tweak**" you can find specific settings options for each effects device.

Under "**eFX Globals**" you can find settings options for graphic level display as well as mouse control.



eFX Globals

These settings apply to all Essential FX.

Metering: Here you can set the meter display.

- **Decay Time** controls reaction speed.
- **Peak Hold** controls the hold of the highest peak.
- **Brightness** controls the display brightness.

Mouse: Here you can set the display reaction to mouse movements in the essentialFX graphic display.

- **Linear mode** lets the faders move in response to vertical and horizontal mouse movements.
- **Circular mode** lets the faders be controlled by circular mouse movements.
- **Mode As Host** lets the faders move in response to the mouse exactly how mouse settings in the host program specify it.
- **[Shift] Factor** specifies the factor for fine adjustment of individual faders with the mouse with simultaneously held Shift key.

Chorus/Flanger

This plug-in offers a simple way to make signals sound more interesting, "spacier", thicker, etc. by modulating or delaying the pitch - the classical domain of application is for guitars, Hammond organs, electric pianos, or synths.

Chorus and flanger are two closely related effects, which are combined into a single plug-in. They normally differentiate in terms of delay time, type of modulation, and degree of internal feedback.



Chorus flanger parameters

IN / OUT: Here you can set the input and output level.

mode:

- **Stereo chorus:** Compared to mono chorus, two copies of the original are created, modulated against each other in pitch, and then fed accordingly to the set mix ratio to the left and right output channel.

- **Mono Flanger & Stereo Flanger** In contrast to the Chorus Effects the lower delay periods and a slightly changed modulation are processed.

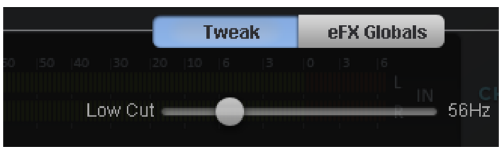
- Ensemble: This creates a denser chorus, similar to Boss/Roland CE-1: Instead of two voices, six are generated. Two internal sine LFOs for de-tuning, whereby for both LFOs the second and third voice phase length by 120°. This results in a denser-sounding effect that is also less warped.

- **Rate:** This specifies the speed of the modulation. Lower rates provide slight hovering effects, and high speeds produce a wobbling, typically distorted "underwater" sound.

- **Depth:** This parameter specifies the depth of the modulation, i. e. the maximum deviation of the modulation and the resulting pitch bending.
- **phase:** This fader moves the right channel's oscillator phasing relative to the left, wave is put back to the right. So that the Tremolo effect drifts apart in the stereo field with ever increasing values. At 180° both oscillators work in reverse, therefore the stereo effect is at its strongest.
- **Feedback:** This parameter defines the portion of the delay that is sent back to the input. Feedback causes the effects of modulation to be more drastic and cutting. Nullification of the feedback is set at the middle of the fader. Set to the right, the feedback is fed to the input equi-phasal; to the left, the feedback occurs. Both variants may sound very different depending on the signal, since they prefer different frequency ranges for dissonance.
- **Mix:** Regulates the mix ratio of the original signal and the delayed portion.

Tweak

- **Low Cut:** This knob sets the filter frequency of a high-pass filter. Signal components below this frequency will be filtered out.



Phaser

The phaser is often mistaken for a flanger due to its typically sharper and cutting effect. In any case, the pitch is not modulated. Instead, the modulation process burrows multiple notches into the frequency response, somewhat like a comb filter. Just like an airplane taking off, the phaser functions with a similar jet effect. It is suitable for enduring signals like synth surfaces or for producing sound designs to create atmosphere or distortion effects.



Phaser parameters

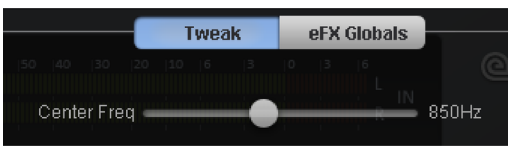
IN / OUT: Here you can set the input and output level.

Mode: The selection includes a number of filter stages. At **4 stages**/**8 stages**, a more plastic effect is achieved, and more complex patterns are reached at **16 stages**. Please note that the more stages are involved, the more computing time will be needed.

- **Rate:** Speed of filter modulation. The essential effect is the same for both chorus and flanger.
- **Depth:** Similar to chorus/flanger, whereby it's the filter notches that are addressed, and not the pitch modulation.
- **phase:** This fader moves the right channel's oscillator phasing relative to the left, wave is put back to the right. So that the Tremolo effect drifts apart in the stereo field with ever increasing values. At 180° both oscillators work in reverse, therefore the stereo effect is at its strongest.
- **Feedback:** The feedback portion produces a more drastic effect in this case. Similarly to the chorus/flanger, co-phasal or opposite-phase feedback is possible.
- **Mix:** Regulates the mix ratio of the original signal and the delayed portion.

Tweak

- **Center Freq:** Sets the mid-frequencies of the phaser. The filter modulation acts on these frequencies.



Reverb

This involves a completely algorithmic reverb plug-in. Selectable algorithms produce thick and extremely transparent reverberation for all kinds of signals. Processing is therefore "true stereo", i. e. the selected algorithm includes the original localization of instruments in a stereo signal in the calculation of reverberation so that the original image will not be distorted.

"Reverb" features algorithms that are set up for natural quality and transparency. A signal treated with this reverb retains power at correct dosage in the overall context of the audio without perception of a conspicuous effect. The CPU load is also relatively low.



Reverb parameters

IN / OUT: Here you can set the input and output level.

Mode: Select the desired algorithm here. The following options are available:

- **Plate**: Simulates a reverb plate. Very dense reflection pattern, penetrating but musically open "metallic" appeal. Very well suited to Drums and Vintage/special effects.

- **Room**: Small room reverb. Middle to high signal diffusion, low to middle reverb time. Well suited for adding a "dry", natural sound to instrumental, spoken, or vocal recordings.

- **Hall**: Mid to large hall. Low to mid diffusion, later response than a "Room". Ideal for simulating concert halls and larger soundscapes.

- Plate II Classic: Classic stereo plate reverb. The design is based on an algorithm that was frequently used in the 80's. This mode produces the typical "Cloud reverb", which is not very transparent, a bit sticky. Plate II Classic is a good fit for lead instruments and vocals.

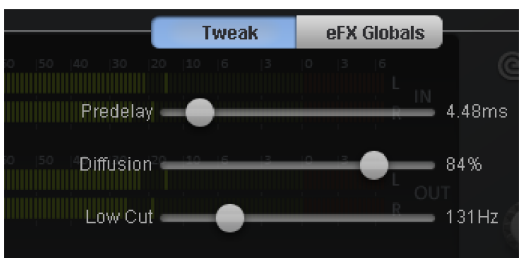
- **Size:** The size of the room being simulated or of the reverb plate. This setting has a direct effect on the distance of the reflection and indirectly on the resonance behavior: smaller rooms/reverb plates possess a larger inclination for natural resonance than larger ones.
- **Time:** Length of reverberation time (in seconds). This value refers to the RT60 time, i. e. how long the reverberation requires for the level to fall 60 dB.
- **Damping:** Real rooms and reverb plates dampen certain frequencies according to their construction. This is most often audible in upper frequencies. Using this parameter you can set the cut-off frequency, above which the reverb will be

particularly strong. In some cases, the "Time" parameter should be adjusted, since sometimes the subjectively perceived reverberation time will also be affected.

- **Modulation:** For several critical signals, the reverberation may produce disturbing resonance. This can be scattered by temporal modulation of the delay signal used in an algorithm. Excessive application may create an effect similar to chorus in tonal signals. The liveliness of the reverberations will be emphasized with lower values. In this case, the modulation applies a random pattern, the intensity of which may be visualized via the "MOD" display.
- **Mix:** This regulates the ratio of the unprocessed signal to the portion including reverberation.

Tweak

- **Pre-delay:** This knob sets time in milliseconds between the direct signal and the appearance of early reflections. The late delay comes only following this time span.
- **Diffusion:** This knob simulates scatter on irregular walls in percent. Increasing values make the reverb sound denser.
- **Low Cut:** This knob sets the filter frequency of a high-pass filter. Signal components below this frequency will be filtered out.



Stereo Delay

The stereo delay is a simple too for typical bread and butter delay effects. The stereo delay offers the "analog algorithm", which features the sound of echo devices of yesteryear.



Stereo delay parameters

IN / OUT: Here you can set the input and output level.

Mode: This selects between the essential algorithms.

Digital: Normal, transparent delay

- Analog tape: Analog tape delay simulation. In this mode, a band echo is simulated with a typical compression and saturation behavior, including phase shifts with high feedback settings.

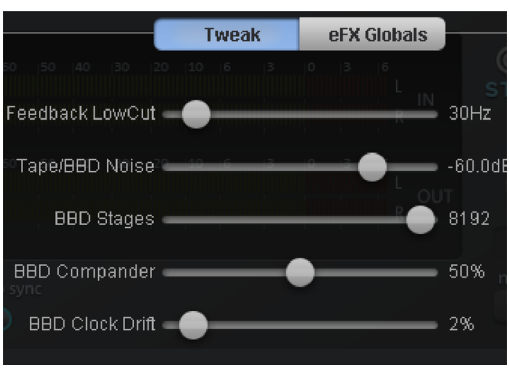
Analog BBD: Simulation of a bucket brigade delay (BBD, bucket brigade delay). These devices, which originate from the pre-digital era, used analog building blocks for storage. The signal was held for a short time in a relatively simple circuit and then moved on to the next. This "bucket brigade" principle created a longer signal delay. BBDs create different delay times by varying the system beat (clock), meaning that for short delays the beat is faster, and for longer it is slower.

- **Tempo sync:** If this button is active, the plug-in is directed at the host/sequencer tempo. In this mode, changes are made to the delay period via the L/R delay using the musical snap grid (e. g. 1/4 note).
- **Delay L/Delay R:** Specify the delay period for the left and right channels here.
- **Damping:** This specifies the cut-off frequency at which the highs are dampened during the delay. This useful for making the delays reverberate more naturally or for creating special effects (reggae/dub-style effects).

- **Feedback:** This parameter regulates the internal amplitude of the delayed signal that is fed back to the input. In "Digital" mode, this process is completely transparent; in "Analog", on the other hand, higher values, a very loud input signal, or the sum of these will make the use of dynamics compression audible. In both modes, the nullification of the feedback parameter is in the center of the fader. To the right, the plug-in works in "Dual delay" mode (both sides work independently), and to the left, "Ping pong" mode will be activated (the delayed signal alternates between the left and right sides).
- **Mix:** Regulates the mix ratio of the original signal and the delayed portion.

Tweak

- **Feedback Low Cut:** This control sets the filter frequency of a high-pass filter for the "feedback". Signal components below this frequency will be filtered out.
- **Tape / BBD Noise:** Here you can control system noise for both analog modes. Especially if you work with high feedback rates, noise can create quick or stable oscillation, making the effect even more authentic.
- **BBD Stages:** Here you can determine the count of For very long delays, chips with many memory cells are used. This explains why bucket brigade echoes with long delays sound so muffled and dirty. Please keep in mind that the shorter the delay, the faster is the "virtual" system beat. For performance reasons, the system beat is limited. The limit is displayed below the delay control (with deactivated "tempo sync") as soon as it is reached, e. g. 46 ms **(min)**.
- **BBD Compander:** Here you can simulate Compander settings. Due to per-cell loss, BBDs have low system dynamics. For this reason, some have an integrated compander (compression at the input, counter-expansion at the output). Strong compander settings interact noticeably with the input signal, especially with high feedback, because the input effects the expansion ration at the output, even when there is no signal at the input.
- **BBD Clock Drift:** This parameter can add drift (during audible jitter effects) by slightly varying the system beat of BBD cells. It works similarly to an LFO, but is randomized.



Compressor

This plug-in is a simple but effective tool for reducing the dynamics of a signal. Drums tracks can be modeled more compactly and with more pumping, vocals can be integrated into the mix better or the entire sum or group signals can be made denser.

In contrast to some other plug-ins, this type works the compressor with a comparatively soft curve and an adaptable regulation process, it therefore compresses completely musically.



IN / OUT: Here you can set the input and output level.

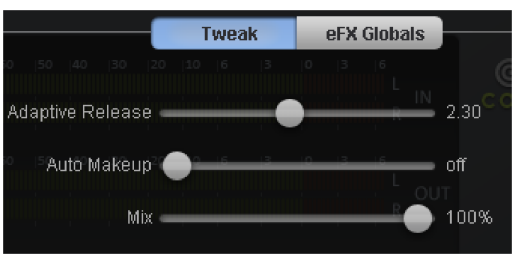
soft clip: Soft clip circuit is switched on directly at the output in order to catch any overshoots.

- **SC filter:** This fader determines the application/middle frequencies, that are filtered with the control signal for level detection. The filter works selectively as a high-pass, band-pass or low-pass filter. In many cases, weighting of the detection is good for optimizing the leveling process. Thus, for example, "high-pass" filtering enables complex sources (drums or sum signals) to achieve consistent regulation without typical pumping artifacts since the process is mainly activated by mids and highs.
- The properties of the detector circuit can be drastically changed by means of the filter type switch. The speaker symbol is there to pre-listen to changes.
- **Threshold:** This sets the response threshold for regulation. For example, -20 dB means that the input signal is only compressed once it reaches -20 dB; below this level, no change or hardly any change will take place. Note that this plug-in deals with the threshold window independent of the program. It can be the case that a small regularization has already taken place at -25 dB. This so-called soft-knee characteristic ensures a soft, musical compression process.

- **Ratio:** This parameter regulates the compression ratio. For example , a value of 10:1 means that when the threshold level is reached, the input level is increased by 10dB, while the output is only 1dB louder. A lower compression, e. g. 2:1, is recommended for subtle compression of group or sum signals, while 50:1 produces a very hard limiting that cannot be made inaudible by even the most transparent compressor.
- **Attack & release:** This parameter specifies how quickly the compressor responds when the threshold is reached (attack) or how quickly the signal applies normal amplitude once the signal drops below this level (release). The transient time settings can be defined in a wide range. Note that due to the adaptable plug-in leveling, actual times may differ. This semi-automatic process favors quick adjustment, without leading to the often dreaded artifacts (rough sound image with rushed regulation, overly low/inefficient compression with long time constants).

Tweak

- **Adaptive Release:** With increasing values, the limiter works increasingly with "Adaptive Release". This means that the longer and harder the compressor intercedes upstream in the signal path, the longer is the resulting release phase.
- **Auto makeup gain**: Normally, you have to continuously adjust level reduction to generate "compression" at the same maximum level. This is done by activating auto makeup gain. The volume difference expected from the set working parameters is determined and applied as an output factor after master regulation. If you prefer to adjust the "classic" level reduction and amplification manually, you can deactivate this function.
- **Mix:** The addition of the original signal is to get transients and spectral balance of the source. The "mixed" signal is particularly discreet, more transparent and less "squishy", whereby the compressed part usually has a higher level reduction than without adding the original.



Gate

The Gate is operated in much the same way as the eFX_Compressor. In particular, the side-chain function, and selecting various filter types can be also be applied here.



The operation is similar to a classic analog gate. Here emphasis was placed on a fast and accurate response, where the typical artifacts from digital gates such as rough, "fluttering" sounds are avoided. The essential FX Gate continuously scans the signal and automatically selects optimal settings according to the current values.

Gate parameter

IN / OUT: Here you can set the input and output level.

sidechain int/ext: As with eFX_Compressor an external control input can be used for triggering.

Note: Sidechaining is not available in some host programs.

soft knee: Normally the Gate has a hard characteristic i. e. below the threshold this signal is markedly, in addition it is transmitted in an unchanged form. "Hard Knee" deals with abrupt transitions. "Soft Knee", however, allows the signal to be modified by "Gating" in the pass and, so that transitions can be made to be more soft and undetectable. This is particularly recommendable for work with acoustic instruments such as drums where the signal levels can fluctuate a lot.

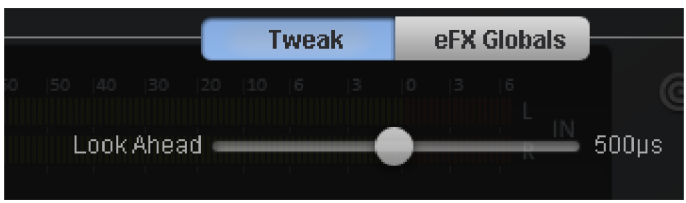
hold: This three-way switch controls how long the gate process waits after passing through the attack phase before subsequently passing through the Release phase. The

Hold Function is useful for signals that need a rather short release time, but shouldn't be flattened out.

- **sc filter:** The control corresponds to the essentialFX Compressor.
- **threshold:** This fader defines the threshold beneath which the gate should be initiated.
- **range:** Here you can set the Gating strength. Right extreme means that the signal beneath the threshold is cut out completely. Subtly attenuating the signal can remove background noises or breathing from vocal tracks. Where necessary the process can be attenuated even further by switching on the soft knee mode.
- **attack:** Regulates the attack time from the closed gate to the point at which signal is let through again.
- **release:** Sets the time, that the gate requires to go from a normal state to gating.

Tweak

- **Look Ahead:** This control sets how long ahead the gate previews the signal. The audio signal will be delayed by this time.



Limiter

This plug-in is a simple yet effective tool for increasing the loudness of your audio signal. This creates a compressed but loud signal without allowing the defined output volume to be exceeded.



The limiter operates with a soft curve and an adaptive regulator that ensures that the sound remains absolutely musical. You can also use a separate input (external sidechain signal) to define the source for the regulation.

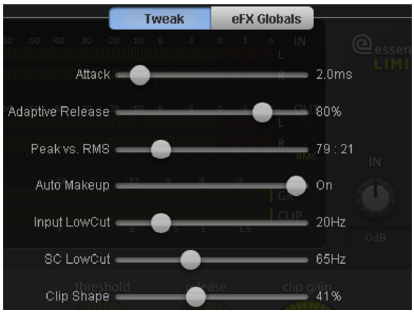
Limiter Parameters

IN / OUT: Here you can set the input and output level.

- **Threshold:** This sets the threshold; the effect will be applied above this level.
- **Release:** This sets the time frame between the point when the signal drops below the threshold and the complete reduction of the effect.
- **Clip Gain:** This sets the amplification factor.

Tweak

- **Attack:** This sets the time frame between the point when the signal exceeds the threshold and the maximum extent of the effect.
- **Adaptive Release:** With increasing values, the limiter works increasingly with "Adaptive Release". This means that the release phase gets longer according to how long and hard the limiter has been applied to the signal processing.
- **Peak vs. RMS:** Here you can choose whether to display the eFX_Limiter peak levels (slider completely to the left) or the RMS levels (slider completely to the right). You can also set the display between peak level and RMS values to any ratio you like.
- **Auto Makeup Gain:** Here you can set the automatic tracking of the output amplification during level reduction in order to maintain compression at the same maximum level. The volume difference expected from the set working parameters is determined and applied as an output factor after master regulation. If you prefer to adjust the level reduction and amplification manually, you can deactivate this function.
- **Input Low-Cut:** You can use the fader to set the filter frequency of a high-pass filter for the input signal. Signal components below this frequency will be filtered out.
- **SC Low-Cut:** This sets the filter frequency of a high-pass filter for the sidechain signal. Signal components below this frequency will be filtered out.
- **Clip Shape:** The left velocity of the fader (soft) corresponds to the oscillator sine wave. The oscillator signal is gradually morphed to the right in the direction of the rectangular wave. This makes the effect more intense, i.e. "harder".



Tube Stage

Preamplifier are still used today, if the signal needs a warm, flattering sound. This is often not only about saturation or distortion artifacts, but rather more about getting a compact and more vivid sound picture. A tube stage makes things a little more dynamic, this is not due to the tubes itself, but rather the entire circuit, which interacts with the tube in a way that amplification levels don't do on a semiconducter basis. As with guitar amplifiers, the complexity increases with the number of stages.



Optionally inside the essentialFX_TubeStage plug-in, either one or two tube stages work.

Tube circuits, especially if they work in the border area and saturate/distort the signal with the **gain** control, react very sensitively to the input signal's spectral composition.

Two independent filter circuits accompany this plug-in's tube stage (s). The first (**pre-eq**) acts directly on the input signal. With this you can determine which frequency range should be principally edited. The second filter circuit (**post-eq**) is located behind the tube stage (or after the second) and determines the tonal balance of the output signal.

This enables you to create various sound nuances. For example, you can accentuate the high frequency range on the input side, for example, to create Exciter-/Enhancer effects, so that the signal appears more "tangible". To avoid overemphasizing this amplified range, a reverse process with the post-EQ can be subsequently made.

Both of the available tube stages can be globally switched in the A or AB operation. In the A-circuit the entire signal runs through, as is common with simple tube preamps, through a tube. However, since these can only edit a half-wave, the working point of the circuit is set approximately in the middle of the reference line. However neither halve will ever be treated equally, so that positive displacements are amplified differently to negative displacements. (so-called Class A operation). Thereby odd and even harmonics are created. The typical 'warm' tube sound to a large extent dates back to the characteristic overtone spectrum.

For each half-wave in class-AB operation, a separate tube is used, so that in principle there is a symmetrical reinforcement. The signal contains predominantly uneven harmonics. The sound image appears thinner but more transparent and solid. This is comparable to the sound, that tape machines create when they are slightly overmodulated.

Tube Stage Parameter

IN / OUT: Here you can set the input and output level.

stages: In signal section **1** the signal only passes through the tube stages. In setting **2**, two stages are cascaded. This divides up the gain so that both stages are driven less 'hotly'. This increases the signal complexity and any tube artifacts.

class A / AB Optionally, a simple gain stage with asymmetric reference line (Class A) or symmetric AB mode. In the A-mode odd and even harmonics emerge, the sound image is similar to a 'warm' tube guitar amp. In the AB section only uneven harmonics are created. The sound image is somewhat 'colder', but more transparent with complex materials and can also be driven louder.

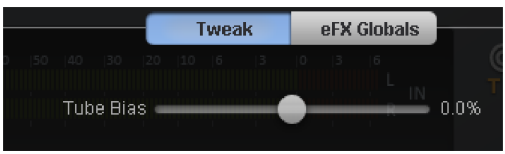
oversampling: If this switch is active, the virtual tube stages are controlled with one-to four-times the project sampling rate, i.e with an internal sampling rate of 176 - 192 kHz.

- **pre-eq:** This knob (called "Tilt" or "Level" on some devices) controls the effect of a soft, passive 6 dB filter for prefiltering signals before the (first) tube stage. If turned to the left the bass is emphasized and the highs are dampened. To the right the inverted filtering happens. With this filter the signal can be correspondingly processed before "Warming up" by selecting the prominent of desired section. Compared to a standard EQ the effect of this filter is more subtle, but it does possess a high 'musicality', by the internal circuitry and also because of the slightly different phase response.

- **gain:** This set the entire amplification factor. If two two tube stages are selected using 'stages', the available Gain is divided by two and is distributed equally over both stages.
- **post-eq:** Operation and function is like pre-eq, however, this filter is placed behind the (second) stage tube.

Tweak

- **Tube Bias:** With this parameter you can control "Bias", or electric current voltage inside a tube.



DeEsser

This plug-in filters/attenuates sibilants in vocal recordings in a simple yet effective way. Since the underlying process operates on the basis of a dynamic filter, other signals are weakened such as cymbals in drum recordings or other signals in a similar frequency range.



In contrast to other devices of this type, the eFX_DeEsser works without adjustable thresholds. The plug-in constantly evaluates the input signal and recognizes signal peaks that are high above in the frequency range of the average levels. Through this comparative analysis with the wanted signal, a constant reduction of noisy sections can be adhered to, so a traditional threshold often requires adjustments for changing levels.

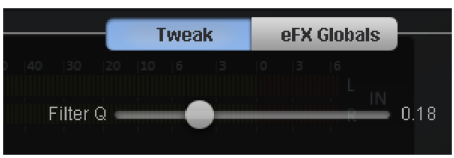
DeEsser Parameters

IN / OUT: Here you can set the input and output level.

- **freq:** Determines the frequency of the filter used for detection, and filter blocking in the signal route. Typically the sibilants in speech or singing voices are in the 6 - 8 kHz range.
- **Speaker symbol (pre-listen):** This allows you to hear the "solo" filter frequency so you can locate noisy sections quickly and easily.
- **reduction:** Regulates the filter attenuation in the signal route.

Tweak

- **Filter Q**: Set the bandwidth of the individual filters between 0.10 (very wide bandwidth) and 2 (extremely narrow bandwidth).



Tremolo Pan

This plug-in is on one hand a Tremolo, that creates typical textures for synths or vintage guitars. On the other hand you can create interesting, rhythmic stereo effects with auto panning.



Tremolo Pan Parameter

IN / OUT: Here you can set the input and output level.

rate: Sets the speed of the internal oscillator in Hz or note value (see "tempo sync").

shape: The left velocity of the fader corresponds to an oscillator's sine wave. The oscillator signal is gradually morphed to the right in the direction of the rectangular wave. This makes the effect sound intense, "harder".

phase: This fader moves the right channel's oscillator phasing relative to the left, wave is put back to the right. So that the Tremolo effect drifts apart in the stereo field with ever increasing values. At 180° both oscillators work in reverse, therefore the stereo effect is at its strongest.

depth: This determines the strength that the oscillator signal has on the Tremolo/Panning effects.

tempo sync: when the switch is activated the "rate" fader snaps to values on the musical grid.

Vocal Strip

This plug-in combines several components in one special tool which is ideal for working with speech or vocal tracks. Virtually all recurring voice signal edits are integrated in a compact, simple interface.



The signal flow is set by the e_FX_VocalStrip and is directly represented by the position of the fader.

Vocal Strip Parameter

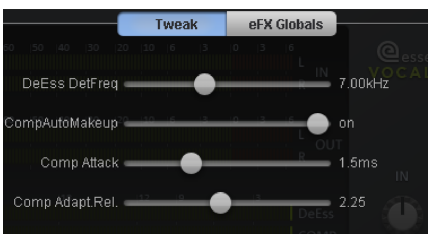
IN / OUT: Here you can set the input and output level.

- **highpass:** This fader determines the cut-off frequency for a steeply sloped highpass filter (24dB/octave) to remove part with low frequencies, such as rumbling or noises created when touching the microphone.

- **gate:** With gate you can attenuate the signals that fall below the threshold. Here, a smooth curve and a maximum 'softening' of up to 24dB is used to avoid hard transitions.
- **DeEsser:** The effect is very similar to that of the eFX_DeEsser. Here, however, the application frequency is set. The filter used in eFX_VocalStrip works in another range. The fader determines the degree of reduction.
- **compression:** For the most part, an eFX_Compressor component contributes to working parameters for optimizing voice recordings. The further the fader is turned the lower the threshold and higher the compression ratio. The Attack and Release times are selected according to the program.
- **tone:** This EQ corresponds principally to the filter network, which is also used in the eFX_TubeStage plug-in. With this you can simply and effectively calibrate the sonic balance of the voice signal, e. g. for better integration into the mix.

Tweak

- **DeEss DetFreq:** Determines the frequency of the filter used for detection, and filter blocking in the signal route. Typically the sibilants in speech or singing voices are in the 6 - 8 kHz range.
- **CompAutoMakeup:** The maximum level is retained while overall level is reduced.
- **Comp Attack**: Here you can determine how fast the compressor responds after reaching the threshold.
- **Comp Adapt.Rel.:** Rising values cause the compressor to work increasingly with "Adaptive Release". This means that the longer and harder the compressor intercedes upstream in the signal path, the longer is the resulting release phase.



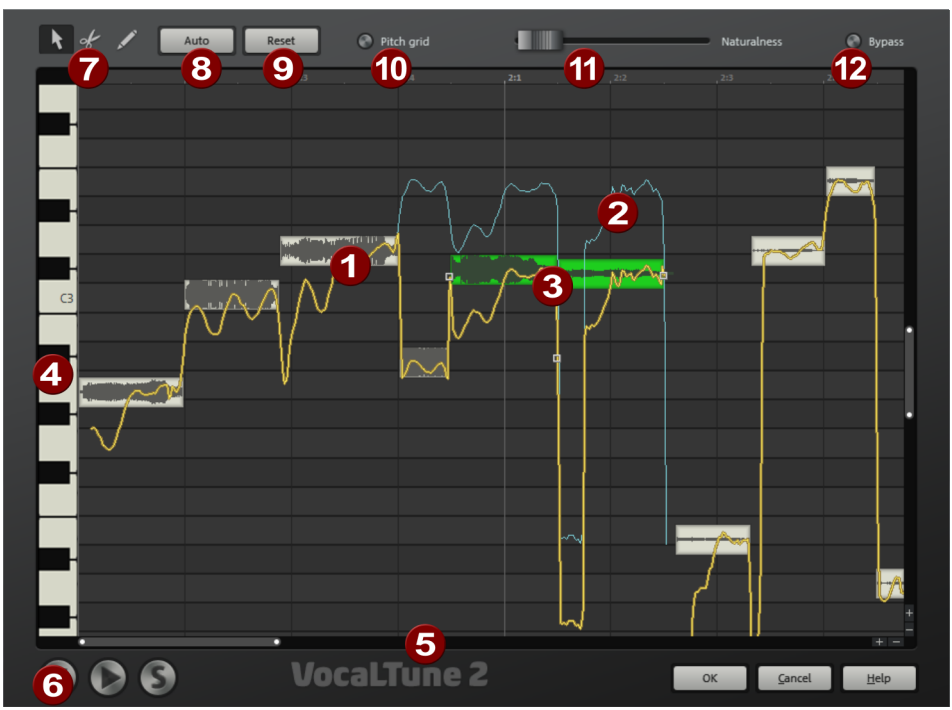
Note: Detailed information about compressor-specific settings can be found under "essentialFX > Compressor > Compressor Parameter".

Vocal Tune

The Vocal Tune effect can be used to edit the pitch progression of an audio object. On the one hand, it is possible to rebalance "distorted" vocal passages. Depending on what you want, this can be as inaudible as possible or even drastically distorted (see Automatic pitch correction (view page 161)). On the other hand, however, the melodic line like in a piano roll can also be completely changed (see MIDI Editor (view page 175)).

To customize the pitch correspondingly, the original pitch of the audio material must, of course, be known. Fundamental to the functionality is therefore a preliminary pitch analysis of the material. This is basically only for tonal, monophonic audio material like solo vocals, solo instruments, and speech. Polyphonic material, effects such as reverb or chorus and background noises do not provide good analysis results.

The analysis function starts automatically when the vocal tuner is opened. For larger objects, the analysis can take longer. After the analysis the audio object is divided into individual slice objects according to the detected pitches; a slice object corresponds more or less to a sung note. If the pitch deviations within a note are too large or the audio material contains noisy components that interfere with the analysis, this also results in two or three slice objects per note.



1. **Slice Object:** The mid pitch of a slice object determines its position in the graphic independent of the set progression of the pitch inside the slice object.
2. **Pitch Curves:** The resulting pitch progression is displayed with a yellow pitch curve. The original pitch progression is displayed as a blue curve.
3. **Selected Slice Objects** can be edited with the Move Tool. (see below)
4. The vertical axis is the pitch, the corresponding notes are displayed as a **piano keyboard** on the left border. Individual keys can be removed from the pitch grid (see below) by clicking on them (displayed in gray).
5. Similar to the arranger, the displayed time section or the pitch range can be controlled with the **+/- buttons** and the **scroll bar**.
6. The **play and stop buttons** at the bottom left can be used to start and stop the playback of the project. **S** causes the audio object to play solo in the Vocal Tuner.
7. **Tools** for editing pitch (see below)
8. „**Auto**" Automatic pitch correction
9. „**Reset**" removes all edits and returns all settings to their original status.
10. Activates the **pitch grid** for automatic pitch correction.
11. The **Naturalness** slider sets the intensity of the automatic pitch correction
12. „**Bypass**" temporarily deactivates the effect

Editing Pitch

There are three tools available for editing pitch:



Move tool: You can use this tool to select slice objects for the editing by simply clicking on them.

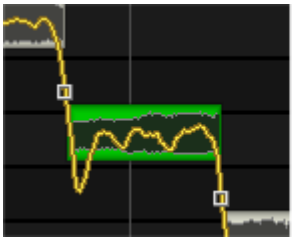
Ctrl+click enables the multiple selection of individual slices. Clicking on an empty area of the editing window and dragging a selection frame is another method for selecting several slice objects simultaneously. Selected slices can then be moved vertically, i.e. moving the pitch.

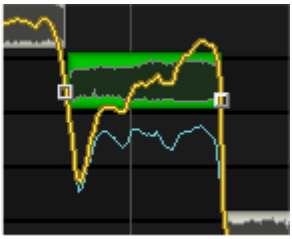
If "pitch grid" is active, the slice objects always snap precisely to the semitones of the chromatic scale.



To limit the snap function to specific keys (e.g. G minor) individual notes on the piano keyboard can be deactivated by clicking on them. The slice objects will then snap to the next "allowed" semitone.

On the borders of the slice objects two **handles** are created on the pitch curve. These handles can be moved in order to produce an increasing or decreasing pitch characteristic while retaining the small changes in the basic frequency (vibrato).





The handle at the end has been moved up to create a rising pitch progression. The small pitch fluctuations remain intact.

Double-clicking on an individual pitch slice makes it possible to enter the pitch more precisely in a +/- cent deviation from the corresponding semitone.



Cut Tool: You can use this tool to cut slice objects and create two slice objects that can be edited separately. This does not affect the pitch of the slice object.

It is possible, however, that a slice moves when cutting because the pitch of a slice displayed is only ever an average value across the total pitch progression within the slice.



Draw Tool: This tool can be used to directly draw the pitch curve. If you hold the Shift key while drawing, a straight line will be drawn between the start position of the drawn curve and the current mouse position.

If a pitch curve extends beyond the borders of a slice object, the two slice objects will be joined together.

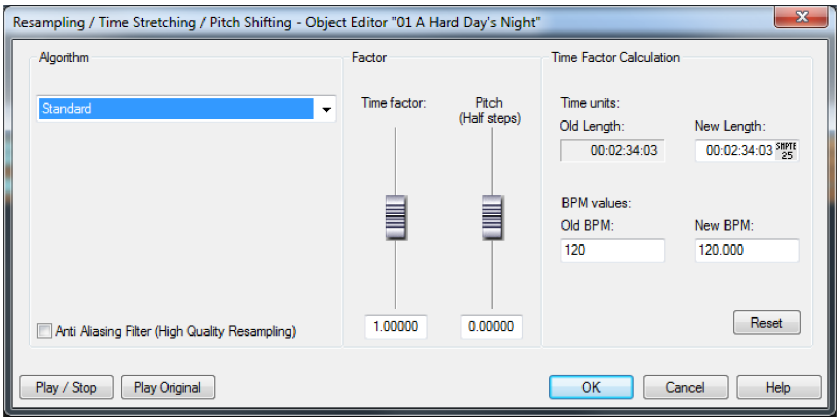
Automatic Pitch Correction

The "Auto" function for automatic pitch correction can be found beside the draw pitch function. The "Auto" button moves all selected slice objects to the next semitone.

Single notes can be deactivated by clicking on their respective keys on the piano keyboard. The will result in the note being moved to the next available semitone during the correction process. This makes it possible to limit the automatic correction to specific notes in a key.

The "Naturalness" slider determines how much the original pitch progression is retained. With small values, the natural vibrato of the voice is radically "flattened" and the famous "Cher effect" results.

Resampling / Time Stretching / Pitch Shifting



All algorithms in this dialog use the "time factor" and "pitch (semitones)" as input parameters.

Open the "Time factor calculation" section to determine the required time factor from the original length and original tempo as well as the desired new length/desired new tempo.

Tip: To change an audio file's sample rate, e.g. from 48 kHz to 44.1 kHz, use the function "Effects -> Sample manipulation -> Adjust sample rate".

Resample

Samplers and PCM Synthesizers transpose samples using this procedure. Time factor and pitch are dependent upon each other: the shorter the audio material, the higher the pitch and vice versa. The effect is comparable with changing the playback speed on record players or tape recorders.

Resample is a relatively lossless process. If a pitch change resulting from the change in speed is wanted or acceptable, you can use this algorithm.

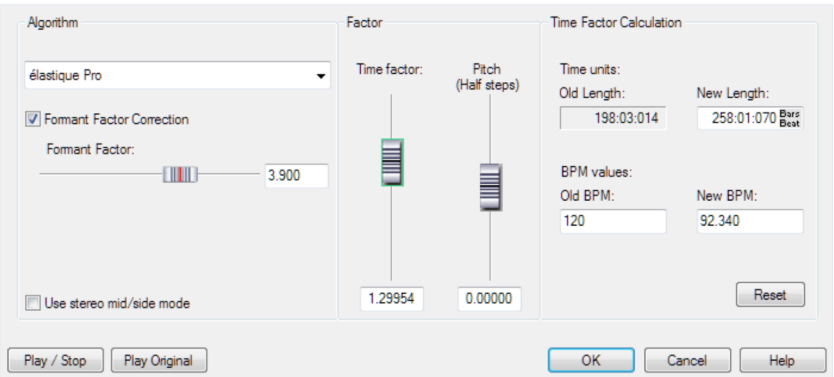
Timestretching/Pitchshifting

With all other algorithms, time factor and pitch variation are independently adjustable. These algorithms create, under circumstances, artifacts which you can balance using the Anti-aliasing feature. The preset timestretching/pitchshifting algorithm can be saved via Timestretch/Pitchshift Patcher in Wave project (view page 321) ("Object" menu).

élastique Pro

With this algorithm licensed from zPlane you can achieve impressive results with minimal additional information such as "Time Factor" and "Pitch". As with the

„Monophonic Voice“ (view page 163) algorithm, this mode can also be used to preserve or shape formants.



Use stereo M/S mode: This option enables M/S processing. This means that the algorithm internally interprets the adjacent stereo signal as a mid signal in the left channel and a side signal in the right channel.

élastique Efficient

When real-time application of élastique Pro threatens to overload the CPU this algorithm offers a less CPU-intensive alternative. However, if you choose this option, be prepared to make some compromises regarding sound quality.

Monophonic voice

This is a special Time Stretching and Pitch Shifting function for vocal solos, speech, or solo instruments. The audio material should not contain background noise – strong reverb may also this method's effectiveness. With suitable audio material, the audio quality will remain high.

The "**Use formant correction**" option preserves formants during Pitch Shifting, i.e. the "Mickey Mouse effect" does not occur. This allows realistic-sounding background choirs to be compiled using one solo voice. The formants, however, may also be moved by +/- 12 semitones in order to achieve desired vocal distortions.

Typical uses of this algorithm include:

- Intonation correction: The note with the imprecise pitch should be cut out as an object so that it may be manipulated independent of the other notes.
- Harmonizer effects: Copy the object containing the singing. If the pitch is altered now, a second voice will be generated.
- Creating background vocals from existing vocal samples
- Time Stretch distortion of a spoken sample, e.g. grandfather's voice.

The "Monophonic voice" algorithm is especially useful for: Speech, single-voice singing, single instruments without overlaps/with low levels of reverb and background noises.

MIDI in Samplitude Music Studio

What is MIDI?

MIDI is a standardized command language that helps control synthesizers. In addition to the command to play a note (Note On, Note Off), there are control commands (Ctrl Ch) for internal parameters of the synthesizer (volume, panorama, the pedal for piano, filter settings and others), program change commands (Prg Ch) to activate saved sound programs, and others. These commands are called MIDI events. An MIDI object containts a series of events and the times at which they occur.

You can create MIDI objects by loading MIDI files, playing and recording with an external MIDI keyboard, or by drawing notes in an empty MIDI object with the MIDI editor.

MIDI objects do not contain audio material. They are used to control synthesizers that then create corresponding sounds. They are comparable to notes that still have to be brought to life by a musician.

MIDI is thus a kind of remote control for synthesizers. This has some advantages:

- MIDI files need a lot less memory than wave files.
- MIDI files can be adapted to any tempo (BPM) without affecting the sound. The playback tempo is simply changed.
- Transposition of MIDI files to other pitches is also easy. As a result, a section in a song does not have to be saved in several different keys. The version in C major is perfectly sufficient. It can then be transposed to any key easily.

The disadvantage of MIDI files: The audio is not yet determined and is only produced during playback.

Connect MIDI Keyboards

You can use Samplitude Music Studio in conjunction with a MIDI keyboard to play and record the included synthesizer plug-ins or VST plug-ins. You can also control sound generation from external devices using MIDI objects in the project of Samplitude.

Basics of MIDI interfaces and cabling

MIDI interfaces are system devices that enable communication between the computer and an external MIDI device. They provide music programs one or more so-called MIDI ports. The music software (in our case Samplitude Music Studio) sends and receives MIDI data via this port, everything else is handled by the drivers and operating system. You can set the ports for MIDI input and output in Samplitude in the MIDI Settings (view page 440) of the System Options dialog (Shortcut: y).

A MIDI interface can be integrated into the computer system in different ways. It can be part of the sound card built into the computer or externally connected via USB or Firewire.



In this case, two MIDI jacks (MIDI IN and MIDI OUT) are located on the sound card. With older sound cards an additional adapter cable must be connected, which provides the typical 5-pin DIN jacks.

MIDI connectors



MIDI connection cable

Connect your MIDI keyboard to your computer by running a MIDI cable from the keyboard MIDI output jack (MIDI Out) to the MIDI input jack (MIDI In) on the MIDI interface. If your MIDI keyboard can generate its own sounds and you would like to use them, connect the computer's MIDI Out jack to the keyboard's MIDI In jack.

With **USB MIDI keyboards** the MIDI interface is part of the external hardware. USB MIDI keyboards are a separate class of devices designed to control software synthesizers. They usually no longer produce any of their own sound, but only consist of a keyboard, various controllers and a USB MIDI interface. They are connected via USB to the computer, in this case, no MIDI connection cables are required.

Note: Even on "proper" keyboards and other synthesizers you can now find a USB MIDI interface alongside traditional MIDI connectors.

Normally for these keyboards no special drivers are needed. All you have to do is connect them. Make sure that the device is switched on and is able to be detected prior to starting <Program Name>, since the available MIDI ports are only able to be discovered during program launch!

Under some circumstances, you may have to select the port for the device as the MIDI input device via the Program settings ("Audio" tab). This is usually called "USB audio device"

Note: Some older devices do not function in some cases in Windows XP. Even though the device has been detected, the corresponding MIDI drivers do not appear in the list. In this case, please contact MAGIX customer support!

In the event that your external device does not have a USB port and the sound card does not have MIDI connectors, you will need to purchase an additional USB to MIDI interface.

MIDI Local Off: If the MIDI keyboard has an internal sound source, it must be shut off when you use its keyboard for recording. This enables you to play the software instruments without hearing the sound of your keyboard at the same time. This function is referred to as "Local OFF" and can be directly set on your keyboard. If necessary, refer to the user manual for your keyboard to find out exactly how to do this.

External synthesizers

MIDI objects can also be played back over a MIDI interface onto external synthesizers, sound modules, etc. Set as default, the "pure" MIDI output (i.e. without using software synthesizer plug-ins) is sent to the system software synthesizers (Microsoft GS Wavetable SW Synth). This is required to preview MIDI files.

If you set the MIDI port of an external synthesizer as the MIDI output device (see previous section), the content of each MIDI object will be output in this manner.

Note: If the MIDI object is in a track containing a software synthesizer, the object will control this synthesizer. To output MIDI via an external sound synthesizer, select "no VSTi" from the list of software synthesizers.

Convert MIDI objects into audio files

If you use VST instruments, then you won't have to convert these MIDI objects into audio data before exporting your entire arrangement, since the sound is created on your computer and can be processed there.

If you still wish to do so (to free up processing power on your PC, for example), then switch the desired MIDI track to "Solo" and export the arrangement. Then add the exported file back into your arrangement and delete the MIDI objects in the exported track.

All MIDI objects which open external synthesizers via a MIDI interface (view page 167) will have to be converted into audio objects if you want them to be exported as well. They only contain control information for sound reproduction.

For this to happen, the output of the MIDI synthesizer (e.g. the sound card) must be connected to the input of the sound card. The MIDI data can then be played and recorded simultaneously via the record function. The result is an audio file that can be edited and exported together with the multimedia files.

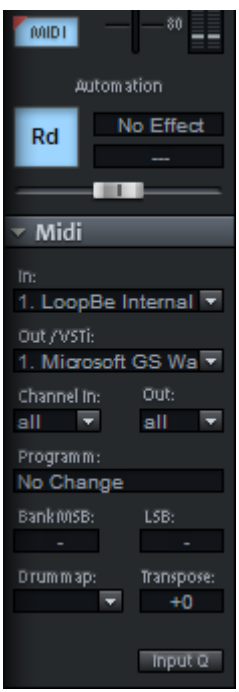
MIDI: Import, record, edit

Recording MIDI tracks

To conduct MIDI recordings, proceed as follows:

- Select the track you wish to use for the MIDI recording.
- Click on "MIDI" in the Track Editor of this track.

The MIDI recording is therefore activated and the MIDI section of the Track Editor unfolds at the same time where further settings are made.



- Select the MIDI input device which you want to use for your recording (e.g. your MIDI keyboard) under "In".
- Select the instrument that you want to play (e.g. a software synthesizer or an external sampler) under "Out".
- Select the sound that the instrument should create under "Program".

Note: With the included Vita instruments, the program selection is already specified with the choice of instruments in "Out".

The other options of the MIDI section are intended for special applications. More information about this can be found in the chapter "Track Editor" (view page 42).

The track is now ready for the MIDI recording.

Tip: Alternatively, you can also make the MIDI recording settings in the track settings (menu track or right-click on the track names).

Set in which recording mode you want to record in the transport console. You can choose from: Normal, overdub and replace.

Tip: Alternatively, you can also select the MIDI recording modes from "MIDI record" mode in the "MIDI menu > MIDI record mode".

Normal: This record mode corresponds to that of the audio recording, i.e. for each recording process, a new MIDI object is created over the existing object. The area of the existing object, where the new recording takes place, is replaced by the new object; but otherwise the old object is retained. Thus you can also correct specific parts of existing recordings in a subsequent recording without having to make the complete recording again.

Overdub: The data are recorded into already existing objects, and existing and newly recorded MIDI data are mixed together. If you record over several objects, they are combined into a single new object. Thus, for example, you can record complicated polyphonic sets of notes consecutively.

Replace: The data are recorded into an existing object, any MIDI data are overwritten. Several existing objects are combined into a single object. This discards previously made recordings.

After selecting the mode, make sure that the recording is activated for the track. The color of the actively switched record button in the track header changes to purple.

- Now you can now start the MIDI recording using the keyboard shortcut "R".

After recording, you will be asked whether you want to keep or delete the recording. At the same time, and within this dialog, you have the chance to change the record mode for the recorded MIDI data. After confirming this with "OK", your newly recorded material will appear as a "MIDI take" in the VIP.

Importing MIDI data

Existing MIDI files can be imported into a Samplitude Music Studio project as objects. However, you can also load a MIDI file as a separate object the same way as a wave, HDP, or RAP project.

Menu: File/Open/MIDI (*.MID) ...

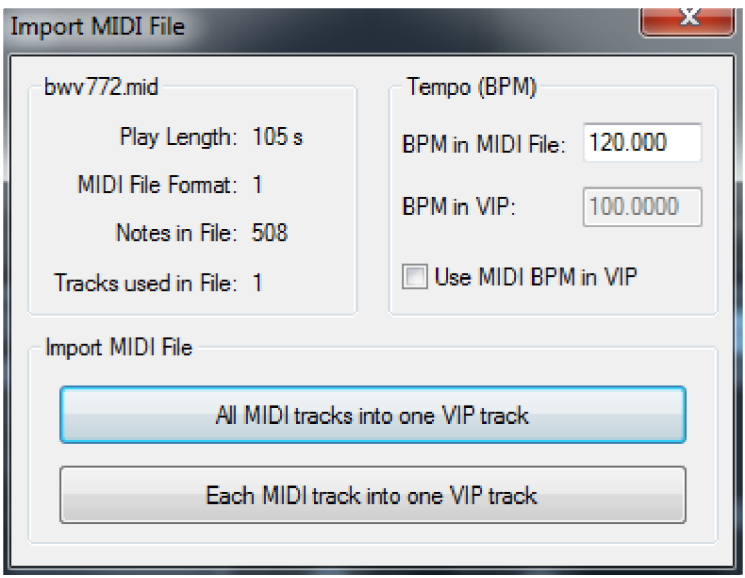
Shortcut: Shift + M

Mouse: Drag & drop from file browser or Windows Explorer.

If you import MIDI files, please note that only type 0 or 1 MIDI data is compatible with the import function. Each file should end with *.MID so that it can be recognized as a valid format.

MIDI files are generally imported like a wave file, irrespective of whether they are imported in a VIP window or a MIDI project window. For a VIP you can specify at which position you want to insert the new MIDI object. Set the play cursor at this position, select a range in the desired track or drag the file from the internal explorer or Windows Explorer directly into the track position via drag & drop.

Hint: The following dialog is automatically displayed if a VIP is already open as an active window. If you want to open the MIDI file in a separate MIDI project window without inserting the content into a VIP, please ensure that no VIP project window is active. Samplitude Music Studio will also display the MIDI import dialog if only one range of a MIDI project window is dragged into a VIP track.



The import dialog contains status information on the MIDI file you want to load:

Each standard MIDI file also contains temp information. Samplitude Music Studio displays this information in a separate section of the dialog. At this position of the import you can decide whether you want to adjust the VIP tempo to the tempo of the imported MIDI file. If necessary, a tempo marker is displayed in the VIP.

If you select the option "All MIDI channels into one track", Samplitude Music Studio inserts the MIDI object into the currently selected VIP track. The created MIDI object then contains all MIDI channels of the MIDI file.

Editing MIDI objects

Editing MIDI objects in Samplitude Music Studio follows the same principle as editing audio objects: MIDI objects can be copied, split, and trimmed, have fade handles for fading in or out, and a volume handle that scales the MIDI velocity. MIDI objects refer

to the MIDI data you have recorded while playing or importing, but are not saved on the hard drive as a MIDI file but are saved as a project file instead.

You can edit MIDI object in the MIDI object editor as well as in the different MIDI editors, i.e. piano roll, drum editor, controller editor, listen editor and score editor.

Keyboard

The keyboard enables software synthesizers to be played and recorded directly via the on-screen keyboard.



You can click the keyboard with the mouse to play the instrument. The closer to the bottom edge you click on the "virtual keys", the louder the sound will play. Of course, you can't seriously play music by clicking with the mouse (this function is more suitable for testing out sounds quickly). That's why you can also play the keyboard with the keys on your computer's own keyboard.

Note: This works only after you first click once on the keyboard using your mouse. Otherwise, pressing the computer keys will function as keyboard shortcuts for the different functions in Samplitude. If the computer keys control the program's keyboard, then the piano keys will display the corresponding keyboard characters.



Use the vertical arrow buttons to shift the octave range so that the keyboard may be played using the computer keys.



You can use the horizontal arrow keys to select the next/previous sound of the synthesizer, or they may be selected directly in the list field on the side.



This button opens the editor window for the synthesizer for fine tuning the sound.

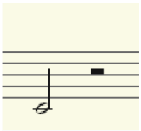


Use the slider to the right to drag the graphic display of the keyboard buttons wider. This is especially useful if you want to operate the keyboard using a touchscreen.

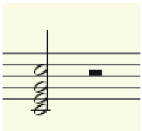
Arpeggiator



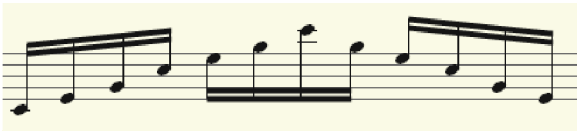
The arpeggiator is a special function that can be used to create full chords or broken chords (arpeggios, i.e. the notes of a chord played in quick succession) by pressing a single key.



C note



C minor chord



C minor arpeggio with 1/16 notes



1. This button activates the arpeggiator.
2. This switch determines whether the played note will generate no chord, a minor chord or a major chord.
3. This switch determines the type of arpeggio. When set to the far right, a normal chord is played. The other positions are up, down or up and down. The figures are repeated as long as the note is played.
4. The tempo of the arpeggio is set here and can range from 1/4 notes (slow) up to 32nd notes (very fast).

MIDI object editor

Menu: Object/Object editor

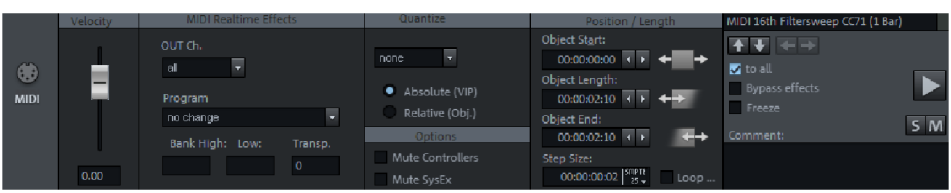
Keyboard shortcuts: Ctrl + O

Mouse: Shift + double-click

MIDI object parameters may be easily edited using the MIDI object editor which is structured similarly to the audio object editor. Among other options, you can set sound, length, volume, and program swapping for each MIDI object.

A Samplitude Music Studio MIDI object can contain events in up to 16 channels. For example, it is possible to control a multi-output VST instrument using a single object on several MIDI channels.

Or select a specific MIDI channel for all events in the MIDI object editor.



You can also use the MIDI object editor to quantize MIDI files into MIDI objects.

Note: These settings influence the MIDI object in realtime and not destructively, making the changes invisible in the MIDI matrix or drum editor.

Important functions and settings in the MIDI object editor:

Velocity: Normally, every MIDI note contains a velocity value which determines how "hard" the note will be played back. Changing the velocity value in the object editor scales the velocity of the notes in the MIDI object to its physical maximum or minimum values (1 or 127). Changing the fader is identical to changing the top-mid handle of the MIDI object in the VIP track.

MIDI real-time effects: The settings for a MIDI channel can be found here:

OUT channel: Here you can redirect the MIDI data of a channel to another channel.

Program: The values preset here will always be sent if the object is played back again.

Bank High/Low: This sets the MIDI bank change bytes.

Transp.: This button transports all MIDI notes.

Quantization: While the quantization conducted in the MIDI editor has an immediate effect on the start position of the notes, a virtual quick quantization takes place. **Absolute** refers to the absolute resolution of the VIP project while **Relative** refers to the relative resolution of the object itself.

Options:

Mute MIDI Controller: Switches the MIDI controller off.

Mute SysEx: Prevents the sending of SysEx data.

Position: Define the **object start/position**, **object length**, **object end** and **step size** here. The setting is equivalent to moving the object in the VIP track or changing the length using the lower length handles right and left in the object.

Loop: If you set a check here, then you will set the MIDI object to "Loop" mode. Now drag the bottom right object handle to the right and you will see that the events of the MIDI object are arranged in a row, according to the new length of the MIDI object.

The object name is displayed in the upper text field and can also be edited.

In the square field to the side, you can select the object color.

Use the **up/down arrow keys** to "jump" up or down to the object of a neighboring track.

Use the **double arrow buttons** to jump to the previous or next object on the same track. If multiple objects are selected, these buttons will not be active.

If the "**To all**" option is active, all selected objects are updated when the object editor is opened. All recently applied settings that have been made in a selected object will be applied to all other selected objects.

Note:

In a MIDI object **- velocity changes** are transferred **relatively**, i. e. they are increased or decreased relative to the velocity of other selected objects.

Bypass FX: Here you can deactivate all effects.

Freeze: If you click on the freeze function for an object, this will be calculated as a new wave file with all the associated effects. The new freeze object takes the place of the original object.

Play/Stop: This button corresponds to the normal playback function (spacebar).

Lock: The "Lock" button has the same function as the key button in an object. The object is then protected against any inadvertent horizontal movement. Additional locks against vertical moving, volume adjustment, fades, length adjustments, ripples or deletion can be set in the **system options** (keyboard shortcuts: "Y") under "Program" > "Object lock definitions". Locking can be temporarily cancelled by pressing the "Alt" key.

Solo: During playback this button moves the playback marker to the start of the selected object and plays that object only.

Mute: This button mutes the selected object. By right-clicking you can also mute the left and right channels individually.

Comments: You can type comments relevant to the selected object in this field.

MIDI editor

Notation display, movement, zoom

MIDI files can be edited in five main areas of the MIDI Editor:

- Matrix Editor (Piano Roll) (view page 179)
- Drum Editor (Possible to switch between Drum Editor and Piano-Roll)
- Controller Editor (view page 188) (e. g. velocity , MIDI volume ...)
- Listen editor (view page 183) (Event List)
- Score editor (view page 191)

Here various tools are available, for example, pencil or eraser. Exact values for each MIDI event can also be set in the edit fields via the Piano Roll.

With few exceptions, changes such as moving or deleting of notes always apply to all selected MIDI events, displayed in red. Changes made to a specific note always also apply to all other selected notes. You can, for example, select a group of notes in the Piano Roll and then change the velocity of these note groups which modifies all selected notes simultaneously.

Selecting MIDI events

Selection of MIDI events is generally the same in all three editing areas (Piano Roll, Controller Editor, List Editor). The differences are visible in the table:

Selection	Mouse action
Select event	Left-click on event
Add/Remove event from selection	Ctrl + left-click on event
Select current event, deselect all other events	Double-click on event
Marquee selection	Left-click on a free space and click and drag selection. (Selection tool in Piano Roll and Controller Editor)
Clear selection	Left-click on a free space (only in selection mode, not in the List Editor)
Set or change current events within multiple selection.	Left-click on selected event
Selection of section of events	Left-click on first event, Shift + left-click on last event (only in list editor)
Selection of all notes of a pitch	Double-click on a free space with this pitch or press the appropriate key on the keyboard (only Piano Roll)

Selection of all events	Ctrl + A, depending on the editing section, includes the selection of notes (Piano Roll), Controller events (Controller Editor), or all events (List Editor).
Select next or preceding note	Arrow left/right (only Piano Roll)

Notation display in piano roll and controller editor (with velocity curves)

Notes which are not selected within the editor are displayed in blue. The intensity of the color symbolizes the velocity, and the velocity increases as the color gets darker/stronger.

Selected notes: Multiple selected notes are displayed in red, and a more intense color symbolizes increased velocity.

Current event: Appears in bright red with a red border. The properties of the currently selected events are displayed in the edit fields above the piano roll. If an event is selected with the mouse, it turns into the current event.

Display of filtered events: You can filter specific events for the display to get a better overview of the events of a MIDI object.

Example: The MIDI object as notes in the MIDI channels 1, 2, and 5. You can now make all notes in channels 2 and 5 accessible for the selection and editing tools via the selection of the MIDI channels in the channel filter by selecting the two channels from the menu. All unselected filtered notes in channel 1 are displayed in gray in the piano roll and the list editor.

Events in the filtered channels can be completely hidden using "Hide filtered MIDI data" option in the menu.

The list editor provides additional display filters that only function within the list. The display filters are initiated with the settings of the playback filters (mute settings), but the filters can be set independently of one another.

Display of muted events: MIDI object settings (in the MIDI object editor, "Ctrl + O") can be used to mute notes and filter other MIDI events. This type of "muted" event is displayed lighter or paler in the piano roll and list editor.

Events in front of or behind the beginning/end of the object (recognizable by the blue lines in the editor or when the display is active and transparent as grayed-out ranges) appear similarly pale as non-muted events within the object borders.

Events above and below the current picture section: Two small red displays above and below the vertical scroll bar to the right-hand side of the MIDI editor screen show in red if there are notes outside the screen's display.

MIDI channel filter

You can control multiple instruments with one MIDI output via the MIDI channels. A MIDI object can contain events in up to 16 **channels**.

Events in one object from all channels or only from selected channels can be played back with the MIDI channel filter in the MIDI editor. To play back or edit events only from certain channels, select the appropriate channels in the "Options" menu > MIDI channel filter". Events in channels that are not selected will be filtered out. "Play back all" deactivates the channel filter.

Events that have been filtered out appear in gray and can be edited using the selection tool. They can be hidden with the command "Hide filtered MIDI data" in the "Options" menu.

Note: The list editor provides additional filters (such as filter by event type, controller number, Note Off events) that only function within the list.

Synchronized MIDI editor and VIP screen view

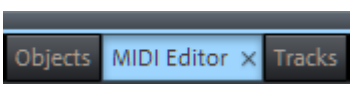
If you change the horizontal display or zoom using the scroll bars, holding "Shift" changes the corresponding VIP window.

Play/Play solo

“Play solo” only plays the MIDI object that is currently opened in the MIDI editor (corresponding with the filter settings in the “Options” menu). “Play” plays the entire arrangement.

Multi object editing (MO-Editing)

You can also load several MIDI objects simultaneously in the MIDI editor. All MIDI objects selected in the arranger are added to the MIDI editor by clicking the "MIDI editor" button in the Docker.



In an already-opened MIDI Editor you can include additional MIDI objects for Multi Object editing by clicking in the Arranger while holding down the Shift key.

The MIDI editor (and in multi object editing) always shows the current MIDI object and the current arranger track from which this object originates. In the field to the right you'll see the MIDI out of your sound card or the activated VST plug-in for this track.



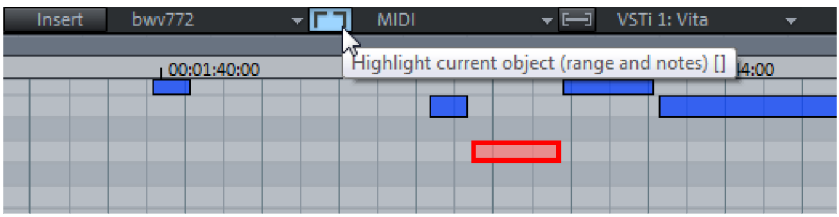
New MIDI events will always be inserted into the current object (i.e. the currently displayed object). The current object is also highlighted in the score editor.

If you click on the arrow next to the object/ track display, you will see all MIDI objects/MIDI tracks in MO Editing mode listed beneath one another. Here the current object or current track has a tick.

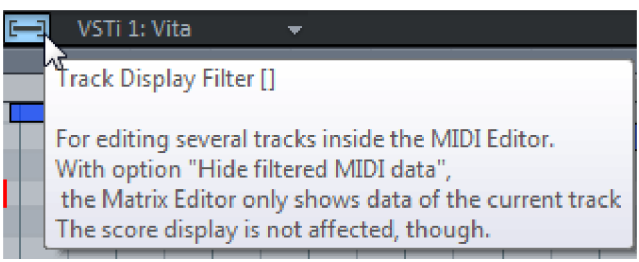
When notes or MIDI events are selected, the associated object becomes the active object. The current Note line will be automatically converted in the score editor.

You can also copy and insert MIDI notes between multiple objects.

The **current object range** can be highlighted by clicking the button behind the object selection field. Areas outside the current object will be grayed out and the notes of other objects will be paler but still selectable.



In addition, a **display filter for the current track** can be activated while in MO editing mode. Events on other tracks will then be grayed out. This also reduces the display in the controller editor to the velocity values for the current track. If the option "Hide filtered events" in the "Options" menu is also activated, MIDI events that are not current will be made invisible.



Note: When representing notes, the note system of the current track will be highlighted using blue note lines.

Step Recording with a Keyboard or Controller Keyboard

In the MIDI editor, so-called "Step recording" can also be executed using the computer keyboard or a MIDI keyboard. Activate the corresponding button first.



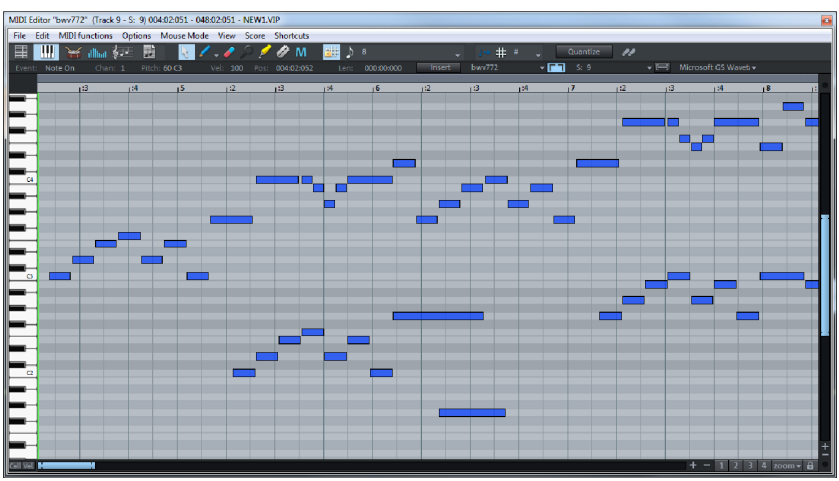
A marker shows the scope of the current octave for the following entries. Now you can enter MIDI notes step-by-step using the keyboard. Note length and step length can be specified by the length quantization values. The most important keyboard shortcut for entering MIDI notes using step recording:

Tab	One step forwards (set pause)
Shift + Tab	One step backwards
Ctrl + arrow up/arrow down	Entry octave upwards/downwards
CDEFGAB	Note entry in current octave
Shift	Enter chords

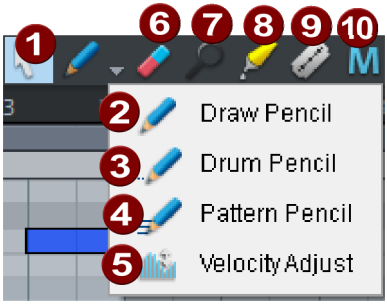
Different notes can be entered without the playback marker jumping if you hold down the "Shift" key. This enables chords to be played.

Notes can also be entered in "Step recording" mode by using the controller keyboard.

Edit events: Matrix Editor (Piano Roll)



For notes inside the Piano Roll, there are various editing options, so-called mouse modes. All the same functions apply in all modes (except for delete) for Note editing (view page 181), so that these modes differ from one another in behavior only when clicking on free areas.



Tip: You can switch between mouse modes using number keys 1-9 and the M key, but the MIDI Editor must be in focus for this to work.

1 Selection (1)

Lasso: you can drag a selection frame while holding down the mouse key.

Clicking on a free range highlights an existing selection.

2 Draw Pencil (2)

A note can be drawn with a left-click. Beginning and length are determined according to the current quantization settings

Various other drawing modes can be selected with a right-click on the small arrow.

3 Drum Pencil (3)

A sequence of notes is drawn. The note length and interval are determined based on the current quantization settings.

+ Alt Key: The first note's pitch will be retained for all further drawn notes. Moving backwards with the mouse (to the left) while holding the key down removes already drawn notes.

4 Pattern Pencil (4)

This mode allows you to draw entire Drum Patterns (or melody patterns). If you want to create a new pattern, you have to select it first in "Selection Mode" and press the keys Ctrl+N simultaneously (or go to menu "Edit" in the "MIDI/Drum Editor > Create pattern from selection"). If you have created a pattern, you can start drawing at any position. Draw the pattern at the position of the deepest note of the pattern. This makes an original pitch sound. You can, of course, draw in a different pitch.

+ Alt Key: The first note's pitch will be retained for the following notes.

Moving the mouse back (to the left) while holding down the mouse button removes the notes which were just drawn.

5 Velocity change (5)

The velocity values for the selected events can be adjusted in relation to each other by holding down the mouse key and dragging up or down.

+ Shift Key: Absolute velocity values will be changed, changing all velocity values to the same one.

6 Delete (6)

Clicking on the selected note deletes all selected notes. Dragging the mouse deletes all notes underneath the eraser.

7 Magnifying glass (7)

Left click: zoom in

Right click: zoom out

Left click + drag: Zoom in into a range

The zoom mode can also be activated temporarily by holding down a special key (default: Z key). After releasing the key, the set mouse mode is reactivated.

8 Glue notes (8)

Glues the note with the next note of the same pitch.

9 Split notes (9)

A note bar in the matrix is divided into two notes with a click. If the grid is active, the separation will take place at the next grid position.

10 Mute (M)

Individual notes or selected note groups can be muted and unmuted with a click. Also available as a command in the "MIDI Functions" menu.

Tips:

- Keyboard shortcuts for switching between mouse modes (tools) may be freely defined (view page 491).
- "Delete" mode may be activated anytime by clicking/dragging with the right mouse button. You can, for example, add new notes with the pen using a left-click and remove already drawn notes with a right-click, without having to change the tool.
- Notes created with the drawing mode receive a MIDI channel and velocity from the Edit Fields via the Piano Roll.
- You can select the next/previous note using the left/right arrows. With the arrow up/down you can change the pitch of selected notes in a stepwise fashion.

Edit notes with the mouse

Edit existing notes by clicking and dragging. Depending on where you click on the note bars several options are available, which are visible by different mouse pointers.

 Change note start time: Grab note bar at the beginning, note end remains the same

 Change note length: Grab note bar at end

 + Shift Set fixed note length for multi-selection: Hold Shift key and drag current reference note longer/shorter. This sets all selected notes to the same length.

 + Ctrl Scale note length for multi-selection: Hold Ctrl key and drag current reference note longer. All notes will be lengthened by the same factor.

 Move note freely, pitch and start time change

 If Alt is also pressed in Move mode, the note will only be moved horizontally, retaining the pitch.

 If Shift is pressed while in Freehand Draw mode, only the pitch can be changed, the position will remain the same.

 If the setting "Ranges for limited movement" is activated in the "Options" menu, clicking and dragging the first half of the note results in a change to the position, while clicking the end half changes the pitch.

Pressing the **Alt key** while moving the mouse temporarily deactivates the quantization grid.

Moving and zooming

The vertical and horizontal view or zoom are adjusted with the Scroll bars just like in the project window.

Mouse wheel:	Scroll horizontally
Alt + mouse wheel:	Scroll vertically
Shift + mouse wheel:	Zoom vertically
Ctrl + mouse wheel:	Zoom horizontally

Editing selected events (edit fields)

The properties of each event in the piano roll, controller, and list editor can be edited by clicking the edit fields below the editing tools. The following buttons are available for each note:

- Channel
- Byte 1 (or pitch)
- Byte 2 (or velocity)
- (Start) time in bars: beats: ticks
- Length in bars: beats: ticks

The display of the ticks has a resolution of 384 PPQ (i.e. 384 ticks correspond to a quarter note).

Used to edit, click, and drag the displayed value. Hold down the left mouse button and drag up or down to increase or decrease the value.

Note: The value adjustments are greater if you press "Ctrl".

You can also edit the value numerically via the keyboard by clicking on the figure.

Multi-selecting events leads to a few special features:

You can change the values relatively by dragging the mouse, using the mouse wheel, or entering numeric values and then confirming by pressing "Enter" (for pitch and velocity).

You can make absolute changes by simultaneously holding "Shift" while dragging & dropping or by completing your entry with "Shift + Enter".

Note: MIDI channel changes are always absolute.

List editor (midi event list)

Open list editor

The MIDI editor has an integrated display of all events in list format. This list editor can be opened with the button above the keyboard or by using the “Alt + L” keyboard shortcut.

When the list editor is opened and activated for editing it has a narrow red border. This is to make clear that certain functions, e.g. select next/previous event (cursor keys) or the “Select all” command, refer only to the list.

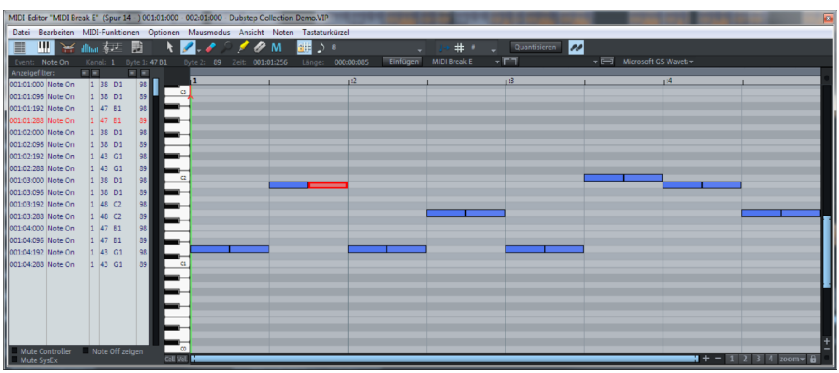
Working with the list editor

The list editor does not only display note events, but also MIDI controller and SysEx data. This controller and the data can be hidden and can even be filtered during playback (“mute”).

Double clicking on a SysEx entry in the list opens a simple editor for viewing and editing the SysEx information. A note always has a "Note on" and "Note off" event. These are always selected and edited in pairs (note off events are not displayed by default, but can be displayed by checking the box below the editor).

New events can be created directly in the list editor by using the “Insert" button. The current values of the edit fields in the upper frame of the piano roll always apply. Therefore, before editing these fields please ensure that no event in the piano roll is selected.

Tip: If no current event has been selected, you can determine the insert position by setting the play cursor.



For editing certain events only, the list editor has a view filter for each column. These are small check boxes above the list editor columns. Select a representative format, e.g. a note of a certain pitch. Then click on the display filter of a specific column to display only events of this type, e.g. of the selected pitch. All other events are now hidden. View filters can be combined. For example, you can use the “Select all” command ("Ctrl + A") to select and edit all type 10 control change events (volume) of MIDI channel 6.

MIDI editor tips & tricks

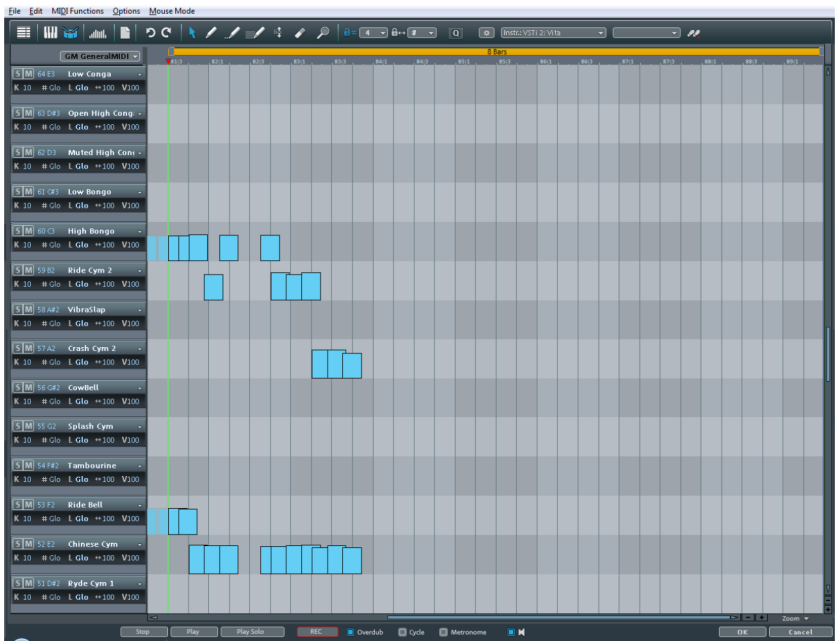
You can copy & paste MIDI data within the editor and between different MIDI objects. MIDI data is always inserted at the current position of the play cursor.

Duplicating: If the grid is activated (“Options -> Quantization grid active"), the selected notes are copied and inserted from the next grid point following the selection. They are otherwise inserted immediately after the selection.

Drum Editor



Clicking this button switches the MIDI editor to Drum Editor mode.



The same content of a MIDI object can be edited with the Drum editor like in the "normal" MIDI editor. The same tools are available. The "Piano Roll" here is specially adapted to edit drum sequences:

- For each pitch there is a **Drum editor track header** instead of simple piano keys. Here, you can assign a name to each drum instrument or rather to each pitch, as well as set the output note and channel, grid and quantization settings, and velocity scaling in %.
- Cell mode (view page 186) is used. The display width for each drum event in a cell can be individually set for each instrument as well as in the respective track header.
- All individual settings for each note can be edited as a whole in a drum map.

Important: When you switch from Drum Editor mode back to the normal Piano Roll, you will be asked if you wish to apply mapping (view page 187) or not. If you **add mapping**, all mapping settings will be applied to the MIDI object. For example: You changed the output value for an instrument with a pitch of 35 ("Bass drum 1" in GM Standard) to 36 ("Bass drum 2"). If mapping is applied, these notes will be replaced by corresponding "real" notes with a pitch of 36.

Cell mode

"Cell" mode serves to improve the overview as it limits the display to only the most important information, note starting points, and velocity.

Each time position of a bar is displayed as a row of cells in on/off states. The note length is not displayed, but rather a unified display width is used. This way, it all looks similar to the step sequencer of a drum computer (see Robota (view page 250)).

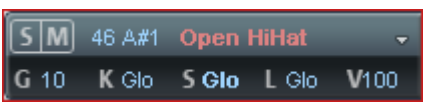
The set quantization grid can be read from the width of cells. "Swing" and "Offset" settings of the quantization options are also made clearer thanks to cells of various widths and by repositioning.

The height of cells displays the velocity of the note. When drawing new drum notes the velocity can be specified via the vertical drawing position within the cells. In connection with the "Drum draw" mode, increasingly loud drum rolls can be drawn in easily.

By clicking on the upper edge of a cell and dragging it vertically with the mouse, the velocity can be adjusted directly without having to use the controller editor. In "Velocity" mouse mode ("Ctrl + 5") it's even easier; all you need to do is click anywhere on the cell.

Drum Editor trackbox

In the drum editor, each individual note has its own trackbox, and individual settings can be specified for each instrument. When zoomed out, each trackbox can be increased in size with a simple mouse click.



S/M: Each individual instrument can be played solo (**S**) or muted (**M**).

Note number: The output note from the instrument can be set here. This can be different to the note currently displayed in the MIDI object so that individual drum instruments can be substituted. To put the display of notes back into the usual order (deep notes at the bottom, highs at the top), click on "Map" at the top and use the "Sort drum map" command.

Instrument name: Double clicking on this field lets you rename your drum instrument.

Quantization options/colors: Use this menu to assign any one of the eight different colors to the cells of a drum instrument. The dialog for the instrument's quantization options is also opened here.

The dialog is the same as for global quantization options (view page 205), but the settings only apply to the individual quantization options if an individual grid value is set for the note as well.

K Output channel

Quantization grid, "Glo" refers to the global value (More information can be found in the section "Quantization settings" on page 205)

L Note length, # corresponds to the grid value, "Glo" to the global value

 Length of the notation, # corresponds to the grid value (i. e. the entire cell width), "Glo" refers to the global value of the note length

V Velocity scaling: The velocity value of each note is multiplied by the value set here in %.

Scaling is audible, but is not visualized further. The purpose of this setting is the customization of the volume ratio between the individual drum instruments. Software instruments usually provide their own mixers.

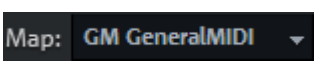
Drum Maps

Drum synthesizers usually respond to notes with different pitches and different sounds. You are then able to control an entire drum kit and an array of other percussion instruments via one MIDI channel. Assigning a MIDI note to a particular drum sound is called "mapping". A "General MIDI" map is used by default.

It may be the case that your synthesizer (regardless if real or virtual) uses a different mapping setup. This means that when you play the drum event, the sound you wish to hear may not be heard (for example, instead of a bass drum, you get a high tom). In this case you must adjust the mapping. The settings for individual instruments can be specified in the track header (the number/note value next to the solo/mute buttons).

For more extensive changes we recommend using the Drum Map Edito (see below). There you can save your Drum Map as a file.

A project may contain various different Drum Maps. All Drum Maps saved in the project can be selected via the menu. If you require a Drum Map from a *.map file, you will have to load it into the Drum Map Editor first so that if can be shown in the menu. You can edit the individual Drum Maps in the Drum Map Editor.



The Drum Map can be set in the Drum Editor by clicking on the list field above.

Drum Map Editor

The drum map editor can be used to create and edit drum maps.

The "Drum maps" list on the left-hand side displays all drum maps which are available to the project. The drum map **GM General MIDI** is always available to start off with.

New: Creates a new, empty drum map.

Copy: Creates a copy of the existing map. This way you can quickly create variations of a drum map with various note allocations which can then be toggled via the drum editor.

Load/Save: Use this to save a drum map (*.map file). This way you can use a drum map you created for a synthesizer in other projects as well. All loaded maps will be displayed in the "Map" menu of the drum editor.

Delete: Removes the selected drum map from the project.

Use the **name** field to rename the selected drum map. The settings (mapping) of the individual notes for each drum map will be displayed below this in tabular format.

Pitch: This is the incoming MIDI note.

Instrument: Displays the name of the drum instrument, e.g. "Bassdrum 1".

Grid: If desired, you can set up a grid for the starting point of the drum events.

Length: In this field you can set the grid for the note length.

Output note: This is the note value to which the drum instrument (the incoming MIDI note in the "Pitch" field) should be routed or mapped.

Channel: You can set up an individual channel for each instrument here.

Quantization options: This opens the dialog for the each instrument's quantization options (view page 205).

Instrument, grid, length... apply to all: This applies the corresponding setting of the selected instrument to all other instruments.

Controller Editor

The Controller Editor is a graphic editor that allows you to edit the velocity of notes in the Piano Roll and Controller events. A Continuous Controller abbreviated as CC or simply referred to as the Controller allows you to transfer control values such as for filter, volume and panorama position.

Tip: All control elements for MAGIX Vita Solo Instruments and MAGIX Vita can be controlled via the MIDI controller.

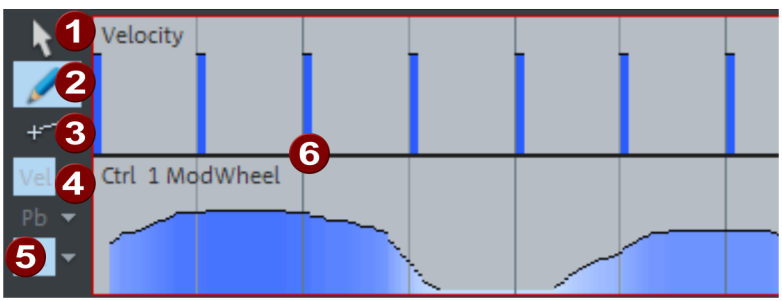


The Controller Editor is preset as hidden. Unhide it by clicking the button below the Piano Roll or with the key shortcut "Alt + V".

The velocity values of note events are displayed as colored bars in the Controller Editor, whereby darker and higher bars symbolize larger values. The bars are located directly below the respective notes.

The values of other controllers are shown as bars. The width of the bar extends to the next event. Because the controllers typically change in small time intervals more or less continuously - regardless of note events -, they appear as ascending or descending ramps. In this case, the height of the ramps and their color intensity also represent the last defined value of an event. Selected controller events also appear in yellow.

Tools



Controller Editor for editing the velocity of existing notes (left) or controller values (right)

1  **Selection tool:** Specifically select existing controller events or notes and adjust their values.

2  **Freehand drawing tool:** Freely draw new controller values or a gradient.

3  **Draw line:** Use the line function to quickly insert a straight controller gradient (ramp).

4  **Controller Selection**. Select a controller to edit by clicking the menu. Controllers, whose data is already available for the MIDI object, are marked by an asterisk.

5 Up to four controller curves can be edited simultaneously. These can be hidden or displayed using the corresponding buttons.

Note: Only one controller curve is preset in the MIDI Editor. To display the additional buttons you have to increase the height of the controller curve area by dragging the top border upwards.

6 Velocity values are only available at time positions of the corresponding notes and in the case of multiple notes occurring simultaneously, several appear on top of each other (view page 191). Controllers are independent of the notes.

Selection tool

Select multiple controller bars by clicking and dragging a range in the Controller Editor; individual values can be selected by single-clicking within the bar. When selecting a velocity bar, the corresponding notes will also be selected.

By clicking and dragging the upper edge of a velocity or controller bar, you can immediately change its value. For multiple selection, the following rules apply: Each controller is increased or decreased by the same absolute value. Holding **Ctrl** while dragging changes the values relative to each other.

For example: Two controller values are selected; the first is 30 and the second 60. If you drag the end of the larger bar up by 30, then the values will change to 60 (30 + 30) and 90 (60 + 30). If you increase the larger bar with relative values (by holding Ctrl) by 30, it will result in an increase of 50%. The smaller bar will also increase by 50%, meaning a increase by 15 (50% of 30), resulting in a final value of 45. If you instead drag the smaller bar (+ Ctrl) and move it from 30 to 60, it will result in an increase of 100%. The larger bar will accordingly be increased to 120. In other words: The relation between the selected values will remain the same when they are relatively changed.

If you hold **Shift** while changing the value of a multiple selection, all of the selected events will be set to the same new value.

Drawing tool

With the **Freehand drawing tool** (Mouse pointer: pencil) you can draw any number of controller curves. With the **Line drawing tool** (Mouse pointer: crosshairs) you can create a linear controller gradient (ramp). By dragging backwards, you can delete your curve during drawing. You can temporarily activate the Freehand drawing tool with the Selection tool by additionally pressing the **Alt key** before clicking. The **Shift key**

temporarily activates the Line drawing mode when using the Selection tool as well as the Freehand drawing tool.

Hint: If you edit velocity with the draw tools, no new notes are generated; only existing velocity values are modified.

Tips for editing velocity

In polyphonic events, meaning when multiple notes are played simultaneously, the bars appear on top of each other, making it difficult to edit the end of a particular bar. To edit only notes of a certain pitch, e.g. all C1 notes in the Controller Editor, click on the respective key on the keyboard to the left of the Piano Roll. The key and the background of the selected pitch are highlighted. Now only the velocity values of notes of this pitch are displayed in the controller editor.

This also works for several pitches. You can add additional notes with Ctrl + click or space between two notes with Shift + click on a second note. These are simply view options of the Velocity Editor. Multiple note selection is also possible using double-click

A further possibility is to selectively edit velocity bars located on top of each other, which is based on the fact that the bar of the currently selected note is selected/edited using the mouse. Therefore, first click on the note within the Piano Roll, or click on the bars located on top of each other and then select the required note using the cursor keys. Then change the controller value by dragging the highlighted (current) bar.

Besides directly changing the velocity values of a selected note, you can change several velocity values at once by clicking in a free space and dragging the mouse over several velocity values while holding down the key. You can then also create sequences by moving the mouse in a curve. A previous (multi-)selection is ignored. For example, you can easily create a crescendo or decrescendo effect.

Quantize controller events

MIDI controller events can be quantized and thinned out; select the "MIDI functions" menu and the "Quantize/Thin out controller" command to do this. Quantization occurs according to the quantization settings (view page 205).

Score editor

The score editor displays the MIDI data of a MIDI object as a score sheet. It "interprets" the available MIDI data into real time. If you move or change the MIDI data, such changes are immediately reflected in the score image. If you insert a new note in the score editor, a corresponding MIDI "Note on" event is created immediately. Therefore, do not view the score editor as a score painting program, but more as an interpreter for MIDI data.

For instance, it is not possible to insert or delete rest symbols directly. Samplitude Music Studio automatically "registers" rests in the gaps between the MIDI notes. You will therefore always have a valid score sheet and "complete" bars, even if the MIDI object should only contain a single MIDI note: the necessary rests are automatically inserted into the bars.

The common controllers of the MIDI editor in the score editor operate as usual, e.g. the eraser is used for deleting notes or the pen for creating, copying, and inserting new notes. In this chapter you will learn how you can edit your MIDI objects within the regular score. While the event editor contains specific editing options for certain details (dynamics, note length), it is better to make MIDI changes directly in the score sheet as it guarantees a better overview.

Opening the score editor

The score editor is integrated into the MIDI editor window. If the MIDI editor is opened, then you can activate the linear score view by pressing the "Score editor (linear)" button.

 Score editor (linear) button

Navigation: You can adjust the play cursor directly in the score by holding shift and clicking the desired position. You can set the playback range by holding the "Shift" key and left clicking the left border and right clicking the right border of the range.

Score editor modes

Samplitude Music Studio offers two alternatives for viewing the score: linear display and page mode.

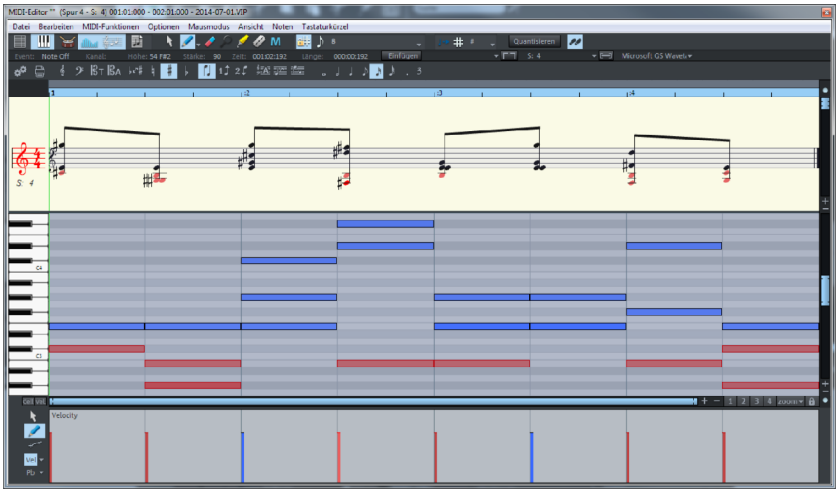
The linear note display can be combined with the matrix display to offer ideal MIDI editing conditions, since the detail in depth of the matrix editor and overview can be supplemented by several score systems. You can select the score in the score sheet and perform fine adjustments in the piano roll. Selection and zooms in all editor views (linear score, piano roll, event list, velocity editor) are always synchronized.

Linear view

 Score editor (linear) button

For detailed editing of the MIDI data in the score you should preferably select linear view mode as both matrix and velocity display are available. All parameters such as pitch, note length, and velocity are displayed.

Please note: Only the notes of the currently active system are displayed in the velocity editor if notes and velocity are parallel. The red bar mark indicates the currently active system.



Notation view in "Linear" mode (move bar between score and matrix)

The horizontal zoom above the scroll bar zooms parallel to the matrix view.

In linear mode details can no longer be displayed correctly if you zoom out horizontally, since the note symbols overlap. It may then be necessary to reduce the size of the notation symbols (+ & - buttons on the right). Despite the no longer correctly displayed details, zooming out can still provide you with a good overview, particularly in large scores. Samplitude Music Studio can adjust the notation symbols automatically. To do this, please select "Automatic zoom" in the score menu.

Page view

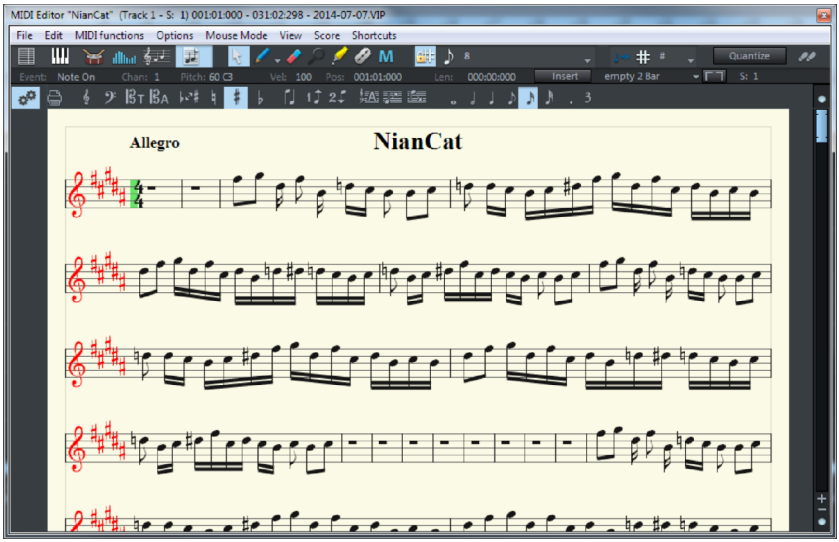
This page mode displays the notes just like on a musical score sheet, which also serves as a print preview. Here you can select notes and allocate them to voices/staves and delete them, although you cannot move them with the mouse or pen.



Score editor page mode

Page view is not only useful for preparing a score sheet (e.g. for titles, borders), but also for editing longer sequences. The stave break allows you to display considerably more bars than with the linear display.

Scrolling in full view mode: Use the vertical scroll bar to scroll from page to page.



Page mode as print preview: You should first change the page format (in the score properties dialog) to the paper format of your printer before setting up the page for printing as the display depends on the page format. You will then see your score exactly as it will be printed.

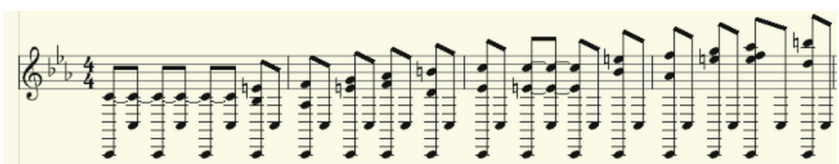
Score sheet

The automatic conversion of MIDI data into score material is usually sufficient for editing MIDI data; in this case, efficiency is required instead of a perfect, ready-to-print display. However, it may still be necessary to adjust some of the display options for the musical material during editing. These display options can be found in the "MIDI score properties" dialog, which you can open by clicking the corresponding button.

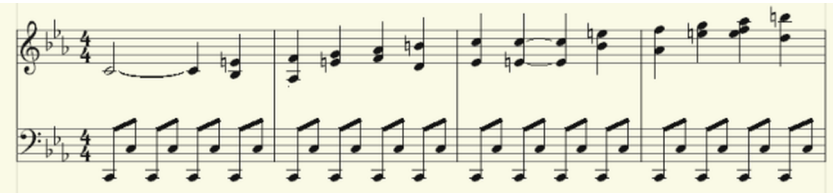


Open score settings dialog for notation system and page properties

Presets are available here, too. These are pre-programmed standard settings for certain instruments or groups such as "strings" or "orchestra". Selecting a preset improves the score display and its readability.



Violin clef view (preset)



Changing the score by selecting the piano presets

More information about the score is available below.

Editing MIDI data in the score sheet

Selection

As usual you can select notes by clicking them. You can select a group of notes (e.g. a chord) by sketching a frame over them while holding down the mouse button. Select multiple single notes by pressing "Ctrl".

Note parameters

The parameters pitch, velocity, and length can be changed for one or several selected notes. If you have selected one or several notes the data of the current note will appear in the info bar above the score view. Changing a parameter may have a comparable effect on all selected notes, just like in the matrix editor.

Move and transpose

To move notes, first select and then drag them to the desired position. Here the info box can help you keep track of the pitch or position. The step size when moving is determined by the selected quantization raster in the MIDI editor.

Copy

Select the desired notes and copy them by holding down "Ctrl" and dragging the mouse. Alternatively, you can also use the copy function of the edit menu.

Insert new notes

You can also insert new notes in the score editor by using the pen. Click on the desired position with the pen, hold down the mouse button and, if necessary, correct the position and pitch. If you let go of the mouse key, Samplitude Music Studio will add a new note of the same length as the selected length quantization value. You can only insert new notes into the active stave. For instance, to insert a note in the lower part of a piano system, first click on the lower staff in the system on the left.

Only notes are inserted that correspond with the current pitch. Non-scale notes or chromatic intermediate steps are skipped. When you enter conventional music material with the mouse, diatonic insert mode increases the chances of hitting the

correct note. If a new prefix is to be added to the note, you can move the note chromatically with the arrow key. This way an inserted F in C major can be transformed into an F# by pressing "Page up".

Delete notes

You can delete notes by:

- selecting them and pressing "Del" or
- by clicking on them with the eraser (or the right mouse button)

Insert notation symbols

Clef symbols can be inserted at the current cursor position by pressing the corresponding clef symbol in the active system.

Delete notation symbol

Notation symbols such as clef and pitch cannot be selected, since they are meta information for the notation display and no MIDI events have been allocated to them. They can also be deleted by clicking them with the eraser (or the right mouse button).

Adjusting and optimizing the score

Samplitude Music Studio automatically generates a notation display from the MIDI events contained in the MIDI object. This is always correct with regard to pitch and position. However, this does not mean that the notation can be read optimally, since displaying note lengths also plays an important role in this context. In this case, the notation permits more interpretation flexibility so that the user usually has to intervene. The illustration shows a typical example of how poor a readable transformation of a sixteenth note piano sequence would look in notation.

This representation may be correct, but it is not readable. Why is that? The MIDI events contain very precise information on the start of a note, i.e. its length and pitch, which has to be taken into account during playback. It may influence the groove of a song if the notes are always slightly shorter than sixteenth notes. If this were to be displayed correctly in the notation, then the score would be unreadable as in the example above. The MIDI events also do not contain information on whether the gap between two notes is a real rest, its harmonic correlations (pitch), and the characteristics of the dynamic sequences. This is why automatic processing of notation always differs from what would be ideal. Samplitude Music Studio includes a number of automatically and manually controllable functions for making it easier to read the notation. The reworked version of the the above score illustration shows how big the difference can be.

Note allocation in multiple staves

The term "Stave" refers to an individual line within a stave as well as all staves of a score. In cases where it is important to be able to differentiate a score and a staff from one another, we use the term "Stave" for the score and "staff" for a single system.

What is meant by a "Stave" can often be interpreted from this relation, for example, in a two-handed piano piece, "upper" or "lower" systems are referenced.

Samplitude Music Studio provides multiple systems, e.g. for piano notation, or entire scores which can possibly be comprised of up to 16 individual systems.

To manually assign notes to a system, click  to move the selected notes one line on a stave higher. Click  to move them one line lower. This results in the note being connected to the line (independent of the MIDI channel or pitch). This manually set allocation can be undone by clicking on

 "Automatic staff allocation"

When transcribing a MIDI piano recording, splitting the notes into a two-line piano system using the split point is recommended. The points where individual notes are placed incorrectly in a line can be corrected easily by assigning the notes manually with a click to the desired stave.

The automatic allocation of the score to a specific line is flexible. Either the MIDI channel of the note event, the pitch, or even a combination of the two can make up the criteria. This permits simpler and faster distribution of MIDI notes in the score line.

For example, it's often the case with some standard MIDI files that a particular piano piece's lower system notes have a different MIDI channel than that of the notes of the upper stave. Let's assume the notes for the right hand are on channel 1 and the notes for the left hand are on channel 2. In this case you should set up two staves for the stave in the note stave settings. The easiest way to do this is with the "Piano" preset. For the first staff, set the MIDI channel allocation to "Ch. 1" in the "Channel" selection box and "Ch. 2" for the second staff. Deactivate allocation according to pitch by setting the split point to 0 (see MIDI score settings dialog).

The rules for allocation are as follows:

If the (preset) option "Automatic stave allocation" is set for the note, then the staves will be played through until the MIDI channel corresponds with it and the pitch is over or equal to the split point.

Note: It may happen that some notes are not shown at all as they are not yet allocated to a stave.

Multi-voice notation

Up to two independent voices can be annotated for each staff. The voices differ in the direction of the note stems: the first voice is always with the stem pointing upwards, the second with the stem pointing downwards. Rests are displayed individually for each voice.

Multi-voice notation can simplify the score considerably and enable multiple instruments or parts to be displayed in one staff together.



You can set the voice by selecting the notes and clicking on the button or menu command "Assign first voice" or "Assign second voice".



This sets the stem direction of the notes, and therefore the voice itself.

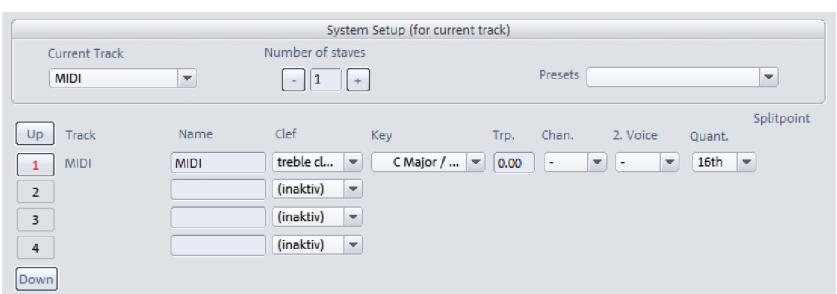
This assignment can be undone by clicking on

 "Automatic staff assignment for notes".

For automatic voice assignment, the note's MIDI channel has to be analyzed.

To do this, set up a MIDI channel for the second voice in the stave properties dialog. This can be set individually for each staff. All notes of a stave whose MIDI channel has not yet been assigned to a second voice, are added to the first voice.

Voice assignment via the MIDI channel can be practical when displaying standard MIDI files with multi-voice piano pieces if the voices of the right hand are set to the first and second MIDI channels and the voices of the left hand are set to MIDI channels three and four. In this case, apply the following settings:



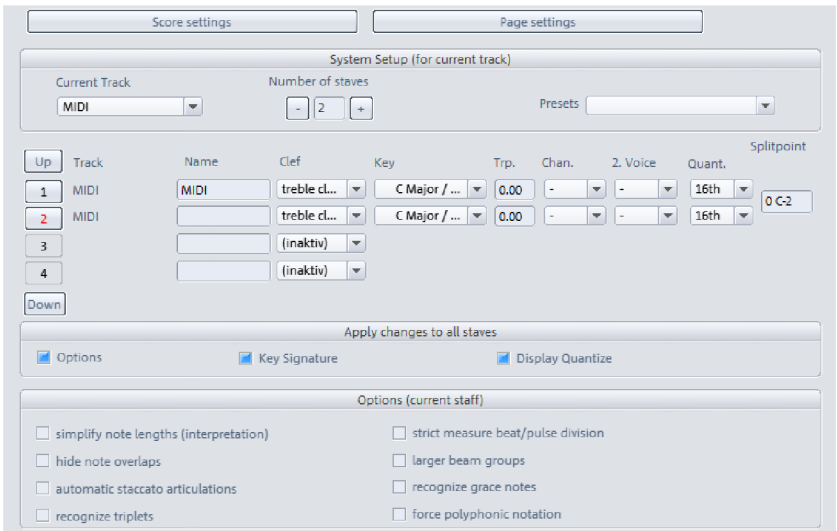
Note: If there is no MIDI channel selected for voice assignment, only one voice will be annotated (if manual voice assignment does not occur).

MIDI score settings dialog



Open score settings dialog for stave and page properties

Note stave and page format settings can be set here. None of the settings have any influence on the MIDI data itself, but rather only on the display of the score.



Note: The affected stave settings are always applied to all MIDI objects situated on the current track. The page format settings are global and valid for every VIP.

Stave settings

All settings for the stave and display parameters/options can be accessed via this dialog page. Here you can enter the clef.

Samplitude Music Studio provides MIDI files with up to 16 staves on one track. For each staff, the clef, display transposition (for instruments that transpose, for example, a saxophone), and display quantization can be specified individually.

Furthermore, an instrument's prefix ("Name") can be set as well as the MIDI channel for automatic stave/voice assignment.

Similarly, the split point serves automatic stave assignment: Notes above the split point are added to the upper stave, while those under the split point are added to the stave beneath it (as long as the MIDI channel matches).

The active staff is recognizable via the index marked in red. The list of 16 staves can be scrolled vertically using the arrow buttons (up/down). In the lower range the display options of the active staff are shown.

Optionally, all changes to settings, display options, clef, and display quantization are always transferred equally to all staves.

Note display: Interpretation options

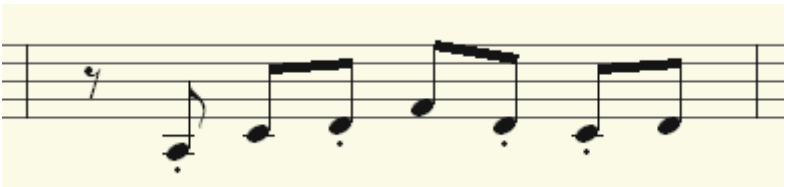
None of the options have any influence on the MIDI files or playback.

Simplify note lengths (interpretation)

Displays rests and slurred notes in such a way that the score is as legible as possible without influencing playback.

Automatic staccato articulations

A staccato symbol is added to a note whose value is considerably longer than the "real MIDI note". This is practical when working with simplified length display.



Option: "Simplify note lengths (interpretation)" selected.

Additional option: "Automatic staccato articulations".

Hide note overlaps

Prevents the overlapping of sequential notes which, for example, arises as a result of playing legato:

Recognize triplets

Activate this option if triplets are present in the MIDI object.

Please note: The display quantization value always has to be one step finer than the smallest discernible triplet value. To recognize one eighth triplets, display quantization has to be set to at least one sixteenth (or to 1/64 for 1/32 triplets).

Strict measure/pulse division

There are no note or rest values longer than a beat subgroup (pulse). Longer notes are displayed as multiple slurred notes. This can simplify the legibility of the score.

Larger beam groups

Beam groups are partially compiled across beat subgroups. This can simplify the legibility of the score.

Recognize grace notes

Note values which are much shorter than the display quantization value are annotated as flam notes as long as a base note is present.

Notation symbols

Clef



There are four clefs available in Samplitude Music Studio: violin, bass, tenor, and alto clef. Samplitude Music Studio differentiates between base clef and clef change. The base clef can be set up for every stave in "Score settings" (and applies to all MIDI objects on the current track). A clef inserted from the tool bar, will be interpreted as a clef change. Clef changes are possible any number of times in a song and also within beats.

Insert: Activate the staff into which the clef should be inserted (by clicking on the staff signature to the left).

Position the play cursor at the desired insert point and click on the desired clef in the toolbar. Move the playback cursor to the desired insert position and click on the desired clef in the toolbar. The clef will be inserted musically, not graphically, with a clef change at position 10:01:000 (the beginning of the tenth beat) the clef symbol at the end of the ninth beat will be displayed according to note set rules.

Clef changes can also be deleted by clicking on clef symbol with the eraser (or the right mouse button).

Beat signature

The metric and beat signature symbols are created automatically from the tempo markers of the VIP project.

Beat changes are possible at every full beat border. In addition, you might want to create a beat count measure marker with the new signature (for example, 6/8) at the desired position. If there are no beat count measure changes, then it's enough to set the bar type of the piece (for example, 3/4) in the transport control.

Accidental

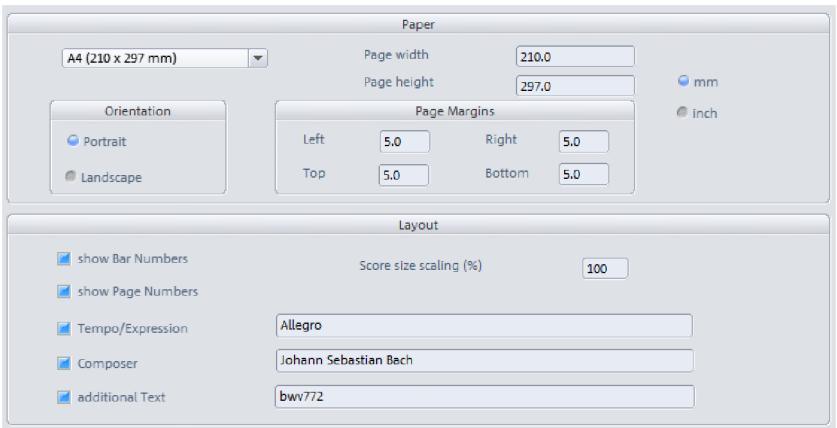


Enharmonic change

Samplitude Music Studio sets the sharps and flats according to the clef description you selected. It is often the case, however, that enharmonic change can considerably optimize the legibility of certain passages. In this case you can work manually. To change one or more selected notes enharmonically, click on the corresponding button. The function transforms flats into sharps and vice versa.

Page format settings

You can select the page format independent of the printer settings so that it always has the same note layout regardless of workplace and independent of the printers installed in Windows.



In the score/page format setting, texts for tempo description, composer, and an additional text can be entered. Similarly, you can choose which layout elements should appear on the page (check boxes for beat numbers, page numbers, and texts).

Printing score

Samplitude Music Studio automatically creates the layout of the score and allows optimal division of staves and staves on the page. You only need to specify the page size, orientation, and page borders.

- **Note size:** Here you can scale the size of the note symbols and the printout. This is actually irrelevant when working using the monitor's display, since you can zoom whenever you want anyway. However, the size of the notes does influence at which position a line or page break occurs.
- **Set a value smaller than 100%** to get more beats/staves onto one piece of paper.
- **Set higher values than 100%** in order to keep larger note symbols on the printout.

Print notes

Activate the print process in the "Score -> Print notes" menu or via the print button. Furthermore, a printer dialog window appears which appears differently for each printer or printer driver. Depending on the printer there are various options, e.g. the selection of pages you wish to print and the number of copies. Make sure that you have set up the same paper format for the printer as for the page mode, otherwise the printout may be scaled and the page ratio changed.

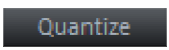
The following won't be printed, it's only visible on the monitor.

- The lines which highlight the page borders on the monitor
- Mouse pointers
- The color display of the currently selected notes and playback areas.

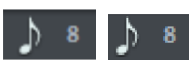
When printing a file (e.g. as a PDF file with a special printer driver) please note that you have to activate the option "Save fonts in document" in the printer driver so that the notation symbols will be displayed correctly in the document.

Quantize

Small irregularities during recorded playing can be smoothed with the quantization function. In contrast, mechanical sounding sequences can be made a little more groovy by applying the **"Swing"** function.



Clicking on the **Quantize** button shifts all selected notes to a customizable quantization grid. All notes are quantized without previous selection. Right-clicking on the symbol opens the quantize settings (view page 205).



1/4, 1/8, 1/16, and 1/32 notes and corresponding triplets can be selected as starting points (grid) and lengths.

The **Quantize** button always performs standard quantization (the note's start point and length are preset). In the menu MIDI functions (view page 206) > Advanced quantization provides other quantization modes (e.g. length only or Soft Q).

The quantization options enable the type and scope of the quantization to be set more precisely.

Quantization Grid ("Snap")



If snap is activated, the notes "snap" to the quantization values when they are created or edited.

The quantization values are also considered. For instance, the notes snap to the corresponding positions within the quantization window.

The snap positions are displayed within the Piano Roll as a matrix. A swing quantization is displayed by the different intervals of the vertical partitions in the Piano Roll. The grid can be hidden with the "Show Quantization Grid" command in the options menu (Ctrl + G).

You can deactivate the snap function while creating or editing notes by holding down "Alt" as you draw them.

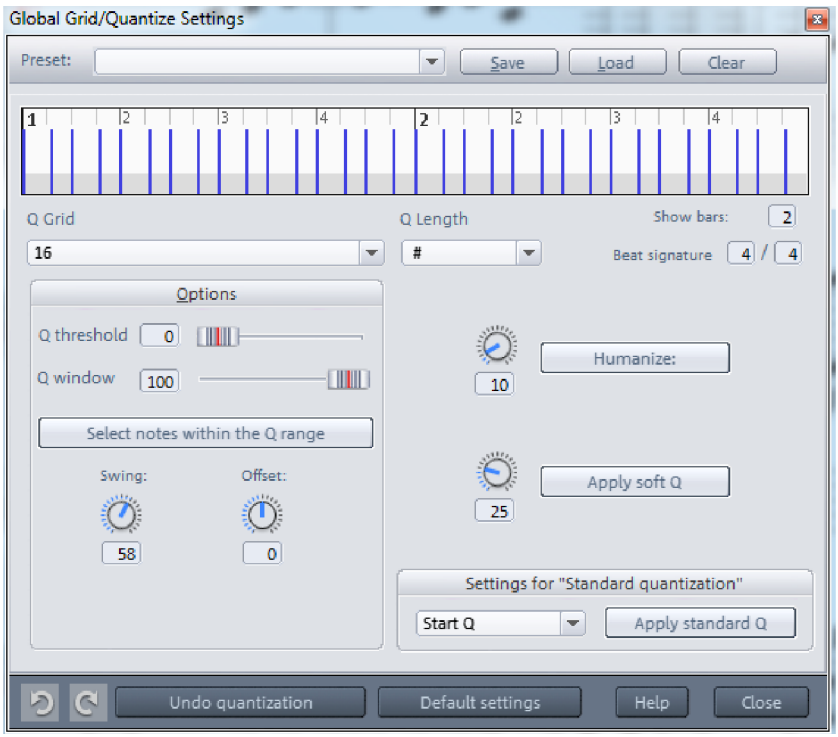
Move relatively on grid ("Options" menu): If this option is activated, notes keep their original intervals relative to the grid and not to the note start when they are moved; the distance moved snaps to the quantization value. Use this option if you want to move unquantized notes a certain distance without disturbing the timing.

Soft Grid ("Options" menu): If this options is activated, the quantization options are applied, e.g. when notes are moved they will only snap to the corresponding position within the quantization window.

Shortcut: Ctrl + G

Quantization settings

The quantization settings can be found in the MIDI editor menu under "MIDI functions -> Extended quantization" or in Samplitude Music Studio's main menu under "MIDI -> MIDI quantization settings".
The dialog with the settings is not "modal", i.e. you can leave it open if you wish, and test certain passages with different settings.



The selected quantization settings may be visualized in the top of the dialog. The blue lines indicate the target positions for the quantized notes, i.e. the snap points. The gray area around this show the quantization window, i.e. the target positions that are affected by the quantization.

Q-grid/length: The quantization grid and length at the target points within the bar on which the note start points or lengths move. (See above)

Q threshold/Q window: With the parameters Q threshold/Q window you can restrict the quantization to certain notes in order to retain the genuineness of an MIDI recording. The parameter "Q threshold" can be used to exclude notes from quantization that are very close to the next snap point. Only notes that are far enough from the raster will be quantized. Conversely, by reducing the "Q Window" notes that deviate too much from the raster can be excluded from the quantization. It is therefore possible, for example, to quantize quarter and eighth notes and retain the sixteenth notes that lie between by reducing the appropriate window.

In summary this means: Events less than the "threshold"-distance or more than the "window"-distance from the grid point will not be quantized. The time range affected by the quantization is indicated in gray in the dialog graphic.

Swing: Starts swinging, groovy playback (for example, triplet). Specifies the division for uneven grid points.

- 50 ... "50-50" division: The odd eighths are exactly halfway between the even eighth notes ("even" playing method)
- 67... triplet playing method, 3-2 division

Offset: The value range in this parameter stretches from -100 to +100. By changing the offset values, you move the whole quantization grid. Negative values move the quantization to the left, i.e. forward in time; positive values move to the right, i.e. backward in time. The maximum of 100 corresponds with an offset distance of half the grid width.

Presentation of blue grid points in the dialog as well as of the grid in the MIDI editor directly reflects changes to these values.

Humanize: The "Humanize" parameter creates another variation option, i.e. notes are able to be assigned according to the randomization principle up to a specific interval to positions around the exact quantization value. The setting occurs in % of a 16th note. The specified value thus regulates the maximum possible spacing of the quantized notes at the exact quantization value.

Soft Q: This value sets the strength or "Soft Q" value of the quantization.

- "100" moves the event precisely to the quantize grid point
- "50" shifts the event to the middle between the current position and the quantization grid point,
- "0" means no movement, i.e. quantization off

The command "Soft Q" considers the current level value in the quantization options. The simple quantization command always occurs at 100%. In this manner, you can always select between approximation (soft) and hard quantization without having to adjust the quantization options every time.

Standard quantization settings: Select the quantization action from the list (see MIDI functions (view page 206)) to be performed by clicking the "Quantization" button.

Reset quantization: All notes will be reset to their original positions.

Standard settings: Restores the default values.

MIDI functions

The "MIDI functions" menu contains advanced quantization (More information can be found in the section "Quantization settings" on page 205) and editing functions for MIDI notes. The commands in the "MIDI functions" menu always affect the selected events. If nothing has been selected, the functions are applied to all events.

Legato: If necessary, notes may be lengthened until the next note to be played in legato.

Quantize notes (default): A standard quantization will be used on all selected notes. If no notes are selected, all notes will be quantized. The standard action can be defined in the Quantization Settings Dialog (view page 205). "Quantize notes (start and length)" is set as default. This function can be accessed via the "Quantization" button in the MIDI editor.

Advanced quantization

This submenu contains additional quantization commands.

- **Start Q**: Selected notes will be quantized corresponding to the set grid quantization value. Note lengths remain unaffected.
- **Start and length Q**: Selected notes will be quantized corresponding to the set grid and length quantization values. Hard quantization always occurs at 100%.
- **Soft Q (Quantization approximation) :** This command considers the current level value in the quantization options. The simple quantization command always occurs at 100%. In this manner, you can always select between approximation (soft) and hard quantization without having to adjust the quantization options every time.
- **Length Q**: Selected notes will be quantized according to the set length quantization value. The start time remains unaffected.
- **Quantize Note Ends to Grid:** The end of selected notes will be quantized according to the set grid quantization value. The start time remains unaffected, but the note lengths will change.
- **Undo quantization**: Use this command to reverse all completed quantization steps. This works even after the project has been saved.
- **Quantization settings**: Opens the selection dialog for the quantization settings (view page 205).

Quantize controller events: Allows you to quantize controller events (view page 191) to reduce their number.

Humanize: Use the Humanize function to make quantized notes sound more "human" meaning less perfect. Notes will be moved to a random value. See Quantization settings (view page 205).

Mute Notes (Mute): Mutes and reactivates notes or selected note groups with a click.

Remove overlaps (polyphonic): Notes are shortened so that there are no longer any overlaps. Chords (simultaneously played notes) are recognized and left uncorrected, i.e. chords are not split up.

Remove overlaps (monophonic): Notes are shortened so that there no longer are any overlaps. Forces monophonic voice leading.

Convert sustain pedal to note lengths: This function converts sustain pedal controller events (controller 64) into note lengths. All notes which were started after a "Pedal pressed" event (CC64 > 64) will be extended to the "Pedal released" event (CC64 < 64), and the pedal events removed.

Transposition: Here you can transpose the pitch of selected events by half steps.

MIDI Timestretching: With this function you can make various changes to selected events, e.g

- double the tempo
- halve the tempo
- scale to range length.
- stretch manually. This allows you to enter individual values in the **Stretch Factor** field.

Reverse: With this function you can reverse the playback sequence. This means that the sequence of notes will be played backwards. The result is a mirror image at the vertical axis.

Mirror Melody: This function mirrors the selected events in terms of the pitch of the current note. The effect is that each interval in the note sequence that was directed upwards will now be directed downwards and vice versa. The result is a horizontal mirror image.

If you don't define any particular notes, the mirroring will affect the mid pitch of all notes.

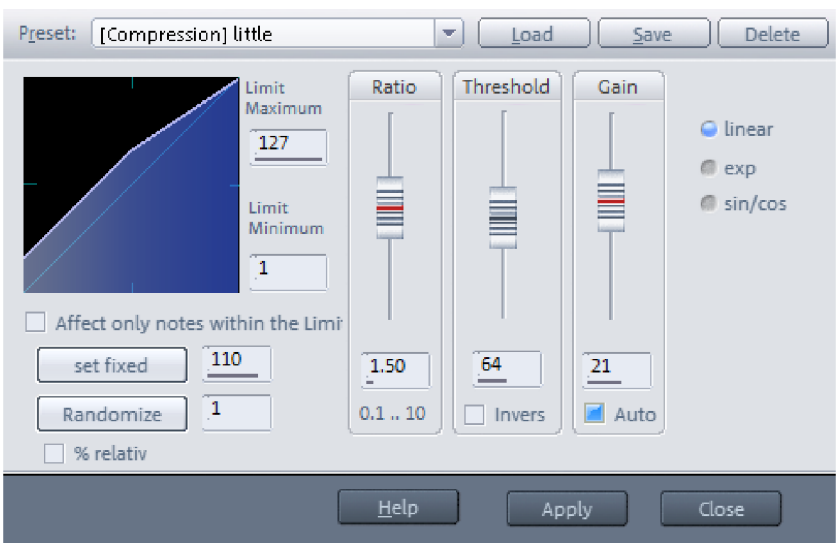
Velocity Dynamics

The MIDI velocity dynamics can be accessed as an offline effect via "MIDI editor MIDI Functions > Velocity dynamics", or as a real-time track effect in the track editor.

"Velocity dynamics" is a MIDI effect that edits the MIDI velocity dynamic of the selected MIDI notes. It can be used in real time as a track effect during playback and for MIDI-Thru (button in the MIDI section of the Track editor), and also offline via the corresponding menus.

Velocity dynamics makes it possible to adjust the MIDI velocity to the dynamics of the connected synthesizer, i.e. to adjust MIDI synths or VSTis, thereby compressing or expanding the velocity strength of the selected events.

Each input velocity value is assigned to a specific output velocity via the characteristic. The characteristic curve may be set linear like a compressor/expander, but other characteristics patterns are also available to produce exponential and sinus/cosine curves.



The Preset field contains a series of presets for different compressor or expander applications; these may be used to form the basis of individual adjustments.

Ratio (0.10 - 10.0): This parameter describes the level of compression/expansion as the MIDI input signal reaches the threshold.

Threshold (0 - 127): Threshold specifies the level at which MIDI events are adjusted via velocity dynamics.

Inverse: Velocity values above the thresholds aren't processed, but rather only those values below the threshold.

Gain (-128 – +128): The gain controller sets the amplification factor for events after they have been processed by other parameters

Auto: If this option is activated, the gain parameter will be adjusted automatically to reach a consistently full overdrive (Velocity 127).

Limit maximum and **Limit minimum** are used to limit the top and bottom velocity ranges by entering a minimal or maximum velocity value.

Offline mode

Offline mode makes the Set value button available. If this is pressed, then the selected MIDI events may be set to the velocity value entered in the field next to it.

Change velocity with the random function

With the Random Variation button you can assign several of the same velocity values to subsequently fluctuate around mean velocity values, e.g. in order to make a programmed sequence sound as if it were played live. In the field next to the button, enter the maximum deviation value allowed. The velocity values will be altered randomly within the range specified.

If **randomized variation should be displayed in relative %**, then this option must be checked accordingly. If the Randomize button is clicked now, the selected MIDI velocity values will change accordingly. At a lower dynamic in the original material, variation will be softer than positions with higher dynamics.

Only for notes in limit zone: A check placed here modifies notes with a velocity within the limit minimum and limit maximum. This enables all notes with a velocity of 100 to be set to 77 or only notes above velocity 100 to work with random variation.

Note: By setting the limit minimum and limit maximum to the same value, a fixed value may be set for the velocity for real-time use.

Menu reference MIDI editor

File

- **Import MIDI:** Load a standard MIDI file (*.mid) to the MIDI object. See Load and save MIDI files.
- **Export MIDI:** Export the content of a MIDI object as a standard MIDI file (*.mid).

Edit

- **Undo/Redo:** The last editing function is undone or restored.
- **Copy/Cut/Paste:** Depending on the editor area, the copy actions can be used for notes (Piano Roll), controller events (Controller Editor), or all events (List Editor). You can copy and paste within one MIDI object or between different ones. Events are inserted at the position of the playback marker.
- **Duplicating:** If the grid is activated, the notes selected in the Piano Roll are copied and inserted from the next grid point following the selection. They are otherwise inserted immediately after the selection.
- **Select all:** Select all events in the MIDI object. Depending on the editor area, the selection includes notes (Piano Roll), controller events (Controller Editor), or all events (List Editor).
- **Reverse selection:** All non-selected MIDI events are selected and selected events will be deselected.
- **Create pattern from selection:** Selected MIDI notes are saved as a pattern. The length of the pattern is quantized when the grid is active. Afterwards, the pattern can be drawn in the Piano Roll in Draw pattern mode (view page 179).
- **Delete selected MIDI events:** Selected MIDI events are deleted.
- **Delete all MIDI events** = File > New

MIDI Functions

see MIDI Functions (view page 206)

Options

- **Hide MIDI channel filter/filtered MIDI data** (view page 177)
- **VIP Track filter:** Limits the display to the MIDI object on the selected track, see Multi-Object Editing (view page 177).
- **Highlight Current Object (Range/Notes):** The current object (in multi-selection) and the selected range in the VIP are highlighted in the display, see Multi-Object Editing (view page 177)
- **Use velocity colors/Use MIDI channel colors/Use track colors:** Changes the colors of the MIDI notes from a graduated representation of the velocity values to different colors for each MIDI channel or each VIP track.
- **Scroll mode/Soft scroll mode:** In Scroll mode (preset) the displayed section of the MIDI object follows the playback marker. In Soft scroll mode, this is done continuously, meaning the section moves behind a fixed playback marker.

- **Show event list/Show Matrix Editor (Piano Roll)/Drum Editor/Velocity/Controller Editor:** Shows or hides the elements of the MIDI editor. (corresponds to the functions of the buttons above in the MIDI editor)
- **Step input**
- **Play notes that have been clicked:** Deactivates the playback of notes that have been clicked or the piano keys on the left
- **Zones with restricted movement for notes:** If active, the notes react differently to the movements of the mouse, depending on where you click on the bar in the Piano Roll, see Edit notes with the mouse (view page 181).
- **Open MIDI Editor with Double-click:** When deactivated, double-clicking opens the MIDI Object Editor (view page 172) instead of the MIDI Editor.
- **Quantization grid active:** Activates/deactivates the quantization grid (view page 203).
- **Soft Grid**: If this options is activated, the quantization options are applied, e.g. when notes are moved they will only snap to the corresponding position within the quantization window.
- **Relative movement on grid**: If this option is active, notes keep their original intervals relative to the grid and not to the note start when they are moved; the distance moved snaps to the quantization value.
- **Show quantization grid:** Shows/hides the quantization grid.
- **Solo:**
- **MIDI Object Editor** (view page 172)
- **MIDI Panic (End all notes):** In rare cases, after a Note On event the corresponding Note Off event may not be sent to the synthesizer and the notes "freeze". Use this command to send Note Off events to all channels in all pitches.
- **Audition Panic (Cancel Played Notes):** Sends "Note Off" commands for all played notes.

Mouse Mode

Mouse mode for editing events, see Piano Roll (view page 179) or Controller Editor (view page 188).

View

All editors and areas in the MIDI Editor are listed here as menu options. The options correspond to the functions of the buttons at the top right in the MIDI Editor.

Notes

Commands for the Score Editor (view page 191)

Keyboard Shortcuts

The keyboard shortcuts used in the MIDI Editor can be freely configured to a great extent. For more on this you can read the following section.

MIDI editor shortcuts

Apart from a few exceptions, like using the space bar for stop/playback, the keyboard shortcuts can be defined freely with the keyboard shortcut, menu, and mouse editor. For some basic functions such as scrolling and zooming, all keyboard shortcuts from the VIP are applied. You can explicitly define shortcuts for all commands that are available in the MIDI editor menu.

Hint: The mouse wheel settings are also applied from the VIP, as is the switch for the temporary zoom mode (special) which is defined with "Z"

Playback/Stop	Space bar
Close MIDI editor (apply changes)	Return
Close MIDI editor (discard changes)	Esc

File

Import MIDI	Ctrl + I
Export MIDI	Ctrl + E

Edit

Undo	Ctrl + Z
Redo	Ctrl + Y
Cut	Ctrl + X
Copy tracks	Ctrl + C
Insert	Ctrl + V
Duplicate	Ctrl + D
Select all	Ctrl + A
Create pattern from selection	Ctrl + P
Delete selected MIDI data	Back, Del
Delete all MIDI data	Ctrl + back, Ctrl + Del
Select next event	Arrow right
Select previous event	Arrow left

MIDI functions

Legato	Ctrl + L
Quantize notes	Ctrl + Q

Options

Scroll mode	F
Show event list	Alt + L
Show velocity/Controller editor	Alt + V
Play clicked notes	Alt + P
Quantization grid active	Ctrl + G
Show quantization grid	Alt + G
Quantization options	Alt + Q
MIDI object editor editor	Ctrl + O
Audition Panic-End played edit notes	Ctrl + F

Mouse mode

Selection	1
Draw	2
Drum (draw)	3
Pattern (draw)	4
Change velocity	5
Delete	6
Magnifying glass	7
Glue note mode	8
Split note mode	9
Mute notes (Mute) mode	M
Select next event	Arrow right
Select previous event	Arrow left
Event pitch higher	Arrow up
Event pitch lower	Arrow down
Select next grid quantization value	Alt + Arrow down
Select previous grid quantization value	Alt + Arrow up
Select next length quantization value	Alt + Arrow right
Select previous length quantization value	Alt + Arrow left
Move play cursor forward	Page down
Move play cursor forward (fast)	Ctrl + Page down

Move play cursor backward	Page up
Move play cursor backward (fast)	Ctrl + Page up
Velocity/controller selection	Ctrl+1
Velocity/controller draw freehand	Ctrl+2
Velocity/controller draw freehand	Ctrl+3

VST plug-ins

Samplitude Music Studio provides the option of integrating software plug-ins according to VST standards as well as MAGIX synths in a virtual project and can be controlled via the internal MIDI functions and editors.

All plug-ins, as well as the instruments with their multiple outputs, are seamlessly integrated into the audio engine with all of their effects and routing options.

The maximum number of effect plug-ins is 4 per object, track or in the master, and is otherwise only limited by the performance of the processor. However, you can increase them virtually as you like using the integrated freeze function (view page 366).

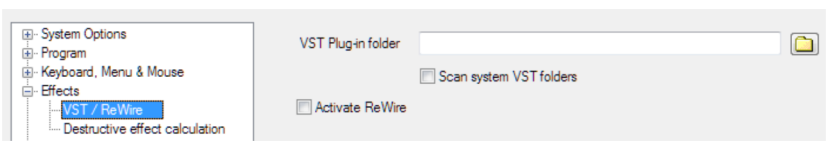
Installing VST plug-ins

Install VST plug-ins according to the manufacturer's instructions. VST instruments and VST effects are not entered into the Windows registry, but must be saved in a certain directory.

Samplitude Music Studio searches for installed VST instruments in the "VST plug-ins" program subfolder. VST instruments may be installed either in this folder or another path may be specified. If a VST plug-ins folder is already installed on the system, then please use the existing folder.

The existing path must be specified in the system settings (shortcut: "Y" key) via "**Effects > VST/ReWire**" (multiple VST plug-in folders may be used). Simply enter one VST plug-in folder path, then using the folder icon on the right, have Samplitude Music Studio scan this chosen folder. Then enter in a 2nd VST plug-in folder and rescan using the folder icon. Now the contents of both VST plug-in folders are available. Samplitude Music Studio will automatically find new plug-ins that have been installed if they are present in the specified folders.

If you add VST plug-in subfolders into the main VST folder (e.g. "Equalizer", "Filters", "Modulation", etc.), then these will be displayed as submenus when VST plug-ins are loaded.



The first time the program is launched, a search for existing instruments and plug-ins is executed (when the track settings are opened). In this case, not only are all the plug-ins imported, but they are also checked for their usability within the program.

This search is only required once; the next time it is opened, the track settings will be opened immediately.

Tip: If you have problems with your current configuration, then you may reset all paths and installed instruments or plug-ins. To do this, delete the "VSTPlug-Ins.ini" file in the Samplitude Music Studio folder. All paths will have to be newly entered. Plug-ins which were removed from the program prior to this will still be shown again.

Load instruments

These are managed in Samplitude Music Studio under "Track menu -> VST instrument editor". You can also assign an instrument to each track; the instrument is selected as a MIDI playback device.

Selected instruments or their individual outputs are shown directly in the first VSTi plug-in/insert slot of the track box and mixer track and can also be muted (left click) and opened (right click) from there.



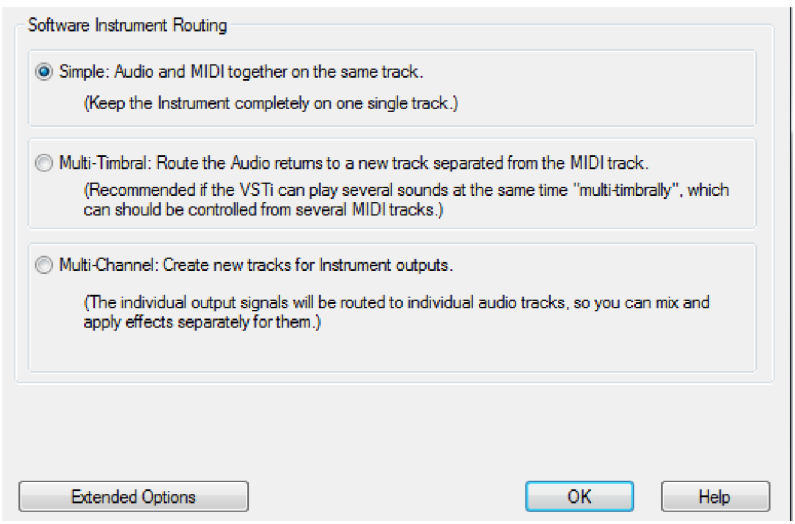
- Load an instrument by selecting a "New instrument" in the project window as a track output. This can happen at various points:
- Playback device menu (right click the "Mute" button -> MIDI -> New instrument)
- Plug-ins slot -> VSTi in the track editor
- "Insert effect slot of the mixer -> VSTi": You will only find this option in the top insert slot of the individual mixer channels.
- "Out" slot -> New instrument in the MIDI section of the track editor.
- "Out" slot -> MIDI -> New instrument in the audio section of the track editor.

Loading routing settings with software instruments

An instrument may also be assigned to each track as a MIDI output device.

Additionally, you can route audio output channels from software instruments to any tracks of the VIP. MIDI (send) and audio (return) signals from a software instrument may be present together on one track (but this is not absolutely necessary). Samplitude Music Studio is fully flexible in terms of individual routing configurations.

When installing a software instrument, the **"Routing for multi-channel instruments"** dialog opens up. Here you may specify new tracks for single audio outputs.



Simple: Audio and MIDI together in a single track: Now all audio signals will be routed to the current track where the instrument has been opened. Multiple outputs will be mixed together before the mixer effects. Simple mono or stereo software instruments may be installed completely in the current track. In this case, the track sends MIDI to the instrument and receives the audio signal from the instrument.

Multi-timbral audio on your own track separated from MIDI routes: Choose this setting if you would like to control the VSTi from several MIDI tracks.

Multi channel: Create multiple new tracks for instrument outputs: Choose this option to automatically create new tracks for all VSTi audio outputs. The newly created tracks are configured and named automatically. The mono/stereo configuration is assumed from Samplitude Music Studio (Standard).

Individual outputs can also be routed subsequently to separate tracks. To display hidden tracks in the Arranger window again, please use the Track Manager.

Advanced options

Stereo/Mono (standard): Information delivered from the plug-in is used for routing.

All as stereo/mono: Several plug-ins deliver incorrect information about whether the outputs are in mono or stereo. These options force individual outputs to be treated as stereo or mono outputs.

Combine audio/MIDI: Activate this check box to automatically route the MIDI output of each individual track to this instrument.

Hide instrument output tracks in arrangement: All newly created output tracks of this instrument are hidden in the arranger but still appear in the mixer window. This setting should be used if an instrument's individual outputs are controlled by a single MIDI file, and therefore do not contain objects or information in the arranger window.

Hint: Please note that a virtual synthesizer's audio output can usually be created, edited, and mixed in the same track as the MIDI data the instrument is receiving. Among other things, this results in a double use of the volume fader which, on the one hand, controls velocity or MIDI volume (CC7), and on the other the audio level. These are not identical parameters. For instance, you can include a MIDI instrument played with high velocity quietly in the mix and vice versa. You can, therefore, optionally assign the volume fader differently. To do this, right click on the track's volume fader.

Load effects plug-ins

Effects plug-ins can be used at track, object, and master level.

Apply plug-ins at wave level

The menu item "Effects -> Plug-ins" (view page 410) lets you calculate the plug-in effects directly into the audio material.

Load plug-ins on object level

Effects plug-ins may be applied at object level via the object editor or via the "effects" menu.

Object Editor

- Double click an audio object and select the "Object effects" view.
- Under "Plug-ins", click on a plug-in slot's little arrow.
- The plug-ins in the menu are now available to you.

Realtime effects menu

- Select an audio object in the project by clicking it
- Open the "effects" menu and then the entry "plug-ins"
- In the effects rack, you can load the desired plug-ins for the selected object one after the other

Load plug-ins at track level

At track level you can load plug-ins in the mixer as well as in the track editor.

Track editor

- Select the track for which you wish to load the effect.
- Open up "Plug-ins" if it is not yet visible.
- Now click on the little arrow next to the plug-in slot.
- You can select any plug-in from the menu.

Mixer

- Open the mixer by pressing "M" or via the mixer button.
- Click on the small arrow next to the insertion slot of the desired track.
- Now select a plug-in from the corresponding submenu.

Note: Send effects will also be embedded. Add an AUX track and apply the effects to it. Bear in mind that the effects will be mixed, i.e. the effect in the AUX track should not contain the original signal anymore.

Load plug-ins at master level

In the mixer's master section, you can load plug-ins just like in the mixer tracks. Click on the arrow to the right beside one of the plug-in slots and select the desired plug-in from the menu.

Route MIDI instrument inputs

Nearly all software instruments require MIDI data in order to be heard. To route the MIDI input onto a specific track which contains the MIDI data, click on the VSTi button in the track editor of the corresponding track and select the instrument from the "Out" slot which you wish to activate. Already loaded instruments are mentioned in this list.

To open a completely new instance of an instrument which works independently of already existing instruments within the project, select its name from the "New instrument" submenu.

Instruments with multi-channel outputs

The number of available individual outputs generally depends on the instrument, and this may be adjusted via the instrument's settings. Outputs may be available in stereo or mono.

Distributing sounds on multiple single tracks

This approach, for example, is ideal for all drum samplers if you want to address an entire drum set, but prefer to mix and edit the drum sounds individually.

Addressing an instriment on several MIDI channels

Several MIDI tracks are typically used for so-called "multi-timbral" synthesizers which can play several sounds on different MIDI channels simultaneously, whereby each addresses a specific sound program (part) on a specified MIDI channel. This also has the advantage that such instruments only require one instance of the plug-in for several sounds. Multi-timbral software instruments often have separate audio outputs. Please remember to route the individual parts to the desired outputs within the VST instrument (panel).

Adjust instrument parameters

The instruments editor (panel) is then opened when an instrument is loaded and can be opened again at any later date by right clicking on the VSTi slot in which the instrument name is displayed. Alternately, the VSTi editor can also be opened by right clicking on the record button on the track -> Instrument output -> VSTi editor.

The graphical interface opens by default. If the selected instrument (or plug-in) does not have its own interface, the parameters dialog will open. This display mode is limited to just a few control elements and can only be opened via the menu of the instrument window. Use this mode if you find the panel of the plug-in too unclear or if it takes up too much space on the screen. In this dialog eight freely selectable parameters of the instrument are clearly and numerically displayed. Bar controls can be used to adjust the parameter values.

Alongside the combi-boxes for the selection of all instrument parameters, the "Auto" checkbox is also of importance. Once activated, the automatic processes of the selected parameters are started. The automation curve is shown in the project track and can be edited. The parameter can be automated using the fader.

Activate automation parameters by checking the "Auto" control box.

The parameter selection is saved for each plug-in so that the next time you use the same plug-in in a different project, the same parameters are used. This way you have

the advantage that every frequently used parameter of the corresponding instrument is available immediately after it has been opened.

Instrument panel and parameter dialog

The instruments editor (panel) is opened when an instrument is loaded and can be opened again at any later time by right clicking the VSTi slot displaying the instrument name. Alternatively, the VSTi editor can also be opened by right clicking the record button on the track -> Instrument output -> VSTi editor.

The graphical interface opens by default. If the selected instrument (or plug-in) does not have its own interface, the parameters dialog will open. This display mode is limited to just a few control elements and can only be opened via the menu of the instrument window. Use this mode if you find the panel of the plug-in too unclear or if it takes up too much space on the screen. In this dialog eight freely selectable parameters of the instrument are clearly and numerically displayed. Bar controls can be used to adjust the parameter values.

The parameter selection is saved for each plug-in so that the next time you use the same plug-in in a different project, the same parameters are used. This way you have the advantage that every frequently used parameter of the corresponding instrument is available immediately after it has been opened.

Dialog menu

Further options can be found in the menu of the instrument window:

Bypass: Deactivates the instrument and mutes it. Note that some instruments use up processing power if bypass is switched on but are still located in the insert slot. In such cases, the instrument should be removed completely from the insert if it is no longer required.

Monitoring: This option must be switched on if you wish to be able to hear the instrument when it is being played or recorded. If you wish to always have monitoring active when the track's record button is pressed, then please select the "Tape monitoring" option in the system/global audio options ("Y", "Audio setup" tab) dialog.

Loading/Save patches/banks: Here you can save an instrument's settings and sounds. The standard formats for this are: *.fxp for patches or *.fxb for whole banks. Some instruments have their own patch/bank format, settings are then loaded and saved directly via the instrument's interface.

Set parameters randomly: Use this function to set all parameters of an instrument to a random value. This option can lead to surprising results and provides interesting ideas for sound design, thanks to the random generation of a new sound. However, you should note that parameters can only be set when they are accessible via the interface. For some very complex virtual synthesizers (e.g. modular systems), some

parameters may not be modifiable using this option. Please note that thanks to the random placement of various parameters, very extreme sounds can be generated. This may lead to no sound being produced at all or extremely loud volumes and frequency ranges being reached. For this reason you should keep an eye on the preview volume when experimenting with this function.

Play and monitor instruments live

Requirements for playing live

In order to play virtual software instruments, you will require a MIDI device to enter the data. This is typically a MIDI keyboard. Of course, you can also use any other PC that transmits MIDI data or a hardware synthesizer.

For direct monitoring while playing you will in any case require an audio interface with ASIO drivers. Simply playing instruments, however, is also possible with MME or WDM drivers.

Monitoring

In order to play virtual software instruments you require a device to enter the data. Typically this would be a MIDI keyboard. Of course you can also use any other PC that transmits MIDI data or a hardware synthesizer.

For direct monitoring while playing you will in any case require an audio interface with ASIO drivers. Simply playing instruments, however, is also possible with MME or WDM drivers.

- For live monitoring you also have to make the following settings:
- ASIO drivers (System/Options -> System/Devices -> Global audio options -> Playback devices -> Driver system)
- Activate global record monitoring in the transport control ("Rec M" button)
- Activate the track monitoring button (loudspeaker symbol)
- Software monitoring or Hybrid Engine (Options -> System/Global audio options -> Audio setup)

Tip: You can also select monitoring mode by right clicking on the "Record monitoring" button on the transport control.

Latency: Please note that a system-dependent delay between pressing the key and the instrument sound occurs when you play virtual software instruments. This so-called latency time is mainly determined by the buffer size set for the ASIO drivers. For playing in an acceptable manner we recommend a buffer size of 1024 samples max. This corresponds with 23ms at 44.1 kHz. For many users, however, a latency of 3ms, i.e. 128 samples, is optimum. Please note that the CPU load also increases at a lower buffer size. The "live" delay only occurs when an instrument is played, playback

latency of an already recorded MIDI track over a virtual instrument is compensated later.

As software instruments are fully integrated into the audio engine of the program, the signals can be routed, mixed and equipped with plug-ins any way you like. There may be some restrictions when playing, but all functions are fully available during playback.

Hint: Please note that "Track FX monitoring" mode or "Mixer FX monitoring/Hybrid Engine" have to be activated.

Latency

Please note that a system-dependent delay between pressing the key and the instrumental sound occurs as you play virtual software instruments. This so-called "latency" time is mainly determined by the buffer size set for the ASIO drivers. To play in an acceptable manner, we recommend a buffer size of max. 1024 samples. This corresponds with 23ms at 44.1 kHz. For many users, however, a latency of 3ms, i.e. 128 samples, is optimum. Please note that the CPU load also increases at a lower buffer size. The "live" delay only occurs when an instrument is played, playback latency of an already recorded MIDI track over a virtual instrument is compensated later.

Recording and playback of an instrument

An instrument is recorded much in the same way as a normal MIDI track. Make sure that the MIDI recording is active in the desired track and then press the record button in the transport control. The recording begins immediately.

When playing already recorded MIDI tracks, track monitoring should be switched off.

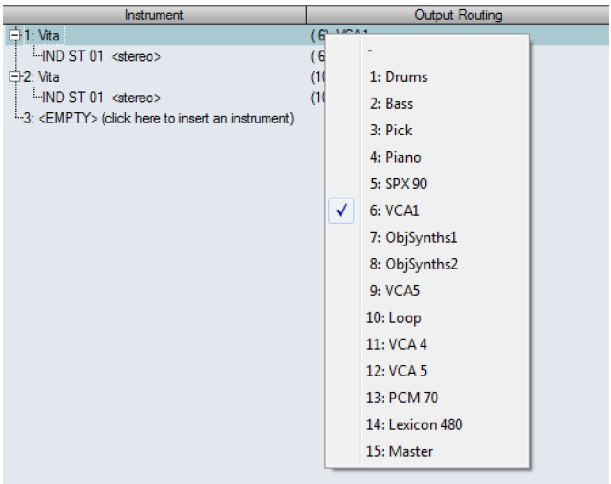
Routing VST instruments using the VSTi manager

There are many flexible methods for signal routing of instruments.

As described in the previous paragraph, an instrument may be fed from several MIDI tracks, and the outputs of an instrument may also be sent to several tracks.

Routing instrument outputs

Instrument outputs can be easily routed by using the VSTi manager. Simply open the VST instrument to view the single outputs and then **right-click the "Output routing" column.**



Now switch to the track that is to be fed with the respective single output. The assigned output then appears in the target track's plug-in slot.

Alternatively, you can also **route directly to the track header of the arranger**:
To play the output of an already loaded instrument on a specific track, **click with the right mouse button on the record button** of the track, go to "Instrument outputs" and select the output of the software instrument available in the arranger you want to sound on this track by placing a check mark. Several outputs of an instrument can be routed simultaneously to a track. You can even combine the outputs of different instruments onto one track.

Deactivation of the instrument outputs works in the same way. Remove the check in front of the corresponding output in the "Instrument outputs" submenu.

Note that the routing options of the mixing console may also be used. A track containing the audio return of any instrument may be routed to any submix bus, AUX bus or master.

Routing instrument MIDI inputs

Most software instruments require MIDI data in order to generate an audio output. To route the MIDI output of a track to the input of a VSTi, click on the MIDI button in the Track Editor of the corresponding track and select the VST instrument in the "Out" slot that you want to activate. Already loaded VST instruments are listed in this menu.

To open a completely new instance of an instrument that works independent of any existing instruments within the project, select its name from the "New instrument" submenu. You can differentiate several instances of the same VST plug-ins by the number (index) in front of the name of the software instrument.

Previewing VSTi instrument outputs solo

To preview solo instrument outputs, switch the track to which signals are added by the corresponding instrument to solo. Even if the MIDI objects, which in effect are responsible for the sound, are not present in the track, you will still hear the selected track solo. Samplitude Music Studio automatically recognizes which MIDI tracks have been routed to this track and plays the instrument output.

Preset management

If an instrument has presets, these are displayed in the “Program Slot” (“Prg”) with their internal name (if MIDI mode is activated).

This drop-down menu can be used to easily “step through” the presets of your instrument. These presets can also be selected using the “Program” menu of the instrument window.

If your MIDI input device can send “Program change” commands, then you can also directly select programs of this instrument. The program slot is automatically updated in the track, so you have an overview of the program all the time.

Freezing instruments (freeze)

Software instruments require CPU power for playback, which at some point can be quite considerable and is required during every playback. Therefore, please use the "Freeze" function to release the CPU power for VSTi tracks temporarily. You retain full control over the MIDI objects of this track, which can be restored (“de-frozen”) at any time.

To “freeze” an instrument, select the “Track freeze” option in the track menu (Ctrl + Shift + F). After a short processing time, all MIDI and audio objects are replaced by a single, resource-friendly, 32-bit stereo audio object, which is now played back instead of the original object and the instrument. The existing automation data and track effects are already included in this freeze object.

The actual instrument of this track is no longer addressed by MIDI files of this track and can even be deactivated, provided that it is not used by other MIDI tracks.

Select “Track unfreeze” (Ctrl + Shift + U) to change the original MIDI data at a later point in time that was "frozen". The track is now returned to the state in which it was "frozen", but again requires the initial CPU power for processing the instrument.

Alternatively, you can use the feature “Edit track freeze”. In this case, a new single-track VIP is opened with the original track. This track cannot be played together with your arrangement. As soon as you save this project, a new freeze object is processed and included in the original project.

Freeze also works with single outputs in different tracks than the main output track (instrument outputs 1+2). You can also freeze these tracks if they do not contain MIDI information and do not hold objects. The MIDI data that has been routed to the track or to the individual output of the instrument automatically creates an audio file that is now played instead of the original instrument. In order to prevent double playback of the data, deactivate the single output of the instrument manually in the frozen track.

To edit freeze data you cannot only use the "Track freeze edit" function, since there is no MIDI data available on this track that could be edited. Therefore, “unfreeze” the track and edit the MIDI data of the send track. You can then refreeze the track.

Note: As long as the instrument is not entirely unloaded from the track it remains loaded into the RAM memory of the system. Samplers or instruments that require considerable amounts of memory also require this when their insert tracks have been frozen.

Tips on handling virtual instruments

- You can realize so-called stack sounds (i.e. sounds that use several synthesizers and play these in unison) by opening several instruments and activating monitoring for all channels.
- To program beats, you can create and save individual drum maps in the MIDI editor that match the respective instruments.
- If an instrument can limit the amount of voices, then you can use this option to save CPU power if you do not require the full number of voices.
- Some instruments use sound sets according to the "General MIDI" standard. You can use these instruments for playing back MIDI files according to the GM standard. Please import the entire MIDI file to a single track including all channels. Make sure that virtual instruments can also receive program change commands that are also saved in such a file, so that the correct sounds are played back.

ReWire

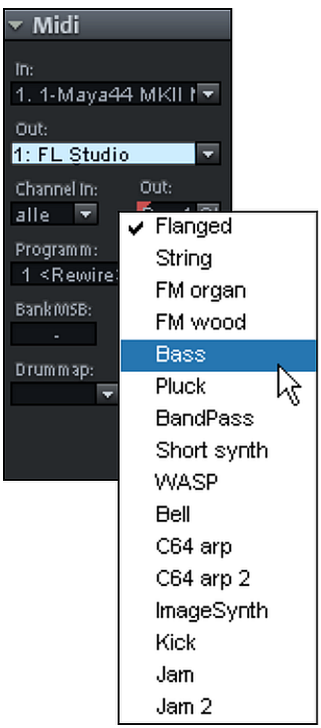
If this option is activated, ReWire-compatible client applications (e.g. Propellerheads Reason) can be integrated into Samplitude Music Studio as synthesizers.

Activate ReWire functionality in the program settings ("Y"). Afterwards, installed ReWire applications can be loaded as instruments into a MIDI slot. All ReWire client applications appear as individual sections in the selection menu of the plug-in slot of

the track and are loaded as software instruments (VSTi). The client application should always be launched after Samplitude and should be closed before exiting Samplitude. Some client applications can be opened automatically by right clicking on their name in the MIDI slot (red) – just as you can open the plug-in window for VST instruments by right clicking.

The ReWire application can then be accessed like a software instrument via MIDI, the audio output signal of the ReWire client can be routed to the Samplitude Music Studio tracks. The client application runs, starts, and stops synchronous to the time position of Samplitude.

ReWire supports up to 4096 MIDI buses. A ReWire client only registers the MIDI buses that are actually available with the host (Samplitude Music Studio). You can therefore select the bus within the track in the MIDI channel menu (e.g. the receiving instrument for Reason):



The "classic" MIDI channel of MIDI notes and events is not important, it is replaced by the ReWire MIDI bus system. For each track a MIDI object is able to control a ReWire MIDI BUS. This means that all events of a MIDI object apply to the track for this ReWire bus, independent of the channel number the events originally had. Multi-timbral MIDI objects, like those created in the MIDI file import, cannot be played correctly with ReWire. You can, however, access the ReWire client across multiple tracks on various ReWire MIDI buses.

Only a few ReWire clients support direct opening of the client application via the host application (Samplitude Music Studio). In this case, you will have to start the client application manually. You can do this by starting your client application as you would normally. It then automatically recognizes the host and starts in a special client mode.

Synthesizers

Samplitude Music Studio comes with several synthesizer plug-ins for creating own drum patterns, bass or melody lines. In Samplitude Music Studio there are two different types of software synthesizers: On the one hand, so-called "Synth objects" that are arranged together with the other objects in the tracks and that contain their own sequencer; On the other hand, synthesizer plug-ins based on the VSTi (view page 216) standard that are controlled by MIDI objects in the tracks.

Synth objects

These synthesizers build individual synth objects in Samplitude Music Studio. A corresponding synth object can be moved onto any tracks without anything changing in the synthesizer settings. Object synths include Loop Designer, Beatbox 2, Atmos, LiViD and Robota.

Note: Object synths can also use object effects. Open the object editor (view page 55) via the corresponding object's context menu.

You can open synth objects via the "Object menu" > "New synth object". A small selection menu with the installed synth objects opens. After the selection, a synth object is created at the position of the playback marker on the current track and the interface of the synthesizer opens.

Programming the synth object

Depending on the plug-in, various functions to create and control sound can be applied via the operating console. Please read the following chapters pertaining to the individual synthesizers in this regard.

To monitor programming, playback can be started and stopped at any time with the space bar while the operating console is open. If the synth plug-in has its own play button (e.g. the beat box), then it will start the plug-in solo without playing the other tracks of the arrangement as well.

Arranging the synth object

If the synth object melodies or rhythms are programmed, you can close the the control console and arrange the synth object in the track. The length of synth objects can be changed by using the handles, or they can be used to fade in and out or change the volume, etc. These steps are identical for all objects.

Double-click on the operating console of each synth object to reprogram the object later. In addition, any number of other synth objects from the same software

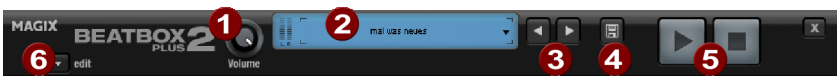
synthesizer can be dragged onto the tracks and programmed separately. You can also cut synth objects apart.

BeatBox 2 plus

BeatBox 2 is a 16-voice drum computer with hybrid sound synthesis and a step sequencer. The proven handling concepts of the "old" BeatBox like matrix programming with auto copy have been expanded with comfortable editing of velocities and significantly improved sound synthesis, including a multi-effects section (one effect per drum instrument).

A drum sound is created in BeatBox 2 using a sample (analogously to the old BeatBox) which is combined with a synthetic sound that can be created using up to three different synthesis models (hybrid sound synthesis). BeatBox 2 plus enables detailed editing and automation of all sound parameters.

There are two styles of interface in BeatBox 2. While closed, you can listen to included sounds or those you've made in BeatBox 2 without using too much window space.



Only the most important control elements are displayed when the program window is minimized.

1. **Volume controller:** Controls the volume.
2. **Peakmeter and preset name:** The peakmeter lets you visually control BeatBox 2. Click on the triangle beside the preset name to open the preset list.
2. **Next/Previous preset**
4. **Save preset:** The preset includes the drum kit in use, the pattern, and any possible automations (view page 235).
5. **Play/Stop:** The playback controller in BeatBox 2 starts BeatBox without playing the arrangement, too.
6. **Edit button:** The edit button opens BeatBox 2 for you to program your own beats and sounds.

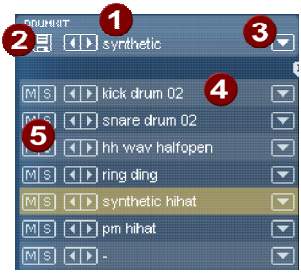


Maximized BeatBox 2 plus window

1. **Drum kit:** This section loads drum kits (collections of different drum instruments) and the individual drum instruments.
2. **Selected drum instrument:** The settings in the synthesis section (6) and velocity/automation (5) always affect the selected drum instrument.
2. **Pattern editor:** Programs the beat sequence. In the top part, different patterns (sequences) can be loaded and saved as well as different settings for the view and function of the pattern editor. The matrix is where the beat is programmed: One line corresponds to a drum instrument, and a column matches a specific time position within 1-4 beats. If a cell is clicked on, then the respective drum instrument will be triggered at this position.
4. **Velocity/Control:** This section has two modes: **Velocity** and **Automation**. The setting **Velocity** displays the velocity levels for the selected instrument's beats as a column. The **Automation** set up allows automation to be set for sound parameters in the synthesis section (6).
5. **Synthesis:** The selected sound parameters and effects settings for the selected drum instrument can be edited here.

In the following, the sections of BeatBox 2 will be discussed individually:

Drum kit



This section loads drum kits (collections of different drum instruments) and the individual drum instruments. You can also try out an already programmed pattern with different kits or exchange individual drum instruments.

1. **Select drum kit:** Use the <> buttons to switch through the different drum kits. A drum kit is a collection of percussion instruments with matching sounds, e.g. rock kit or electronic drums à la TR 808. By changing the drum kit, you can add an entirely different sound to the rhythm you have already created.
2. **Save drum kit:** Use this button to save the current collection of drum instruments as a kit.
2. **Drum kit list:** Click on the arrow right of the name to open a complete list of available drum kits.
4. **Select drum kit:** The arrow buttons function analogously to those of the drum kit. The sequence of drum instruments in the kit can be resorted via drag & drop.
5. **Mute/Solo:** The "solo" button switches a drum instrument solo, i.e. all other instruments which are not "solo" will be muted. The "mute" button mutes a drum instrument.

New drum or effect sounds can by added to the current drum kit by **drag & drop** from Windows Explorer. Drag a wave file to a drum instrument to create a new drum sound based on this sample. BeatBox 2 copies the sample into the sample folder to make sure that the instrument or kit created can be used again later. You can drag a complete folder with wave files to the drum kit to create a kit based on those samples.

Context menu

Right clicking a drum instrument always opens a context menu:

- **Copy/Paste:** Copy an instrument from a track and paste it to another one.
- **Empty instrument:** An empty instrument is added. No sound is played, it has no name, and is used to clean up an unused track.
- **Default instrument:** The standard instrument is added. It has the standard parameter for all synthesis shapes and serves as the starting point for your own sounds.
- **Reset automation:** BeatBox 2's own presets contain automations. These are dynamic sound parameters like filter curves or pitch changes. This command allows you to completely remove these for the selected instruments.

Pattern editor buttons



1 **Pattern:** Use the <> buttons to switch through the different patterns. The arrow to the right opens a list of all available patterns, and the save button stores the current pattern.

2 **Clear track/all:** All events for the selected instrument (**track**) or all events for the pattern (**all**) are removed by clicking this button.

2 **Bar selection:** The bar you wish to edit can be selected via the corresponding number button. Use the "**Follow**" button to select follow mode, i.e. the step display follows the steps of the currently played beat. **All** shows all bars of the pattern.

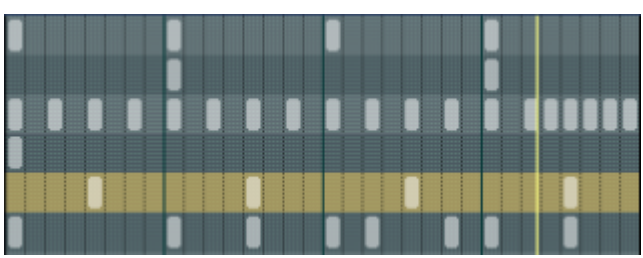
4 "**1>2-4**" **Auto copy:** If more than one bar is set as the pattern length, "Auto copy" mode makes sure that the drum notes set in the first bar are automatically placed into the next bars. This also makes it easy to create a continuous beat, even with a loop length of four bars. Notes set in the bars further back are not affected by the "Auto draw" function, which, for example, makes faint variations detectable only in the fourth bar.

5 **Bars:** The maximum length of a drum pattern is four beats. The length can be selected via the small scroll bar.

6 **Shuffle:** This controller changes BeatBox 2's timing. If the fader is turned to the right, the eighth of a rhythm is played more and more like a triplet. If that sounds a bit too abstract – simply try it out, ideally with a pure 1/16 hi hat figure; you'll soon see what the shuffle fader is capable of.

7 **Grid:** Here you can set the time resolution of the BeatBox. You can choose from 1/8 notes (only for very simple rhythms), 1/16 (default), 1/32 (for more refined constructions).

Pattern editor - matrix



This is the heart of BeatBox. A click on any position in the drum matrix creates or deletes drum notes (events). Clicking and dragging draws in a series of notes.

Together with the velocity editing options (view page 236) (velocity), you can easily create drum rolls.

If "Shift" is held when you click on notes in the range, a rectangle can be drawn out which selects the notes contained within this rectangle (lasso selection). Selected notes can be copied by dragging them to a new position. If "Ctrl" is also held down, then existing notes will remain at the target position. Delete all selected notes by right clicking.

Two special commands are available for selection:

Shift + double click	Select everything in the bar clicked on.
Shift + Ctrl + double click	Select all

A simple mouse click cancels the selection. The selection is automatically canceled after copying. If you want to keep your selection, hold down "Ctrl" while copying.

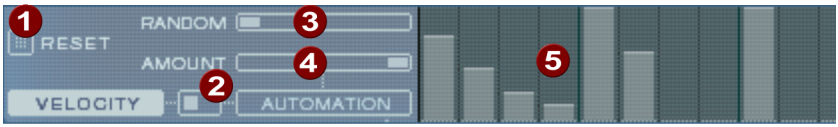
Keyboard shortcuts

Many functions in BeatBox 2 can be controlled with the keyboard, for example a beat can be triggered with the "Enter" key live in a running pattern. Here's a complete list of the keyboard commands:

General	Key command
Open/Close editor	e
Pattern editor - options	
"1>2-4" Auto copy	a
Follow	f
Display bar 1... 4	1... 4
Show all bars	0
Grid finer/rougher	+/-
Selected drum instrument	
Previous/Next	Cursor up/down
Preview	p
Live input	Enter
Mute on/off	m
Solo on/off	sec

Velocity

The velocity mode serves for editing the velocity/automation of the individual drum notes for the selected drum instrument.



1. **Reset:** Sets all velocity levels to 100%
2. **Mode switcher:** Switches the section between velocity control and Automation (view page 235).
2. **Random:** The random parameter adds random variations to the set velocities. This helps make your beats sound more natural.
4. **Amount:** No function in velocity mode.
5. **Velocity level:** Every set note for the selected instrument is displayed as a column and can be edited. Multiple columns can be edited at once; see Editing velocity values and automations (view page 236).

Automation

Every parameter for a drum sound, including effects, can be automated, i.e. can change during a pattern. For example, you can make your snare drums more lively by adding higher voices to loud hits or by setting accents on individual hits with reverb effects.



The synthesizer section below enables the selection of a parameter for automation via the small blue LEDs above a parameter controller.

More about the parameter controllers in the Synthesizer (view page 237) section.



1. **Reset:** Sets all automation values for the selected parameter. 0.

2. **Mode switcher:** Switches the section between velocity control (view page 235) and automation switched. This happens automatically during selection of parameters.

2 **Random:** The random parameter adds random variations to the set automation. This helps make your beats sound more natural because each programmed hit will sound slightly different. The level of the random parameter is also influenced by the amount controller (see below), i.e. if the amount is at "0", then the randomness will have no effect.

4 **Amount:** The amount parameter regulates the complete influence of the automation values and of the random factor on the selected parameter. An amount of "0" does not have any effect at all on the automation; maximum level has the greatest effect. The effects of the amount controller on the automation values is made visible by a slightly lighter line in the value columns.

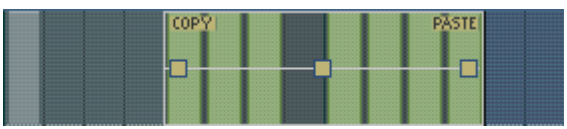
5 **Automation values:** The selected parameters can be drawn in as a column with the mouse. Automation values can also be drawn between the set notes; the sound of the drum instrument changes during playback.

> Automation values are added to the original value of the parameters.

Editing velocities and automation values

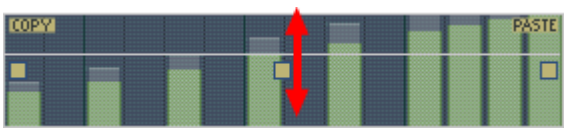
Hold down "Shift" and select any number of columns for velocity or automation with the mouse. Two special commands are available for selection:

Shift + double click	Select everything in the bar clicked on.
Shift + Ctrl + double click	Select all

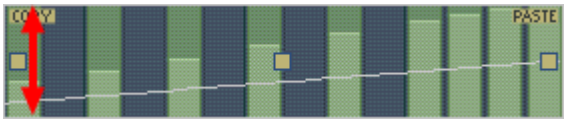


The "Copy" button copies the selection to the clipboard. If you select this or that track in another editor, then you can paste the notes there now from the clipboard. If the target selection is larger than the contents of the clipboard, then it will be inserted again. This lets you quickly add a short section throughout the complete length of the pattern.

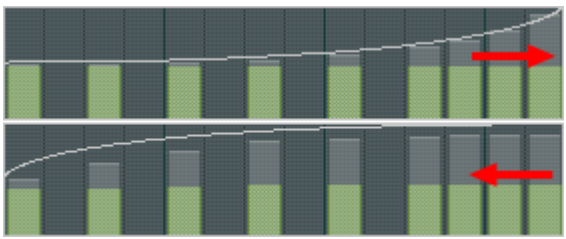
The three handles allow the velocity or automation values to be edited together.



The middle handle increases or lowers the values together.



An object can be faded in or out with the handles to the left and right upper corners of the object.



If you move the handles horizontally you can change the curve shape of the transition.

A single click in the automation section cancels the selection again.

Note: A selection of velocity values matches the selection of corresponding notes in the matrix editor.

Synthesizer

In the lower section of BeatBox, you can set the sound for the selected drum instrument.

The synthesis in BeatBox 2 consists of a combination of a simple drum sampler and a synthesizer. There are three different synthesis models possible for the synthesizer: "Phase Distortion Synth" (FM synthesis), "Filtered Noise", and "Physical Modeling". The mixed signal of both components is then processed by a multi-mode filter. An envelope curve ("envelope generator") time-dependently controls modulations of in all components.The details of the synthesis models can be read in the section Synthesis models (view page 241).



1. **Preview drum instrument**
2. **Save drum instrument**
2. **Select sample:** A click on the arrow selects samples from the categories like kick, snare, etc.

4 **Select synthesis mode:** Switches between the three synthesis models.

5 **Mix:** Mix relationship between drum sampler and synthesizer.

6 **Parameter controllers:** All six sound parameters for a drum sound can be directly set and automated via the parameter controller. The parameters in question depend on the drum sound currently loaded. By clicking the name of a sound parameter, a menu opens for you to add parameter controllers to each drum sound's synthesis parameters.

7 **Automation:** This selects the controller's parameter for the automation (view page 235).

Effects section

Each of BeatBox 2's drum instruments includes an effects unit which is fed in after the actual sound synthesis and editing. Each of these effects units includes a series of high-quality algorithms to add "audio polish" or to place the sound in a production-typical context.



1 **FX on/off**

2 **Parameter controller:** An effects module includes four adjustable parameters. The fourth, "Mix", is always available and the remainder possess a function dependent upon the selected algorithm.

2 **Automation:** This selects the controller's parameter for the automation (view page 235).

4 **Effects algorithm:** Click the arrow to select an effects algorithm.

The available effects algorithms per unit are described in the following.

Mono delay (tempo sync / millisec.)

Simple, monophonic delay effect

Parameters

- **Time:** Delay time controlled by musical measure (sync) or free running
- **Feedback:** Repetition
- **Damping:** High damping of the repetition

Stereo delay (tempo sync / millisec.)

Stereophonic repetition, adjustable separately per side

Parameters

- **Left / Right:** Delay times, synced or free running
- **Feedback:** In contrast to mono delay, no repetition takes place in the middle position of the **feedback** controller. When turned to the left the type of delay is that of the so-called "ping-pong" variety, i.e. the signal is alternately sent so that is jumps from one channel to the other. When turned to the right the delay effect is "dual mono", in which case left and right sides act as two independent time-delay units.

Chorus

Produces a typical "floating/shimmering sound" by modulated detuning of a signal to "thicken up" its sound or spread it across the stereo field. Detuning is achieved by a short delay, the length of which can be varied by the modulation. This produces the so-called "Doppler" effect.

Parameters

- **Time:** Delay time in milliseconds. This can be understood as the "base" modulation which is stretched or compressed by the modulator.
- **Rate:** Modulation speed
- **Depth:** Modulation amplitude. Low values modulate only a little, higher values lead to a clear vibrato.

Flanger

Algorithmically similar to chorus, but different in that the delay time is significantly lower and delay works with repetitions (feedback). A flanger sounds more "cutting" and up-front than a chorus.

Parameters

- **Rate:** Modulation speed
- **Feedback:** Delay feedback
- **Depth:** Modulation amplitude

Phaser

A modulation effect just like chorus & flanger, but in this case no detuning takes placed. Filter components periodically alter the signal's "phase response" (principle of the "phase shifter"). Characteristic notches are produced in the frequency spectrum response to create so-called "comb filter effects". The phaser effect is suitable for pads and "psychedelic" sounds.

Parameters

- **Rate:** Modulation speed
- **Feedback:** Feedback of filter steps
- **Depth:** Modulation amplitude

Room reverb / Hall reverb

In the case of reverb there are two realistic simulations of natural reverberation. Sounds receive "atmosphere" and thereby appear lively and "authentic". Room reverb simulates a small space with high echo density. Hall reverb mimics the typical reverb of large concert halls.

Since natural spaces never sound "static" because air molecules are constantly moving and due to the complexity of reflection processes, both algorithms include a modulation parameter which varies the delay time of individual echoes and thereby affects the liveliness of the reverb impression depending on strength.

Parameters

- **Decay:** Reverberation length
- **Damp:** Damping of highs, simulates absorbtion via air, wall materials, and objects
- **Mod:** Modulation strength.

Lo-fi

This algorithm gives the sound a little bit of "grit", or a certain measure of signal destruction depending on its setting. An ideal partner for creative sound design. The simulation of early digital synthesizes or samplers is equally possible since their AD/DA converters were anything but "true" in the character of their sound. The sample rate from the output of the lo-fi effect can be continuously reduced and a generous measure of "aliasing" distortion can be produced alongside the unavoidable loss of highs which results from "down sampling". Bit resolution is clearly changeable, too.

Parameters

- **Rate:** Sample rate
- **Crush:** Number of bits
- **Low-pass:** Low-pass filter at the output to smooth out induced noise

Distortion

This overdrive effect works similarly to common guitarist effect pedals. Everything is possible, from light, bluesy signal saturation to hard "metal shred boards". Here a dual-band EQ works on the in and output signals and therefore provides a rich palette of sounds.

Parameters

- **Drive:** Controls the internal level and thereby the overdrive
- **Low:** Bass portion.
- **High:**High portion.

Analog filter 12/24db

Vintage compressor

Synthesis models

The sound synthesis in BeatBox 2 consists of a simple sampler and a synthesizer which includes three different synthesis modules.

Sampler

The sampler plays short sound recordings ("samples") in different pitches. The sampler is intended for creating all kinds of drum sounds; the sounds are static and unnatural if the pitch is not altered. This is why the sampler is combined with on of the three synthesis models.

Filtered noise

White noise is filtered by two band-pass filters with separately setup frequencies and resonance. This algorithm is suitable for creating synthetic snares and high hat sounds.

Phase distortion synth

Two oscillators with regulated phase distortion and thoroughly variable frequency modulate each other (FM/cross-modulation/ring-modulation). Depending on the setting, this algorithm can be used to create kick, tom, or metallic percussion sounds; higher values for frequency and modulation level produce noisier sounds for high hats or shaker sounds. Since the oscillator frequency can be set exactly according to the musical pitch, this model can be used to produce mass lines or melodies.

Physical modeling

This is a simple physical model of an "abstract" percussion instrument. A fed-back network of delays is caused to oscillate by an impulse of filtered white noise (exciter). Depending on the setting of the exciter, the size of the model (surface), and the damping, a wide spectrum of natural sounding percussion instruments like cymbals, claves, gongs, or triangles can be created.

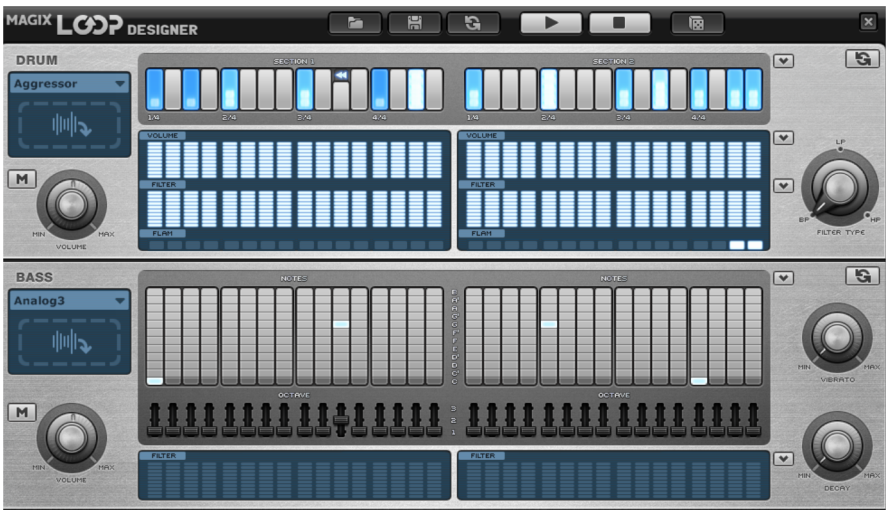
Multimode filter/Envelope generator

Following the samplers and synthesizers, an inverse filter (multi-mode filter) is added to add the last bit of polish to the drum sound. The envelope generator controls all time-dependent processes in the synthesizer and sampler.

Loop Designer

The loop designer unites both stellar design elements of drum'n'bass style in a "device": turned-up beats and rumbling bass lines. With the Loop Designer you can create authentic drum'n'bass sounds without any specialized knowledge.

Loop Designer: overview



The top half of the synthesizer controls the rhythm section, the lower half - the bass section. You can mute both sections using the M symbol on the left border. This way you can, for example, turn off the bass section in order to take only the drum section into the project. Only the drum section will then be added to the mixdown file when mixing down the project. Next to this are the volume controls, which control the volume of both sections.

You can preview and stop your drum'n'bass creations using the "play" and "stop" buttons.

Additional buttons:



Loads a saved pattern with all settings.



Saves a pattern.



Undo for all settings made in all sections.



Makes random settings changes in both sections. You can change settings later as you wish.

Drum section (top half)

Here complex, authentic-sounding Jungle-Breakbeats can be put together easily. In professional recording studios Jungle-breakbeats are made by chopping up arbitrary drum loops and putting them back together in a different order. These laborious work steps are significantly simplified by Loop Designer.

The new sequence is determined in the top row, the so-called "step" row. The grey cells represent the individual sections ("counts") into which the loop is separated.

Pick a different note or playback by left-clicking a grey cell. Various notes will be represented with a light bar which "grows" toward the top with each mouse click. This way, each time you click on the grey cell, the bar expands by one step.



1 of 4: Play Drum Loop starting from the first note.



2 of 4: Play Drum Loop starting from the second note.



3 of 4: Play Drum Loop starting from the third note.



Full bar: Play Drum Loop starting from the fourth note.



Reverse icon: Play backwards from this position



Stop icon: Stop playback

The right mouse key deletes settings of a step bar and the Drum Loop is played in its original order.



Pressing the double-arrow button generates a random step sequence. You can change this rhythm as you like.



Clicking into the blue field in the left part of the drum section opens a pop-up menu where you can pick the sound of the Drum Loop. When you select another drum loop it will load and be played in the way you programmed it.

Tip: You can also send a loop from Soundpool or a wave file to Loop Designer. To do so, select the desired loop or file and drag it into the field while holding down the mouse key ("drag & drop").

In the field under the "steps" row the sound of the loops is defined. The intensity of the settings is determined with a control similar to a peakmeter. The higher the bar, the stronger the influence on the loop is. With the help of the left mouse key, values can be smoothly adjusted. "Volume" controls the loudness (full = loud, empty = quiet), "filter" the filter strength (full = clear, empty = muffled). In the "Flam" row you have the option to make the note repeat itself twice in quick succession. This is how to program rolls and fill ins.

Using the top arrow buttons at the right edge you can load pre-defined pattern settings. The originally set loop will not be changed. The two lower arrow buttons offer presets in the form of standard curves for "volume" and "filter".



The "Filter type" controller selects the type of the filter sound: "BP" stands for "bandpass", "LP" for "low pass" and "HP" for "high pass".

Bass section (lower pane)

The bass section produces suitable bass lines.

- The first row of the "Notes" row, determines the order of the sounds i.e. the series of notes. Select a cell with the left mouse click, where the lowermost represents the lowest note and the topmost - the highest. A right mouse click deletes a cell.
- In the "Octave" row you can specify the octave of the bass. The slide control positions represent the various octave values. If the controller is down, a deep sound is produced, if it is in the top position, you will get a high tone. If the controller is in the middle, the pitch will be balanced.

Just like in the drum section, here you will also find arrow buttons on the right side for opening pre-defined patterns and and a double-arrow button for setting arrows. The filter can be set analogously to the drum section. The arrow button next to the filter area select presets in the form of standard curves.

You can determine the bass sound in the blue selection field at the left side. You can drag loops and WAV sounds into the field using drag & drop just like in the drum section.

Additionally, there are two slide controllers for sound changes to the right:



The "Vibrato" slider makes the bass tone's pitch change. When the control is to the far right, the sound vibrates more, if it's to the far left pitch isn't changed at all.



The slider "Decay" determines how long should it take to for the sound to subside. Set to the far right the sound is very fast (about 1 / 4 of a second), on the far left the sound lasts longer.

Robota

The Robota is a four-part drum computer with virtual analog and sample-based sound production. Virtual analog sound production means that the sounds are synthesized in real-time, i.e. produced with a synthesizer to recreate the typical analog sounds of classical drum computers, such as the Roland Tr-808 and Tr-909, or more recent devices such as the Korg Electribe or the Jomox x-cousin. Sample sound production uses drum sound recordings (or even other recordings) as the basis for sound production.

After selecting the elementary sound production technique, the sounds of each of the 4 parts (or instruments) can be edited using modulators.

The step sequencer programmed with incident lighting helps Robota to play. 4 beats in sixteenths (or 2 beats in thirty-seconds) are processed as a loop. At each beat position, the playing positions can be set by clicking a button. In "Event" mode, the instruments are distributed within the beat pattern. In "Snapshot" mode you can adjust additional instrument sound settings.

Sound synthesis

The four instruments of the Robota are built identically. Each instrument can create all kinds of drum sounds – from hissing hi-hats to phat bass drums.

During elementary sound production, you can choose between an oscillator with selectable wave shapes (sine, triangle or saw tooth) or a sample. In addition, you can add a noise generator can be added. The oscillator has a pitch envelope (pitch env.) and a volume envelope (attack/decay). It can also be frequency and ring-modulated. The depth of the modulation can be controlled via an envelope parameter (Fm/rng dcy). There's also a "Lo-fi" section consisting of distortion (Rectify), bit rate reduction (Crush) and sampling rate reduction (down sample).

Temporal control via an envelope (lofi dcy) will get the best out of the lo-fi effects. A multi-mode filter (low-pass/band-pass filter/high-pass) with 12/24 dB steep-side. A comb filter can be inserted. The filter frequency can be likewise modulated via an envelope. For extra pressure, an adjustable compressor (compressor, comp resp) is included, as well as tube amplifier simulation (tube).



Parameter (1): To simplify matters, not all parameters can be changed on a sound - only those that are meaningful for the selected drum sound may be changed (snare, kick, high etc.). There are four selected variable parameters coordinated exactly with the selected preset sound.

Oscillator waveform (2): The fundamental waveform of the Oscillators is selected here. You can choose from sinus/triangle/sawtooth/sample. If you have selected "Smpl" you can use the rotary knob to select a sample, i.e. a previously recorded drum sound. These samples are saved in the folder /synth/robota/samples/. If select custom samples, they will appear in the selection list.

(3): For each part you can regulate: Filter Cutoff, Resonance, Tube, Volume and Panorama (view page 247).



With **select** choose the instrument for editing in the step sequencer.



"**M**" mutes the instrument, "**S**" makes it solo

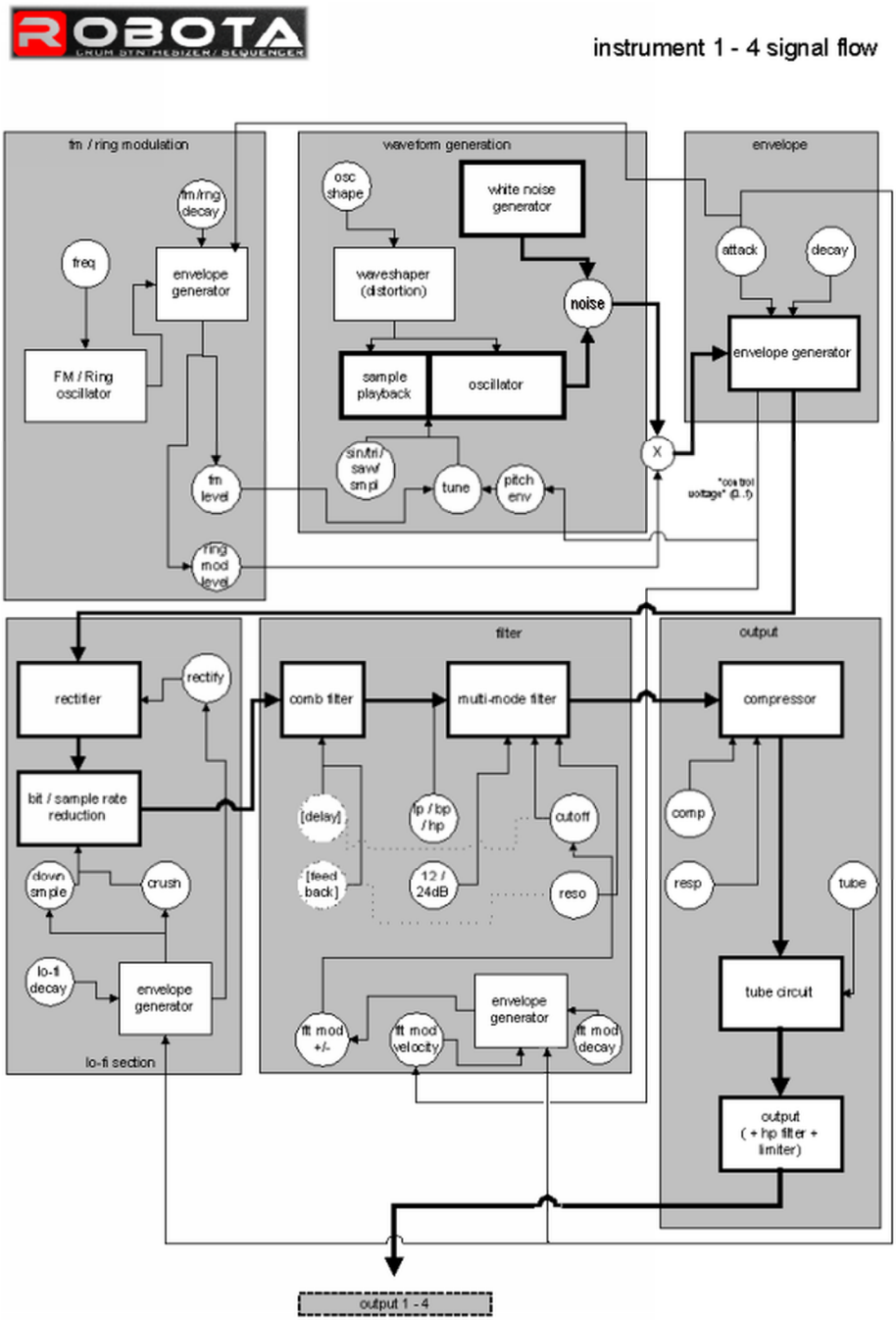


The **loudspeaker** button allows you to hear a preview.

Master Section

Volume regulates the total volume of the Robota. **Distortion** adds an adjustable tube distortion to make the sound "dirtier" and more powerful. The peak meter helps control the output level – when it enters the red area, reduce the total volume.

Schematic illustration of the Robota synthesis



Here is a detailed circuit diagram of a Robota voice with a description of all control parameters.

Pitch envelope (pitch env)

Controls the pitch envelope level.

Tune

Tunes the instrument.

Oscillator shape (osc shape)

The shaper adds additional frequency shares to the basic sound of the oscillator by artificially reshaping the wave shape. A sine wave (shape = 0) can be reshaped up to a square curve (shape = max).

Oscillator waveform

The fundamental waveform of the oscillators is selected here. You can choose from sine/triangle/sawtooth/sample. If "Sample" is selected, you can use the controller to select a sample, i.e. a previously recorded drum sound. These samples are saved in the folder /Synth/robota/samples/. If you select custom samples, they will appear in the selection list. If you are playing your own samples, they will appear in the selection list.

Noise

Adjust the ratio between the oscillator sound and the noise generator.

Attack

Adjusts the attack time. The greater the set value, the softer the attack of the sound. The attack rate is also applied to the lo-fi and filter envelope curves.

Decay

Adjusts the decay curve. The greater the value, the slower the instrument will decay.

FM/Ring modulation frequency (Fm/rng frq)

The fundamental frequency of the frequency or ring modulation.

FM level (fm lvl)

At a low frequency FM first adds vibration to the sound, at high frequencies and low levels it creates bell-like sounds, as the level increases metal sounds, and finally noise.

Ring modulation level (rng lvl)

Ring modulation creates typical auxiliary frequencies.

FM/Ring modulation decay (Fm/rng dcy)

Time constant of FM/ring modulation by-product. Only the beginning of the drum sound is affected by the modulation.

Rectify

Distorts the audio signal.

Crush

Bit rate reduction. Digital artifacts become audible with higher settings.

Down sample (dwnsmple)

Sample rate reduction. Ideal for creating the "old school sound" of older digital drum machines. As it is increased, the result becomes darker.

Lo-fi decay (lofi dcy)

Time constant of the by-product of the three lo-fi effects which makes the sound "dirty". Only the beginning of the drum sound of the lo-fi effects is affected if the decay is low. For instance, this makes the kick of a kick drum sound more interesting.

Filter modes (flt mode)

Filter mode: High cut – sound portions above the cut-off frequency are filtered out. Band pass (BP) – Sound portions above and below the cut-off frequency are filtered out. Low cut - All sound portions below the cut-off frequency are filtered out. This mode is set as a preset and can not be changed.

Filter frequency (flt freq)

The cut-off frequency of the filter.

Filter resonance (flt reso)

Filter resonance which increases the sound portions at the cut-off frequency of the filter. If the resonance is high, the filter itself can also be used as an oscillator.

Filter modulation -/+ (flt mod -+)

Regulates how much and in which direction the filter envelope curve moves the filter frequency in which direction.

Filter-Modulation decay (flt mod dcy)

Decay time of the filter curve. Smaller values with high resonance create a "zapping" sound of the filter, greater values create the typical sweep sound.

Filter modulation velocity (flt mod vel)

Specifies how much the filter modulation depth depends on the velocity. If this value is increased, louder beats will generate higher filter curves than quieter ones.

24 dB

The filter can operate with a slope of 12 dB or 24 dB. This mode is set as a preset and cannot be changed.

Comb filter (comb filt on)

You can activate a comb filter, a feedback delay that creates resonance-like sounds comparable to a plucked string. The delay time and feedback levels are permanently linked fo the filter parameters (frequency and resonance). This comb filter is set as a preset and can not be changed.

Compressor

Controls the compressor strength. This lets you increase the "power" of the drum sound.

Compressor response (comp resp)

Controls the compressor time. The lower the value, the faster the compressor follows the volume.

Tube

Controls the level of the tube amp simulation. It "saturates" the output signal of the voice and adds warmth to the sound if the settings are moderate. Increasing the settings makes the sound "dirtier".

Volume/Pan

Controls the volume and panorama position of the drum instruments.

Sequencer



Incident lighting is used to control the drum patterns just like in all classical drum computers and groove boxes. The step sequencer consists of 16 individual step buttons with LEDs corresponding to the appropriate partitioning of a beat:

16ths or 32nds (a half beat is in each case displayed). A button lights up to indicate the releasing of the instrument at this point in the beat (= step).

A left click turns on the step, a further left click deletes the step again.



A pattern can be a maximum of 4 beats long. The length can be modified using the fader on the button bar.



The beat to be edited can be selected with the applicable “edit” button. The “Follow” button specifies whether the step of a beat is in time.

"**1 > 2-4**" **auto draw:** If more than 1 beat is activated as the loop length, the "Auto draw" mode ensures that the drum note set in the first beat is set automatically for the following beats. This makes it very simple to produce a continuous beat from a loop length of 4 beats. Notes set in the rear beats are not affected by auto draw.

How to program a drum pattern:

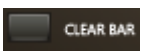
- Select the pattern length with the fader.



- Select “Event” mode.
- If you edit during playback, turn off “**Follow**”. Select the beat with the “**Edit**” buttons.



- Use “**Select**” to choose an instrument to edit.



- Use the “**Clear bar**” button to delete all steps in the selected instrument.



- Turn on the appropriate **step** buttons, and use the “**Velocity**” controller to adjust the beat velocity.
- Repeat the procedure with the other instruments

Snapshots

In addition, you can automate programming of the editable sound parameter of a drum sound via so-called "snapshots". You can thereby save the sound parameters of a drum instrument on the step buttons of the sequencers.

Automating the drum instrument with snapshots.:



- Set the edit mode to “Snap”.
- If you edit during playback, turn off “Follow”. Select the beat with the “Edit” buttons.
- Select an instrument and edit the sound. You can control the sound of an instrument even when playback has stopped by using the loudspeaker button.
- Save the sound as a snapshot to one of the step buttons.

- Change the sound of an instrument and save the settings to other step button

Warning: The parameters are not changed abruptly but are faded internally instead, in order to avoid crackling. If two snapshots with extreme parameter differences are too close together, the drum sounds will sound differently when the pattern is played.

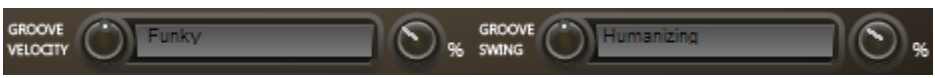


- Using the arrow keys, you can jump between the individual snapshots during stopped playback.

- Press "**on**" to activate snapshot automation.

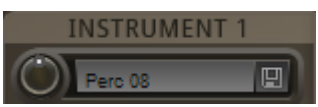
Groove Control

The secret behind "groove" beats lies in delay. That is, individual beats are either anticipated or delayed according to patterns. For example house beats use the "shuffle" whereby straight 1/16s are delayed at certain times.

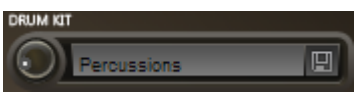


In the Robota there are **groove velocity** and **groove swing** presets. Groove velocity presets contain for each step of a beat a certain offset to increase or reduce the original beat velocity. Groove swing presets contain for each step a time alignment that is either anticipated or delayed. The result is a livelier-sounding sequence. The strength of the effect can be adjusted with the % regulator.

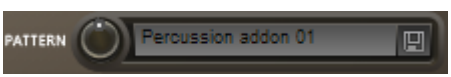
Setups, drum kits, presets, and patterns



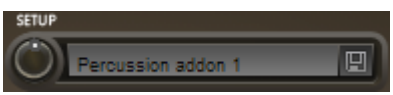
A single instrument sound is saved as a preset.



Presets containing all four instruments are saved as drum kits.



All note information plus the snapshots are saved as a pattern.



Together (drum kit + pattern) they are know as a setup.

Load/Save

Presets, drum kits, patterns and setups can be selected with the continuous rotary regulators next to the display area. For storing, click on the  "Save" button. Then specify a new name in the input field. To store, press "Enter".

Note: A drum kit stores only the names of the presets, not the actual parameters. If you want to store your own drum sounds that were created by changing existing presets, you must first store them as new presets and then as a new drum kit! The same applies to the setups, which contain only the pattern and drum kit names.

If necessary, always store in this order: preset -> drum kit -> pattern -> setup. This applies only when creating your own "templates". If you store your project normally, the complete current status (synthesizer + sequencer) of the Robota is always stored and correctly loaded later with the project.

Synthesizer plug-ins

Samplitude Music Studio also includes software synthesizers that are based on the VST plug-in technology. These are different from synthesizers that are loaded as synth-objects:

- Generally, VST instrument plug-ins (VSTi) do not feature sequencers of their own and are controlled via MIDI objects.
- VST instruments are always loaded to a specific track. All MIDI objects on this track then control this VST instrument. VST instruments, unlike synth objects, cannot be freely moved from track to track.
- Effects may only be applied at the track level.

Nevertheless, these are much easier to manipulate in Samplitude Music Studio using the MIDI controls.

DN-e1

The DN-e1 is a virtual analog synthesizer that is suitable for all conceivable styles and application areas. It works in a subtractive way, i. e. first a basic sound is selected that is then filtered with the aid of a filter curve.

The DN-e1 is played with a MIDI keyboard or with the aid of MIDI objects. You can use the keyboard in the program to set the sounds.



Sound selection

Select the sounds and sound configurations at the top.

Bank: Here you can switch between three banks with various complete configurations.

Category: Here you can select a sound category.

Rndm (Random): Here you can activate a random selection of the parameter settings in order to experiment with the sound.

Patches/Name: Here you can select a sound that will then be modulated.

Output

The end of the signal chain is edited in this area.

Volume: Sets the total volume.

Voices: Controls the number of voices generated (polyphony).

Glide: Controls the glide function. You can access sliding pitch transitions between the individual notes.

Unisono: Switches to monophonic, but generates a number of slightly varied voices for "thickening" the sound.

Filter en.

In this area the filter curve used to filter the output sound is modulated.

Attack: Sets the time duration that the filter curve requires in order to reach its maximum.

Decay: Sets the time duration that the filter curve requires in order to go from its maximum to the sustain level.

Sustain: Here you can set the degree of filtering that should take place after the decay phase. This filtering remains the same until the key on the keyboard is released; in contrast to the other three parameters, it does not also control a time duration, but a specific level.

Release: Sets the time duration which the filter curve requires in order to go from the sustain level to the zero point after the key is released.

Reverb

An additional reverb effect can be set here.

Type: Sets the sound coloration of the reverb effect.

Pre Del: Sets the time that passes between the direct signal and the arrival of the early reflections. The reverberation time comes only after this time span.

Damp: The corner frequency at which a damping of the highs should be implemented for each delay is defined here. This is useful, for example, for making the delays reverberate more naturally or for creating special effects (reggae/dub-style effects).

Decay: Sets the complete reverb time.

Low Cut: Sets the filter frequency of a high-pass filter. All signal components below this frequency will be filtered out.

Amount: Here you can set the mixing ratio between the effect and the pure sound, i.e. the original sound without any effect applied.

Delay

An additional echo effect can be set here.

Type: Different types of echo can be selected here: normal echo, ping-pong echo (where the sound swings through the stereo panorama) and various other forms.

Color: Sets the sound coloration of the echo.

Feedback: Sets the number of echo repeats.

L Rate: Sets the time duration for individual echoes for the left channel.

R Rate: Sets the time duration for individual echoes for the right channel.

Amount: Sets the mixing ratio between the effect and the pure sound, that is to say, the original sound without any effect applied.

Vita

The MAGIX Vita synthesizer specializes in playback of "real" instruments using sampling technology. This means that short samples of real instruments in different pitches, playing techniques and volumes are used, combined, and played again at the correct pitch.

The VITA synthesizer is controlled via the MIDI objects. If you load Vita via the Media Pool, a preset MIDI object will appear first. You can then load different Vita sounds via the "Output" menu at the top of the MIDI editor.

You can adjust Vita's sounds via the instrument menu of the trackbox.



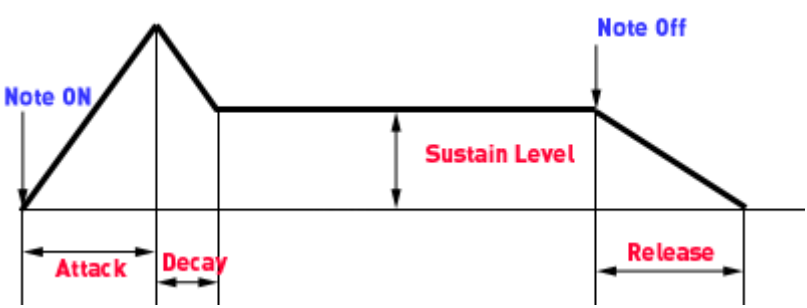
The Vita interface



1. Layer selection/Peak meter: The Vita sounds, also known as layers, can be selected here using the arrows. Right-clicking on the display opens the layer menu.

2. Main parameter: Here the volume, panorama position, pitch characteristics ("transpose") and the fundamental frequency ("master tune") can be set.

3. AMP: This is the volume envelope. With this you can control the timing of a sound's volume. A(ttack) stands for the volume increase at the start, D(ecay) for the length of time the decrease in volume takes on a section set with S(ustain) at the maximum volume. R(elease) is the length of time it takes for the sound to fade out.



4. FILTER: Here you can switch on a filter which influences the sound. With FILTER TYPE you can select the kind of filter you want to use. Cutoff controls the filter frequency and "Resonance" controls the strength of the emphasized filter frequency. "Velocity" indicates how much the velocity influences the filter frequency, using "Gain" you can balance the volume. The filter envelope (ADSR slider) influences the filter frequency depending on the time.

5. DELAY: Here you can switch on an echo effect. "Time" controls the delay time and "Level" controls the strength of the echo sound.

6. REVERB: Here you can switch on a reverb effect. "Time" controls the delay time and "Level" controls the strength of the echo sound.

7. TUBE DISTORTION: This is a tube distortion effect like those found in guitar amplifiers. This is normally used for electric guitars but you can also get creative and use it for other things. "Drive" controls the strength of the distortion. "High-cut" and "Low-cut" filter out the high and low frequencies.

8. VALUE DISPLAY: This always displays the exact values of the parameter that was just adjusted.

9. DYNAMIC RANGE: Usually the relationship between the created volume and the MIDI velocity is proportional. You can compensate for the fact that some MIDI keyboards need to be pressed forcefully to produce loud sounds (or conversely produce loud sounds with a soft touch) using the "MIDI Input Curve". Using "Dynamic and "Dynamic curve" you can manipulate the dynamics of a sound, i.e. the relationship between the loudest and quietest sounds.

10. Voices: Here you can control the number of voices played simultaneously. If notes are no longer played, as is the case in some fast passages, you can increase the number of voices at the expense of performance.

11. Keyboard: Here you can preview the Vita sounds. This only works during playback or recording. **12.** lets you hide the keyboard.

Revolta 2

Revolta 2 is a further development of Revolta. It is polyphonic and playable with up to 12 tones, including an additional noise generator, a step sequencer, and an extra-flexible modulations matrix. An effects section with 9 different effects and presets (created by a professional designer) make it a full-fledged synthesizer for all kinds of lead, sequence, and pad sounds.

REVOLTA 2 has a whole array of presets. The sounds have been created by professional sound engineers and demonstrate the huge potential of this instrument from the word start. First off, however, we would like to encourage you to try out the

various control functions and to experiment as much as you like. The sky's the limit to your creativity.

Revolta 2 interface

Note: The following is only a short description of the Revolta 2 interface.



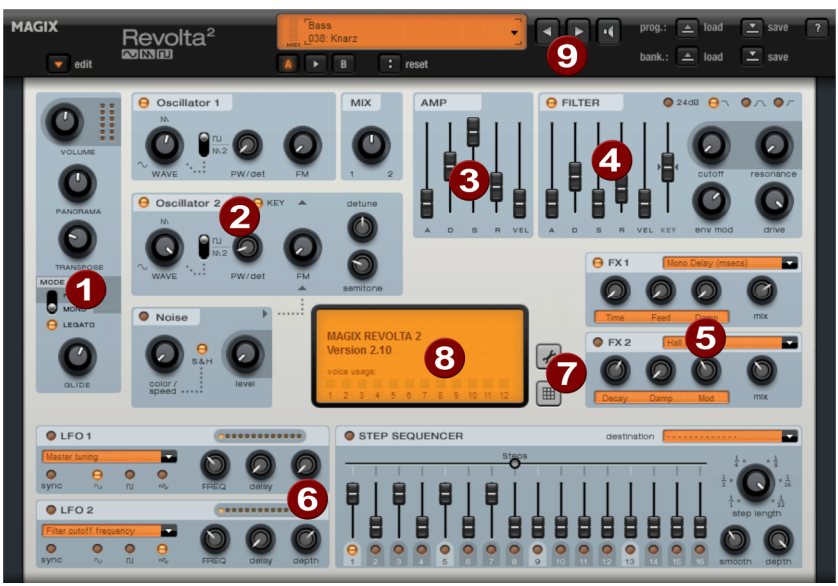
For a comprehensive documentation of this complex synthesizer please click the help button on the Revolta 2 interface!

The Revolta 2 interface can be displayed in two sizes. In "Rack" mode only the elements necessary for preset loading are visible:





By clicking the edit button you can open the complete interface.



1. Main parameter: Sets the volume, panorama position, pitch characteristics ("Transpose"), and play modes ("Poly", "Mono", "Legato"). "Glide" regulates the portamento time.

2. Oscillator section: Two oscillators are available with smoothly adjustable curve forms and a noise generator. Both oscillators can be tuned to each other and used to modulate frequencies.

3. Amp: This is the volume envelope. Here you can influence the temporal progression of a track's volume. **A**(ttack) stands for the volume increase at the start, **D**(ecay) for the length of time the decrease in volume takes on a section set with **S**(ustain) at the maximum volume. **R**(elease) is the length of time it takes for the sound to ring out. **"Vel"** specifies how much the envelope curve depends on the velocity.

4. Filter: Here you can switch on different filters to influence the sound. "Filter type" selects a filter type. "Cut-off" regulates the filter frequency, "Resonance" controls the strength of the amplification of the filter frequency. VEL" indicates how much the velocity influences filter frequency, and "Key" changes the filter frequency depending on the note pitch ("Key tracking"). The filter envelope (ADSR slider) influences the filter frequency depending on the time. "Env mod" controls the strength of the filter envelope curve, and with "drive" the filter can be overmodulated.

5. FX1/FX2: Here you can mix in 2 different effects out of a total of 9 available effects.

6. LFO1/LFO2/Step sequencer: Two LFOS and the step sequencer can be used to modulate single parameters of Revolta 2.

7. Options and modulations matrix: The two buttons open the Revolta options page for general and preset-specific settings and modulation matrix. In the modulation matrix modulation sources are connected with modulation targets. Simple modulations like the oscillator (the pitch will be modulated via an LFO) can be set quicker directly on the interface. Much more complex modulations are possible in the matrix because the matrix offers more modulation sources (e.g. MIDI controller, oscillators) and the modulation source can influence more targets.

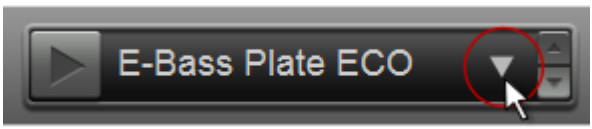
8. Value display: The value display shows the exact value of the parameter which was just modified. In addition, you can find out the load of the twelve voices.

9. Preset section: Here you can select Revolta presets. Every sound can be listened to, and an A-B comparison between two sounds is also possible (for example, an edited and an unedited sound).

Vita Solo instruments

Samplitude Music Studio includes four additional track synthesizers that are based on the Vita Sampler engine. The Vita Solo Instruments are a sample player that have customized interfaces for the relevant instrument.

The basic controls are identical for all synthesizers.



One click on the arrow symbol opens a fold-out menu where you can determine the general sound of the instrument. If "ECO" appears in the description, this refers to especially performance-improving settings which may not sound so "smooth". You may also save the settings you changed in order to add them to your favorites lists for later use.



You can control the overall loudness of the instrument.



You can turn the instrument keyboard on or off with this controller.

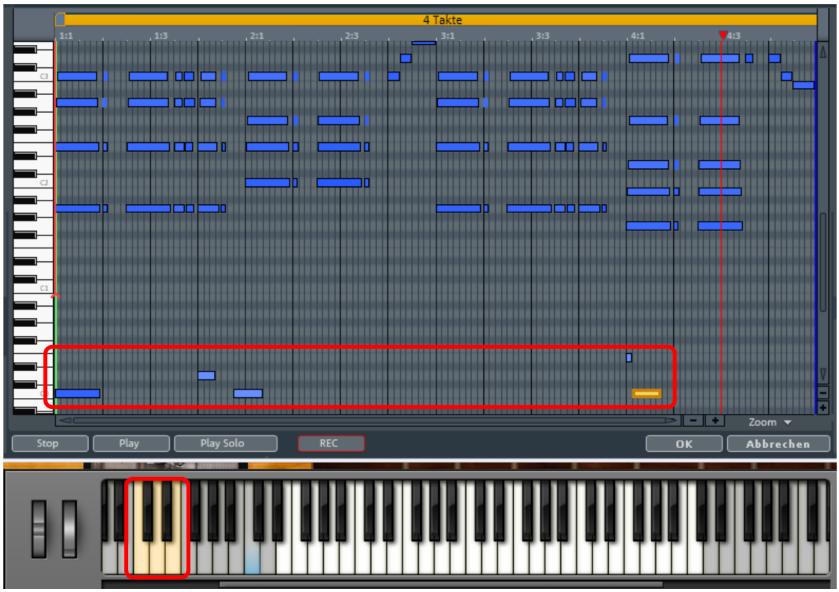
Because these samplers are enhanced for each instrument by tuned effects, the rest of controls function analogously to the already familiar synthesizers such as Vita. If you would like to know which result certain effects have, you will find explanations in the Essential FX, Vintage Effects (view page 126) or Reverb chapters.

Additional information is also available in the VST plug-ins (view page 216) chapter.

Articulation

Some Vita Solo Instruments have a special feature: In a bass octave (on the keyboard (C0-H0), there are special notes, which let you control the playing style (articulation). An alternative sample set is loaded, which lets the bass sound even more realistic using various playing styles such as note bending and flageolet.

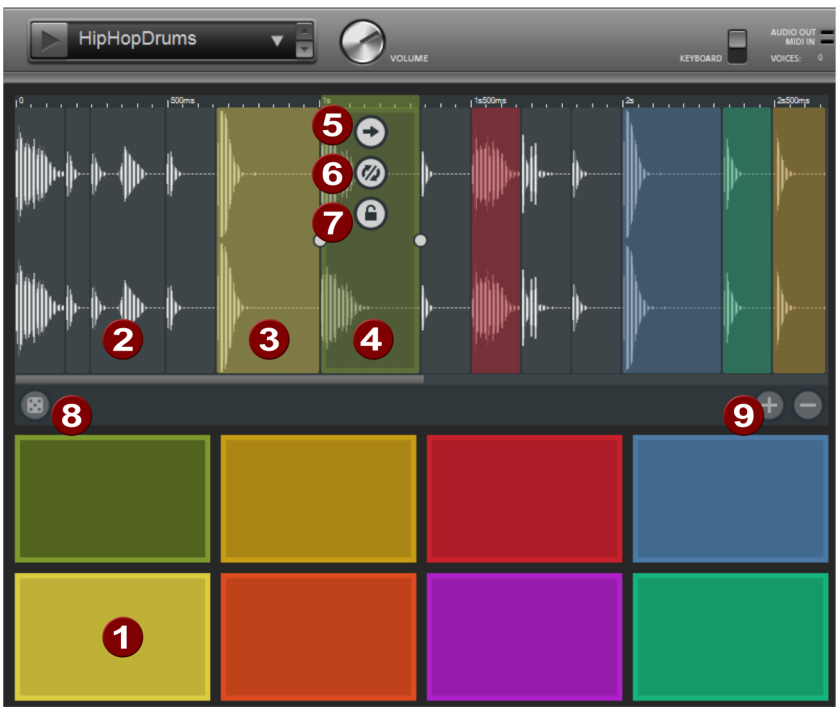
Articulation is switched on and continues until normal articulation is switched on again through the corresponding note (C0).



On the keyboard at the bottom of the synthesizer interface are the buttons to switch articulation, displayed in different colors. In the MIDI Editor appearing above, you can watch a practical application of articulation. The notes on 1:4 and 4:1 will be played back with varying articulation. Before the next "right" note, normal articulation will be switched on again through C0.

Vita Sampler

The Vita Sampler is a simple sampler, which you can use to play sections of samples via MIDI, for example individual drum sounds from drum loops. This function as a so-called "beat slicer", which means that it automatically finds the individual elements in samples (e.g. kick drum in a drum loop), which in turn are available as destinations for eight drum pads.



1. **Wave form:** Your own samples in the file formats .wav. .aiff, .ogg, and .mp3 may be loaded into the Vita Sampler via drag & drop simply by dragging them there. In this case, the sample segments ("slices") are detected automatically and marked in the sample.

2. **Assigned slice**: Of all the detected slices, 8 are selected randomly, assigned to the drum pads, and specified as random playback modes (**5,6**).

3. .**Drum pads:** Slices may be played using the mouse with the drum pads and via MIDI with the white buttons starting at C3 (MIDI note number 60, 62, 64, etc.)

4 **Selected slice:** Slices may be selected for advanced listening by clicking them. The associated drum pad is also displayed at the same time.

To change the slice assignment for this drum pad, drag the colored frame around another wave form slice.

To change the size of the assigned slice, drag the edges of the frame using the round handles. The edges will snap onto the specified slice borders. Pressing the **ALT key** shuts off the snapping grid. This enables imprecise positions in the slice detection to be corrected.

Note: Slices may not be assigned to multiple drum pads, which is why sometimes, the selection cannot be dragged as desired.

5 Clicking the symbol changes the **playback direction** of the slice:



Forward



Reverse

6 Clicking the symbol changes the **playback mode** of the slice:



No loop. The slice is played back for as long as the drum loop or the MIDI not is active, but only until the end.



Loop. The slice is played back in a loop for as long as the MIDI note is active.



One shot. The slice is played back independently of the length of the MIDI note until the end

7 **Lock pad:** Lock the pad out of the random function (see below).



Not locked



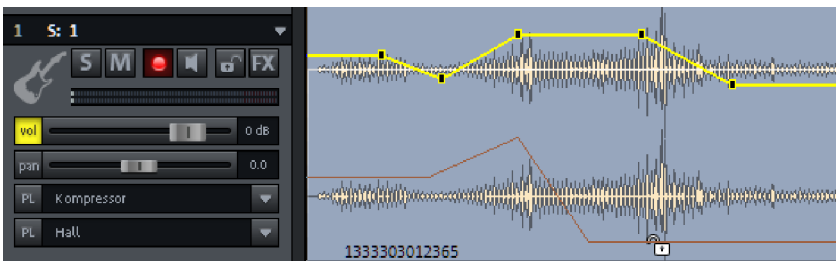
Locked

8 **Random:** A new, random selection of slices is added to the drum pads and random playback modes (**4**,**5**) are assigned. Locked pads are not included. You can use the random function repeatedly to discard unwanted results and keep the good ones.

9 **Zoom**: The zoom buttons enable you to enlarge the wave form display, to recognize more details,which is practical for correctly slice edges with the ALT button (see above)

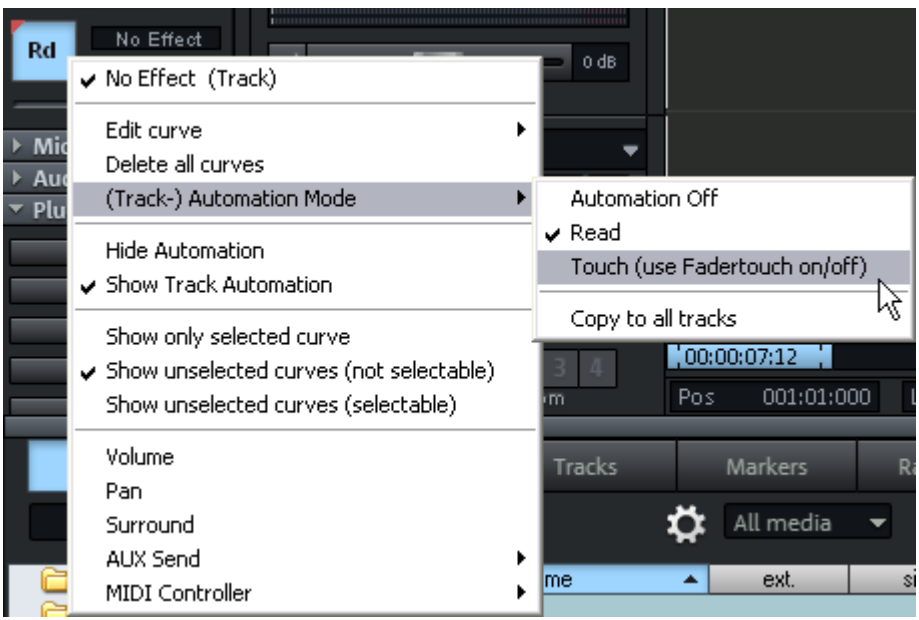
Automation

Samplitude Music Studio provides lots of comprehensive automation possibilities at track level. You can enter automation movements in realtime or draw them manually. The created automation data are visible as controller movements in the corresponding plug-in or as a curve in the automation track. An unlimited number of automation curves are available on each track. The volume automation curve is set to 0 dB at the middle of the track and +6dB at the top of the track.



The following dynamics automation settings are available at track level: volume, panorama, AUX sends and plug-in control elements and MIDI controllers.

Automation modes



The automation modes define how automation data should be saved or displayed. Set the automation mode for each channel/track. Different automation modes may be selected by right clicking the automation button in the mixer channel. Clicking this

button toggles between the last activated mode and "Read" mode. **"Copy to all tracks"** applies the currently selected automation mode to all tracks/channels.

Off mode

All automation functions are deactivated on Off Mode, all already written automation sequences are ignored.

Read mode

All recorded automation parameters are played in "Read" mode. The automation button is usually set to this state.

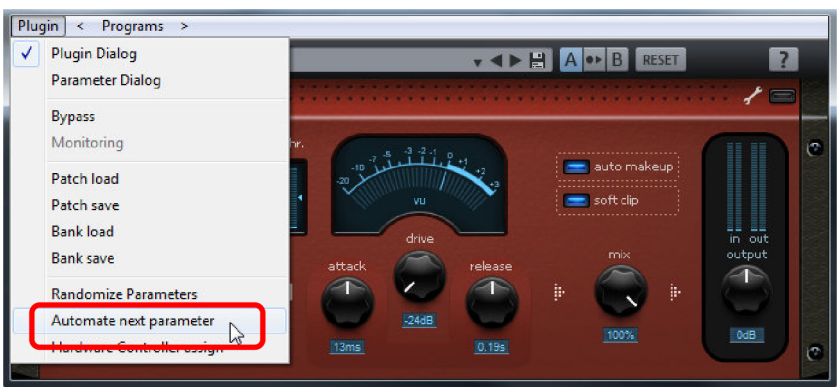
Touch Mode

In "Touch" mode, automation data is only recorded as long as you touch the selected control element with the mouse or touch it from your external controller. As soon as you release the button, the automation recording stops. Once released, the control element will move back to the previously recorded position. You can determine the fader return time in the System Options (Shortcut: „Y“) under „Effects“ > „Automation“ > „Automation Release Time“.

Track automation - Basic procedures

Step 1: Select the "Touch" recording mode for creating automation curves for the individual tracks/channels.

Step 2: To automate a plug-in control element, select "**Automate next parameter**" in the plug-in menu and click the desired function button in the plug-in dialog.



The arranger will now display an automation curve for this parameter.

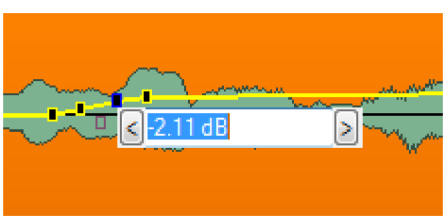
You can also select the plug-in parameter you want to control by right-clicking on the automation display in the Track Editor.

Step 3: To start recording automation, press "Play". Whatever changes you made to the selected control element will be recorded in real time during playback.



You can overwrite, edit and copy the automation data at any time. You can draw fine steps in the curve if you hold down the "Shift" key.

In universal mouse mode, you can edit the curve points by right-clicking on them. A numerical entry field will appear where you can enter the values you want, or you can use the mouse wheel to change the value in 0.1 dB increments. Holding the shift key while doing this will adjust the value in increments of 0.01 dB. Holding down the "Ctrl" key, in turn, will change the value 1 dB at a time.

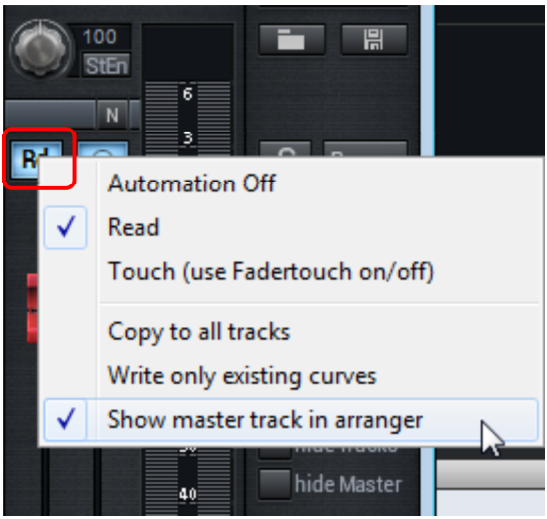


You can jump to the next automation point using the Tab key.

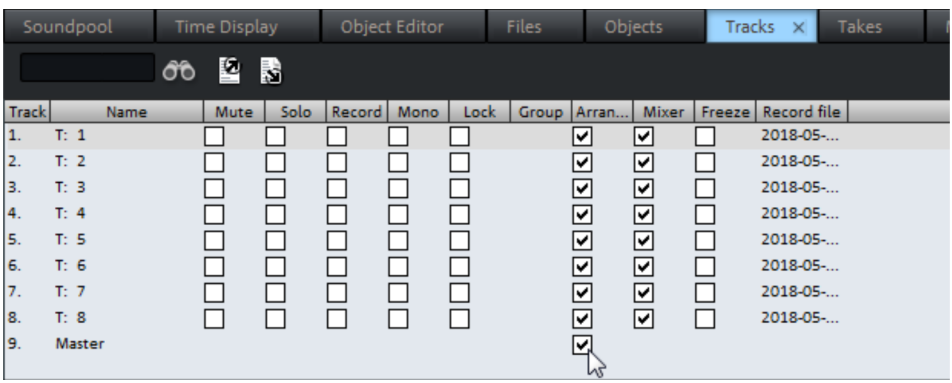
Note: Afterwards, if you want to change the vertical positions of the curve points—that is, their values, not their positions—hold the shift key while moving them. Holding the "Alt" key in addition to this will only move the curve points horizontally. (So you'll be changing their positions and not their values).

Master automation

At master level, you can automate the volume, EQs, VST plug-ins, and MIDI controllers. An automation button for volume automation of the stereo sum is available in the master section of the mixer. To display the master track in the arranger, right-click the automation button in the master channel. Select the option "Display master track in arranger".



A blue track called "Master" is now displayed in the arranger. You can automate this track in the arranger too. In addition you can make the master track visible in the arranger window via the track manager (view page 292). To do this, open the track manager and place a check next to "Arrangement" for the "Master" track name.



VST plug-in/VST parameters dialog

All of the parameters that may be automated may also be selected and activated in the VST plug-in's parameters dialog. This allows automation to be recorded directly via the selected parameter controllers during playback. You can open the parameter dialog in the plug-in's menu via "**Plug-in -> Parameter**".

Detailed information about the VSTi parameter dialog is provided in the chapter "Software/VST instruments -> Plug-in parameter dialog".

Recording automation in "Read" mode

The easiest way to **write automation in "Read" mode during playback** is via the "**Ctrl + Alt + switch/controller**" shortcut, while working directly in the plug-in/instrument/mixer interface. This way allows an automated recording to be made at any time. As long this key combination is held down, you may also automate the selected parameters in "Read" mode.

If a mixer/VST control element is clicked with the same key combination "**Ctrl + Alt**" while stopped, a corresponding inactive curve will be created automatically for editing in "Draw" mode.

Automation Draw Mode

Select **Draw Automation Curves** mode in the toolbar to draw automation curves for a parameter or a MIDI controller.



Drawing Track Automation:

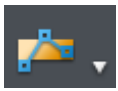
1. First, select a control element in the track editor/mixer or VST plug-in using the key combination "**Ctrl + Alt**".
2. The inactive automation curve that appears in the track can now be edited with the pen tool.
3. When creating an automation curve with the pen tool, you can place it on any position in the track display and drag with the mouse pointer to edit the curve.

VST parameters are shown in % while drawing. Volume and AUX send parameters are indicated in dB.

More information about Automation Draw mode can be found in the chapter „Mouse functions and Mouse modes > Automation Draw mode“ (view page 269).

Editing Automation Curves

Alongside the normal mouse mode for editing already recorded curves (create or delete curve point), a special

 Curve Edit Mode or  Object/Curve Mode is also available.

In **Curve Edit Mode** you can directly draw, move and delete curves with a double-click. The mouse pointer switches to a **Hand or Moving tool**. If your mouse is not directly above the curve, you can select an area of automation points using the **Calculation Tool**.

In **Object/Curve mode** you can also create new points on the curve, move, and delete curves with a double-click. If you move the mouse pointer away from the curve, you will automatically be in Object mode. In this mode you can move objects and adjust their start and end positions, add fade-ins and fade-outs as well as edit the object volume.

You can find detailed information about the curve modes in the chapter "Mouse functions and mouse modes" (view page 74).

Move automation curve with audio/MIDI data

To move the audio material to a new position on the timeline along with the automation curve, the automation curve will have to be connected to the object. This is possible via "**Link curves to objects**" mouse mode. Click this button in the mouse mode toolbar to get started.

 Objects may now be moved or copied together with your curve points.

Note: If you only wish to move or copy the curve points, follow the instructions above and simply delete the objects once moved/copied. The curves remain intact.

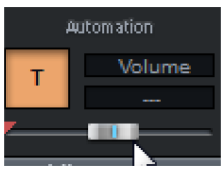
To copy the curve points, simply use "Curve edit" mode and drag out a section by moving the mouse from right to left over a curve while holding down the mouse button, copy the curve points via "Ctrl + C", and then insert them into a different track at the current play cursor position via "Ctrl + V".

Automation – context menu

A variety of options are available for launching the automation context menu:

- Launching the "Automation" menu item
- Right-clicking on the automation button in the Track Editor
- Right-clicking on the automation controller in the Track Editor
- Right-clicking on the "Vol" button in the track header

Now you can select an automation parameter that you then manipulate with the automation controller in the Track Editor.



First entries in the automation context menu

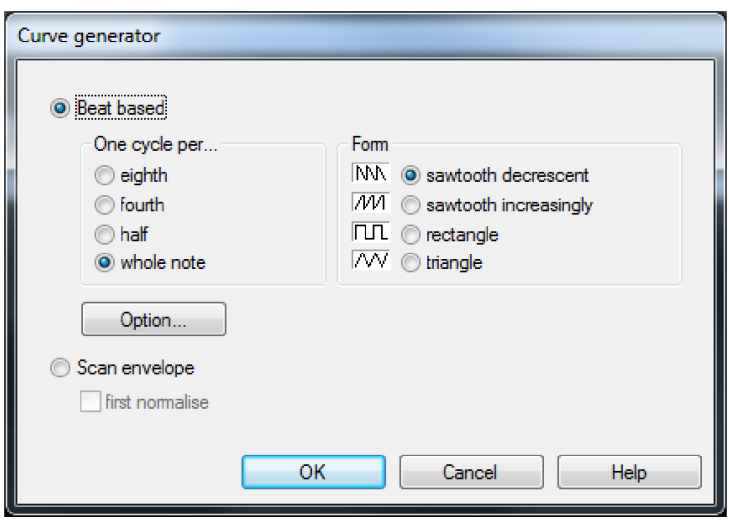
The first entry indicates which parameter you have automated, e.g. **Effect 0 volume** or **Effect 1 pan**. By checking the corresponding entry you can activate the corresponding automation curve. If you haven't activated an element, **No effect (track)** will be displayed.

Editing curves

Curve generator

The curve generator will create a volume curve for you that is beat based and pulses according to eighth, quarter, half, or full notes. Enter a minimum and maximum value or define delay values as an option for the beat-based envelope curve calculation.

The **"Create..." option** in the automation context menu opens a selection dialog to define the shape of the automation curve more accurately.

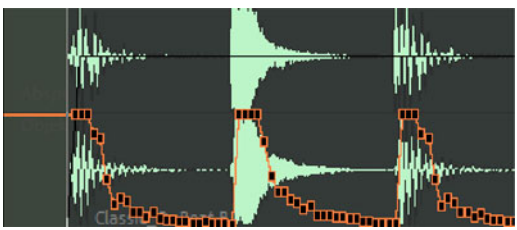


Beat-based: This option causes the form of the automation curve to follow the beat in the arrangement.

There are 4 basic patterns available for beat-based automation curves: 2 sawtooth shapes, rectangle, and triangle. These shapes run depending on the beat and control the intensity of the activated effect. The left side of the dialog enables the automation curve to be set to activate once per eighth, quarter, half or whole note.

Options: This opens an additional dialog to control the style and intensity of the influence of the beat on the automation curve (see below).

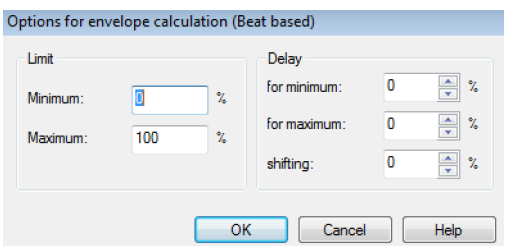
Scan envelope: This option allows the volume process to be displayed as an automation curve (as an alternative to a beat-based automation curve).



First normalize: This function normalizes the level of the audio object before the object is scanned to create an automation curve.

Curve generator - options for envelope calculation (beat-based)

Limitation: Determine the minimum and maximum value of the envelope. Via **Delay Minimum/Maximum** the basic forms can be altered further.



Shift moves the entire curve. This lets you create interesting off-beat effects.

Edit curve – invert

This command inverts the activated automation curves.

Edit selected curves – thin out

While recording, the automation events are placed in very short intervals. The command "Thin out" reduces the number of curve points. The course of the automation is then displayed and reproduced even more accurately.

Copy / Paste / Delete

The activated automation curve can be copied/pasted into other tracks and deleted.

Edit curve – inactive

Use this command to deactivate the selected automation curve. The curve remains intact, but will be displayed as a dotted line and will no longer affect the corresponding parameter.

Delete all curves

This command deletes all automation curves of the corresponding track.

Track automation mode

Specify the track automation mode here. Detailed information about the automation modes is available in the chapter "Automation -> Automation modes".

Do not display automation

With this option, you can deactivate the display of the automation curves for all tracks.

Display track automation (default setting)

If you select this display option, only the track automation will be displayed.

Show Only Selected Curve

Views only the selected curves for the corresponding track. This helps to maintain a clear overview if several automation curves have been created.

Display unselected curves (cannot be activated) (Default setting)

The unselected automation curves are grayed-out. They cannot be activated with the mouse.

Show unselected curves (selectable)

The unselected curves are also grayed out, but can now be activated with the mouse.

The last section of the context menu lists the ranges for which automation parameters are available during automation of the corresponding track.

Burning CDs

Burning Red Book-compatible audio CDs is a vital feature of Samplitude Music Studio. You won't require any other software for writing a CD. You can also write CDs "on the fly", and all processing is performed in real time during the write process. Since trackbouncing was not performed first and no image is created, no extra space is required on the hard disk.

However, sufficient system resources must be available for processing while writing. If your PC is too slow and writing is interrupted, then you can of course revert to the conventional trackbouncing method.

Writing

Some years ago, there was only a small number of select studios which were able to do CD mastering. Today, writing audio CDs is nothing exceptional and continuously dropping prices for CD-R burners and media make them available to nearly everyone.

The audio material is stored digitally on the CD, this data is read by the CD player, and then it is transformed back to the analog plane. While in action, track indexes indicate to the CD player which songs start at which position.

Samplitude Music Studio can also write an audio CD from the program directly. Before the write process starts, the track indexes are directly set in the VIP window, and then Samplitude Music Studio converts stereo sum and indexes into a data stream which is fed to the CD burner.

The CD-R drive modifies an assigned layer of the medium by means of a laser so that an audio CD player can read this information as digital audio data later on.

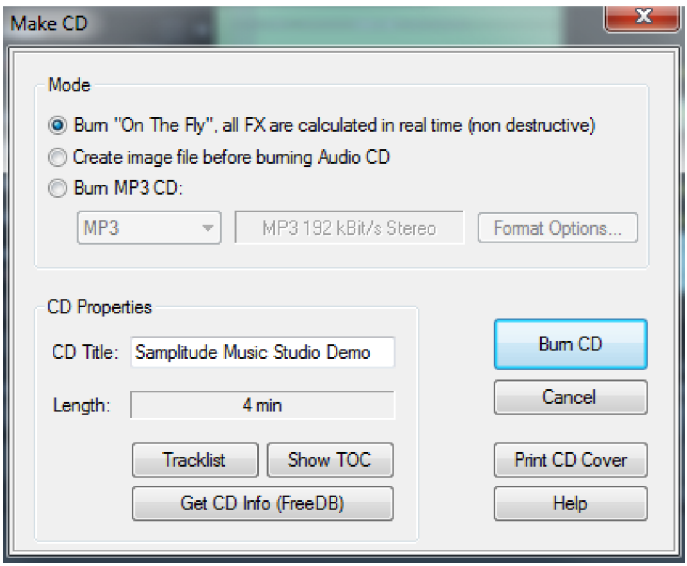
Burning CDs in Samplitude Music Studio

1. Record individual CD tracks in Samplitude Music Studio import WAV files into VIP tracks.

2. Mix your recordings using realtime functions of the VIP windows and the Mixer windows. The CD will sound exactly as what you hear as the playback from a stereo sound card. All settings for playback will be audible on the CD.

3. Set the track markers to mark the start positions of individual songs. If the VIP window has only one stereo track in which each song is laid down as a separate object, you can create track markers using the "Automatic indices" button in Samplitude Music Studio. An index is set at the beginning of every object. In Samplitude Music Studio tracks and indices can be arranged in any order. Pauses can be adjusted by moving objects, and indices with no pause may be set as well.

4. If you have made all settings, click on the "Create CD" button in the toolbar or select "CD > Create CD". The burning dialog opens:



Burn audio CD "on the fly" calculates all effects in realtime: This option immediately starts the burning process as long as a blank CD-R is in the CD-R drive.

Before burning, create a CD image file: This option creates a stereo wave file before burning, corresponding to the first version of the project. It is recommended when the system is too burdened or too slow for realtime ("on-the-fly") burning. Please take not of the system indicator on the main screen! If it comes critically close to the 100% marker, we recommend creating an image file before burning. The image file will be automatically deleted after.

Burn MP3 CD/DVD: You can burn an MP3 CD/DVD with this option. You can find MP3 encoder settings via "Format options".

CD title: here you can enter a CD title, which can be read by some CD players.

Track list: This option lets you monitor the CD track manager (view page 414), which can be reached via the CD menu. All tracks can be listened to and the track markers can be moved if needed.

Display TOC (CD contents): This button opens a text window with the current Table of Content. You can also open this data with current CD contents in an external editor.

Get CD info (freeDB): When you click this button, Samplitude Music Studio looks for information to the title in the freeDB.org data base and displays it.

Burn CD: opens the actual burning dialog. Here you can select the burning speed, burn CD text to the blank disc, simulate burning and create the CD as a CD extra project. In addition, you can compare the CD after burning with the project data in order to compare the error rate. If it is too high, the burning speed has to be lowered. Even new CD and DVD burners can cause errors during burning.

Cancel: closes the dialog without burning.

Print CD cover: opens MAGIX Print Studio, an included printing program, using which you can print a CD cover. Track information are automatically transferred as a table into the print project in MAGIX Print Studio.

Help: opens the corresponding section of the Help file.

DSP display

System capacity is essential to the real time CD writing process. Once the writing process started, it cannot be stopped. The CD will be unusable if the the process is interrupted. When "on the fly" is selected, the computer must calculate the playback with all real-time functions and simultaneously write the data onto the CD.

The DSP display is a useful tool to assess possible problems when writing to the CD. The table below gives you a clue to the maximum possible writing speed. Individual deviations may result due to the configuration of your system and the speed of its components.

DSP display and writing speed

Nearly 100 percent	single speed
Up to 50 percent	double speed
Up to 25 percent	fourfold speed

In particular, when first using a new and unknown computer system it is recommended to simulate the writing process first to check the system's performance limits. If the system becomes overloaded, reducing the number of tracks or real-time effects will help by combining parts of the VIP window (trackbouncing).

The offline writing process variation offers another possibility. It creates a new stereo file first as the basis for the writing process.

Tools and wizards

Crossfade editor

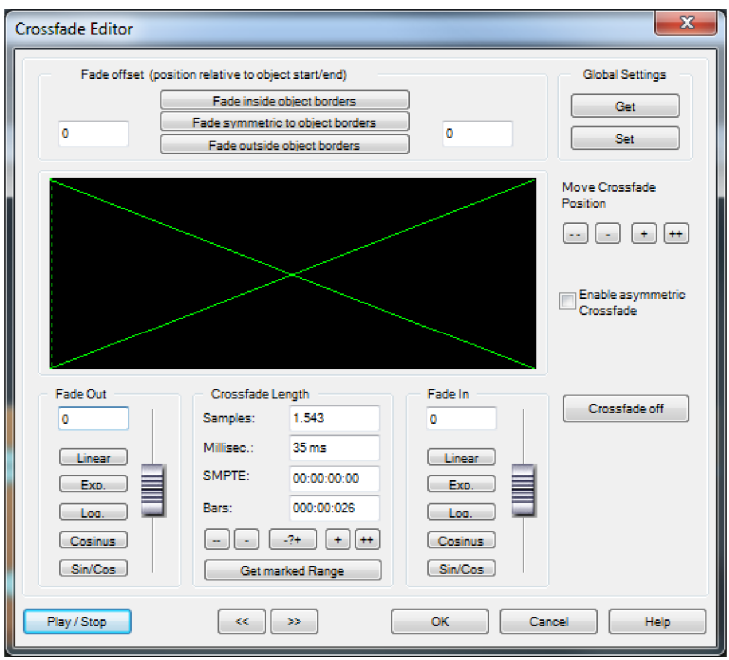
Samplitude Music Studio features a professional crossfade editor.

The crossfade editor is opened by clicking the toolbar button or via menu "Edit -> Crossfade Editor". You can also use the keyboard shortcut "Ctrl + F".

Use the crossfade editor to conveniently and efficiently edit all aspects of a crossfade. All changes are non-destructive and can be undone.

Crossfading with the crossfade editor

In the VIP, select the objects which you wish to fade into and open the crossfade editor.



The following editing options are available for selection:

Crossfade length: The length of the crossfade may be set in different sized steps. Clicking the "+" / "-" buttons increases/decreases the length in small steps, the "++" / "--" buttons in larger steps. Use the "-?+" button to customize these step effects as needed. The crossfade length can also be defined by a selected range in the VIP by clicking on the "Get range length" button in the "Range" menu. This range has to be selected before opening the crossfade editor.

Fade in/fade out: There are plenty of different curve types available for selection for the crossfade:

- Linear (0)
- Exponential
- Logarithmic
- Cosine
- Sine/cosine

The faders may still be used to change the curves in the corresponding available range. Linear curves require less computer power than non-linear.

Note: The settings for fading in/out in the crossfade editor are applied to the selected object if it does not overlap any other object.

Global settings: Set

The current settings are defined as by default. This is useful in case an object has been split with the "T" key and you want to create a crossfade between the two objects. When opening the crossfade editor, the specified settings are set as default.

Global settings: Get

Use this button to get the presets of the crossfade editor.

Get range length: The range length of the range selected in the VIP is set as the crossfade length.

Fade offset: Specify how much of the fade should be outside of the object border. Usually, the entire fade is located within the borders of the object, that is, the fade starting point is at the start of the object (0%) as is normal with fade ins/outs of individual objects. If the fade becomes part of a crossfade, it may be necessary to modify it. For example, if the second object starts with a drum beat, it would be better to execute the crossfade beforehand in order to keep the "attack" of the drum beat.

The value may be changed from 0% (fade within the object borders) to 50% (fades symmetrical to the object borders) to 100% (fade outside the object borders) – the object is then stretched by the percentage of the fade length. The "actual" beginning of the object is displayed as a dashed line.

With a fade offset of over 0%, make sure that the corresponding audio material is available in the wave project, otherwise it may be the case that an object with a modified fade offset cannot be faded in or out. For example, if the object starts at the exact beginning of the wave project, you will no longer be able to crossfade if the fade offset rises above 0%.

Crossfade off: The "Crossfade off" button deactivates the crossfade of the selected object. The fade out time of the first object is set to 0.

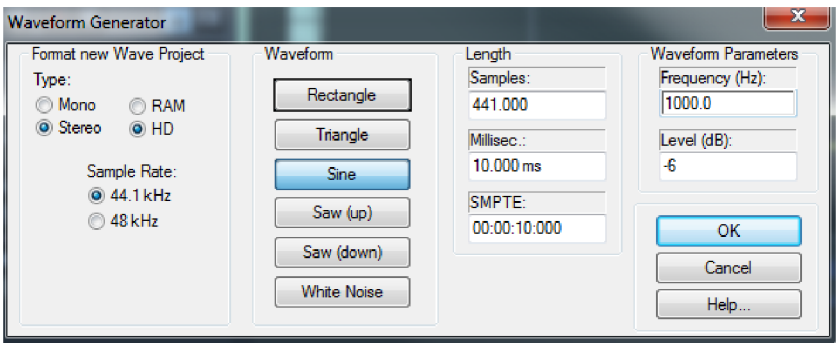
Play/stop: This button starts playback in the selected range or at the cursor position.

Move crossfade position: The end of the first object and the end of the second object are moved equally. The ++/--/+/- buttons are used to set the crossfade length.

Enable asymmetrical crossfades: The fade offset settings of both objects are no longer connected to one another and can therefore be set independently of one another.

Waveform generator

This dialog contains a powerful generator for several test tones.



Select whether the waveform created should be a mono or stereo file.

Next, choose between a RAM wave project or HDP; in the first case, the waveform will only be created in memory (RAM), and this must be saved separately if you want to use the signal again later.

If a HDP is created, then the waveform created will be available immediately as a file on the hard disk. Basic differences are also explained in the chapter "Wave projects".

Sample rate: The sample rate may be selected between 44.1 kHz and 48 kHz.

The next section specifies the type of signal to be produced. Select from square, triangle, sinus, sawtooth up, sawtooth down, and white noise.

Length: Enter the desired length of the test tone generated in samples, milliseconds, and SMPTE.

Wave shape parameter: The waveform is finally specified for the pitch and volume parameters.

Once you've made all your settings, click "OK" or press the "Enter" key. The signal generated will now appear in a new window and for further editing.

Remix Agent

The Remix Agent is a powerful tool for determining the BPM (beats per minute) and the time positions of quarter note beats of any song. This is important, for example, when a track on an audio CD has been imported into Samplitude Music Studio and other sounds like drum loops, effects or synthesizer voices are to be mixed in.

You open the Remix Agent via "Object" > "Remix Agent".

Tempo and beat recognition

To create a remix, elements from a completed song or components of a song are added and removed creating a new song. In order to combine your own loops and beats with a given song, it is important to know the exact tempo (in BPM - beats per minute) of the song. The Tempo and beat recognition in Samplitude allows you to define the tempo of MP3s or imported tracks from a CD.

Once the tempo has been determined, you can optionally match the tempo of the project to the tempo of a song, the tempo of a song to the tempo of an existing project, or divide a song into individual beats (remix objects), which can then be rearranged as desired.

Requirements for using the Tempo and beat recognition

- The song must be longer than 15 seconds.
- The songs have to contain "rhythmic" music.
- The track must be in stereo.

Note: If one of the above requirements is not fulfilled, the Loop Finder can be used.

If audio files longer than 15 seconds are dragged into the project, the Remix Agent is started automatically.

Workflow of Tempo and beat recognition

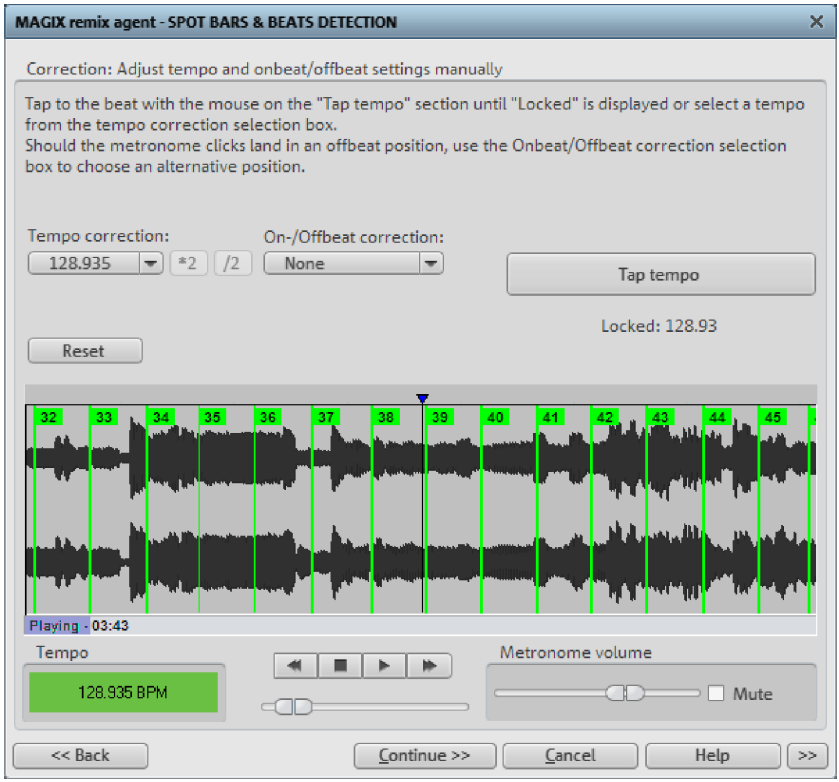
The Tempo and beat recognition works in 4 steps:

Step 1: Checking the start marker

Step 2: Tempo recognition

Step 3: Specifying beat starts

Step 4: Application of BPM and beat recognition



Step 1: Checking the start marker

Place the play cursor at the position where detection should start in the object by clicking the timeline. If the object contains a longer intro without beats but rather calm synthesizer pads, you should position the start marker after the intro.

Furthermore, the start marker should always be positioned just before a beat hit, even better, just before a beat at the start of the bar.

Step 2: Checking the automatic tempo recognition

After opening the Remix Agent by pressing the "Continue" button, it will begin to analyze the audio material and try to determine the tempo. The object is played back while a metronome click relative to the event can be heard and numbered green beat lines appear in the waveform.

The following will be indicated:

- Position of the start of the measure (one): red lines.
- Position of the other quarter notes (two, three or four): green lines.
- Reliably recognized positions: thick lines.
- Unreliably recognized positions: thin lines.
- Tapping is indicated by additional blue lines.

Note: If the tempo or bar information of the object you wish to analyze is already available, these are displayed as dots at the respective positions above the display of the wave shape.

Under the waveform on the left side the established tempo is displayed in BPM. There is a small transport console in the middle to make navigating easier. The slider serves as a position controller. To set the metronome volume, an additional fader and mute button are provided on the right-hand side.

Change beat positions and tempo

The automatic tempo recognition doesn't always work right away. If you don't hear the metronome clicking in time with the music, click the "No" button in the upper section of the dialog in order to access the manual tempo input dialog.

To correct the metronome speed and any timeshift that may occur between the metronome clicks you can use the tempo correction as well as the "Tap tempo" button:

Tempo correction: The Remix Agent provides various speed settings – the speed the Remix Agent determined as the most probable is preset. If this tempo isn't correct, you can choose another one from the list. The next time you play back the song it should be in sync with the metronome.

On/Off beat correction: Now it may happen that the tempo is right, but the beats have been displaced. "On/off beat correction" provides a number of alternatives for moving the beats according to the complexity of the rhythm. Try out various alternatives until the metronome clicks are in sync with the beat.

Tap tempo: Instead of selecting the tempo under "Change Tempo", you can click rhythmically on the "Tap tempo" button or press the **"T" key**. Additional blue lines are displayed in the wave display. After at least four taps, the Remix Agent attempts to select the correct tempo from the list in "Tempo correction". The display next to the "Tap tempo" button displays the current status. Keep tapping until the red display showing "Unlocked" changes to the green "Locked" setting.

Use the **"0" key** to manually set the quarter beats while the music plays. Surrounding markers will automatically be removed to ensure that the set tempo remains intact.

You can move the markers with the mouse. If you hold down the "Ctrl" key simultaneously, the subsequent markers are also moved. If the metronome clicks now correspond with the music, you can continue to the next step.

Step 3: Determining the start of a bar:

Next you can set the time signature. The default setting is 4/4 but you can adjust this if necessary. The beat at the start of the bar should coincide with the high sound of the metronome, or the red line in the waveform display.

It can now be corrected in just one step: If the start of the bar can be heard, click on **"Tap One"** once using the mouse or press the**"T" key** on the keyboard. Alternatively, select how many quarter notes the "One" is to be moved back. Use the **"0" key** to manually tap the position of the beginnings of the bars during playback. This allows you to correct the beginnings of the bars in longer sections.

Continue to the last step if the starts of the bars are now correct.

Step 4: Applying BPM and bar recognition

This lets you determine what you want to do with the analyzed audio material. The following option is available:

- Create remix objects from the analyzed audio material
- Adjust the project tempo to that of the analyzed audio material and vice-versa.
- Save only the tempo and beat information in the audio file for possible editing later on.

Following this, you can also start the Remix Maker and the Harmony Agent.

Create Remix Objects

The song is split into individual objects according to beats. These objects can then be used in the VIP in any way. Some sample applications:

- Create loops from complete songs and use them with your own material.
- Remix songs, that is, change the order of the remix objects, cut and duplicate individual parts or beats of the song, or enhance the song with various other loops, samples, etc.

Attention! The "Create Remix Objects" option can only be selected if the Remix Agent has been opened from within a VIP.

Audio Quantization: The new objects are precisely arranged on the bar grid.

There are slight tempo variations in “hand-made” music, so that different bar lengths can occur. Object time stretching is automatically activated and applied to correct the difference in length so that the objects still fit into the rigid beat grid of the arrangement.

Use resampling for small corrections: If the required corrections are not too significant, you can use higher-quality resampling instead of time stretching.

Note: If you change the tempo of your multitrack project later (and adjust the audio objects in the VIP to the new tempo), there will be clearly audible pitch changes in the Remix Objects.

Remix objects in loop mode: New objects are put into loop mode. When extending the length of the object using the right object mouse handle, the object is continuously played back in original length.

Set arrangement tempo to object tempo: The arrangement (VIP) takes on the determined BPM value. If you would like to use the cut-up song as the basis for a new composition as with remixes, this option should be active.

Note: The time correction assigned to the Objects is carried out by setting the Object real-time time-stretching and can therefore be corrected in the Object Editor. On the contrary, TS settings that are already set are overwritten.

Group: This function groups the remix objects.

Use Crossfades: The remix objects are crossfaded. The default crossfade parameters are used.

Cancel: The dialog is closed without applying the changes.

Adapt tempo

This option lets you adjust the song speed to your project speed or the other way around.

Attention! The "Adjust Tempo" option can only be chosen if the Remix Agent has been opened from within a VIP.

Set object tempo to arrangement tempo: This adjusts the object length to the existing arrangement. There are three different possibilities:

Use Time stretching: The pitch of the song remains constant in time-stretching; however, the sound quality may suffer.

Resampling: Resampling changes the pitch (similar to changing the speed of a record player), but retains most of the sound quality.

Note: If you change the tempo of your multitrack project later (and adjust the audio objects in the VIP to the new tempo), there will be clearly audible pitch changes in the resampled Remix Objects.

Audio Quantization The tempo adjustments are calculated into the audio file in such a way that it appears as if remix objects were created and then immediately compiled into a new audio file (see below). If recognition is unreliable, the result can show extreme tempo variations. Here, before opening the Remix Agent, it is particularly important to set the start marker in a way that ensures proper detection of the tempo.

The advantage of audio quantization is that smaller tempo variations can be balanced in the music. The starts of the bars in the music correspond with the bar starts in the arrangement: they do not slowly drift apart.

Set arrangement tempo to object tempo: The arrangement (VIP) takes on the determined BPM value. If you would like to use the cut-up song as the basis for a new composition as with remixes, this option should be active.

Change global settings: The BPM value of the arrangement (VIP) is set to the determined value.

Adapt tempo map: A tempo marker is set in the arrangement (VIP) for each bar between the positions of the playback marker and the final position of the remix Objects.

Generate beat markers in the current range: Use this option to place markers at the beginning of the beats of a song. (The positions of all strokes displayed in red in the waveform display).

Generate quarter markers in the current range: Select this option to place markers at the beginning of the positions of the quarter beats. (The positions of all strokes displayed in the waveform display).

Example applications for both cases:

Mixing 2 songs:

1. First adjust the project tempo to the song that will be faded into the second song. ("Set arrangement tempo to object tempo" change global settings)

2. Then adapt the tempo of the second song to the project tempo (“Set object tempo to arrangement tempo”).

3. As the project tempo now matches the song tempos of both songs you can easily fade between the two songs.

Save tempo and bar info

When you select this option the tempo and beat information will be written into the audio file. The objects in the VIP or the VIP, respectively, remain unchanged

Generate bar markers in the current range: Use this option to place markers at the beginning of each bar in a song. (The positions of all strokes displayed in red in the waveform display).

Generate quarter markers in the current range: Select this option to place markers at the beginning of the positions of the quarter beats. (The positions of all strokes displayed in the waveform display).

Managers

A manager combines frequently required management and control functions within one window, such as for markers, tracks and CD tracks. This includes a file browser for finding, previewing and loading media files.

Managers can be opened within the Docker, but can also be displayed as separate windows. Manager windows are multi-monitor enabled and save the last position when closing. Multiple managers in various different views can be opened simultaneously and independently of one another.

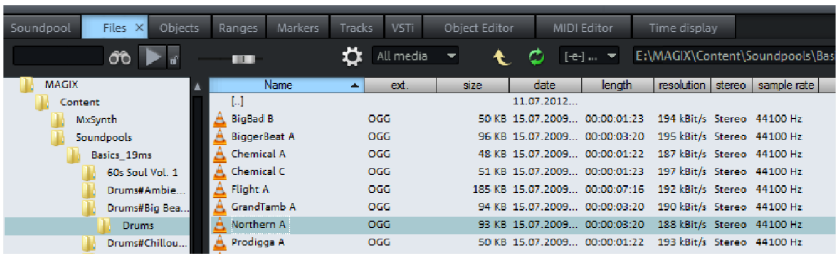
You can open the Docker providing quick access to all managers and other windows via the "View > Managers/Docker" menu. You can also access individual managers via the "Managers..." submenu below.

File manager

Samplitude Music Studio contains a file browser in the manager where files can be previewed and loaded directly into projects. The browser can be used to create favorites folders and provides access to all recently opened folders.

To view the file browser, click on the "Manager" button in the toolbar and then select the "File browser" tab at the bottom of the manager window. The file manager can also be opened via the menu.

Menu: Tools/Manager/File browser



Navigation / Favorites

The file manager works in a similar way to Windows Explorer; directories and files are displayed with directory and file symbols in list form.

Navigation is achieved with the mouse or keyboard. A drive selection menu found in the toolbar lets you quickly switch between all data storage devices connected to the workstation.

A display filter located in the toolbar lets you limit the display to certain media types, e.g. .wave, MIDI, or project files, only. "All media files" is the default display.

The "Search" option lets you search the current window for directories or files. Enter a search item into the input box and click “Enter”. Found directories or files are highlighted. You can find and highlight several entries that meet your search criterion by entering one or several first letters.

The file browser opens as a tiled window by default. The right box hosts the favorites list, which you can fade out using the “Options” toolbar. Use “Add” or “Remove” to add and remove directories from the list of favorites.

There is a combo box below the favorite list displaying the last used paths and which lets you change the current project directory.

Preview audio files

You can use the "Play" icon in the toolbar to preview a marked audio file, and every highlighted audio file is played immediately if the “Autoplay” box is checked. This way you can listen to a complete list using the cursor keys only. Clicking on the play button again stops continuous playback again.

Hint: During playback the transport console controls are allocated to the media file. Playback and positioning functions are fully available.

Playback is not routed through the mixer or internal effects. In contrast to the playback features of the “Load” window, which uses routines of the operating system,

playback uses the audio device selected in the "Play" parameters (“P”), usually an MME, WDM, or ASIO device. If no playback occurs, first check that the settings and routing of this device is correct.

Note: To preview certain media data, e.g. in WMA format, you have to convert these files to wave format. Conversion is done automatically in the background.

Load files from the browser into projects

Some media files can be inserted from the browser into an opened project at the desired time position via drag & drop. If the file browser list is in the foreground, pressing “Enter” has the same result.

If an audio file is dragged from the clip list and dropped into an empty space or into the title bar of the program window, it is opened in wave editing mode.

If several files are selected in the list, all files will be inserted at the current cursor position as new objects, and loading options ("Options") will be applied. This way you can specify whether all files should be inserted into the current project one after the other, one underneath the other, alphabetically, or according to their time stamp positions. The load option settings are valid also for files loaded via the load dialog of the program.

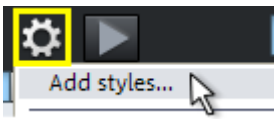
There are further options in the context menu of a media file (right click):

- Load file
- Delete file: Physically removes file from storage device. This process cannot be reversed!
- Highlight all files
- Open via standard link: The file is opened in the Windows application that is linked to this file type. This can be an MP3 player or some other wave editor.
- Open in Windows Explorer: Opens the current directory as a new Windows Explorer window.

Soundpool

This setting can be used to access Soundpools. Access to the supplied Soundpools is via a new, more clearly laid out database overview that enables the display of loops, multiple styles and instrument categories, e.g. all bass loops of every installed style or every loop of a style.

If you did not install the Soundpools on your hard drive during installation, then insert the Samplitude Music Studio installation DVD into the DVD drive. The contents of the Soundpools will now be imported into the database. Other Soundpool media are automatically recognized and added to the database.



We recommend copying media to the hard drive and then importing it with "Add style".

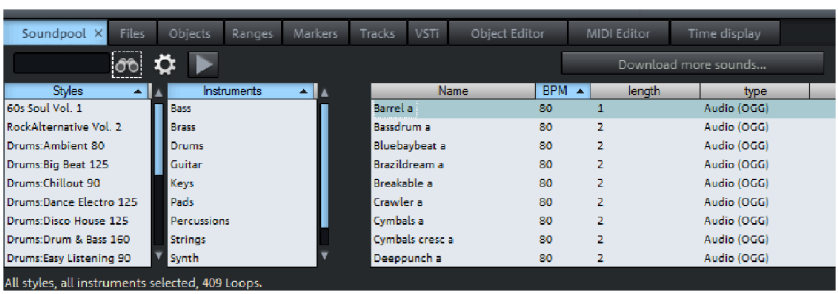
This menu provides several additional options for maintenance and display of your Soundpool database:

Normally, loops can be previewed just by clicking them, even during project playback. If "Automatic playback" is deactivated, then use the playback button in the manager.

The option "Hide instruments without available loops" completely hides instrument groups in the Soundpool manager for which there are no loops present in a certain style (instead of being grayed out).

Every detected Soundpool (on CD/DVD or on the hard drive) is added to the database and displayed there, even if the corresponding medium is currently not in the drive or if the Soundpool has been deleted or moved. The option "Clean up Soundpool" removes these entries from the database. "Reset Soundpool" will reset the Soundpool database so you can re-import the Soundpools later.

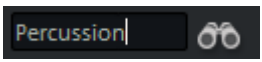
A Soundpool consists of one or more **Styles**. Styles are sound libraries that belong together and cover a certain musical style. The sounds (sample or MIDI loops) of one style all have a certain tempo. You can mix loops from different styles, and the tempos will be adjusted accordingly. Within a style, loops are ordered according to instruments, and one instrument folder contains different sounds. Each sound can have a different pitch (except for drums and effects sounds).



The Soundpool display consists of several columns: First, all styles available in the database are shown. The second column lists the instruments. The third column, "Name", contains the list of the sounds found. The respective name, tempo, length in bars (1, 2, or 4 beats), and type is listed for them. The different pitches are displayed above that (if available).

The list of samples found is created based on the entry selection in the first two columns. With "Ctrl + click" you can reduce or expand selection. No selection ("Ctrl + click" on a single selected element) shows all entries from this category.

If you select an instrument, e.g. "Drums" and "Percussion" and no style, then all drums and percussion samples in the whole database will be displayed.



In the search field, you can search the list of the sounds found for a certain sound file name.

There is one principle difference between the types of loops: While audio loops (.wav or .ogg) are normal (looped) audio objects that can be applied anywhere in the arranger, MIDI loops (MIDI takes) consist of MIDI data + the controlled synthesizer (Vita or Revolta). This is automatically loaded to the track where you place the MIDI loop. This means that you will need to use a new track for each additional MIDI loop which controls a different sound. However, the same loop in another pitch is possible.

Loops can be loaded by double clicking, drag & drop, or by double clicking the corresponding pitch. The objects will be inserted directly behind one another so that complete accompanying tracks can be compiled quickly.

Tip: If you want to search in multiple lists at the same time, open a new manager via "Tools -> Open new manager..." and switch to "Soundpool" in the new window. A separate search query can be set for each list.

Object manager

The object manager integrated in the manager lists all objects contained in the current project and makes it possible to edit selected object parameters.

To view the object manager, click the "Manager" button in the toolbar, and then select "Objects" at the bottom of the manager window.

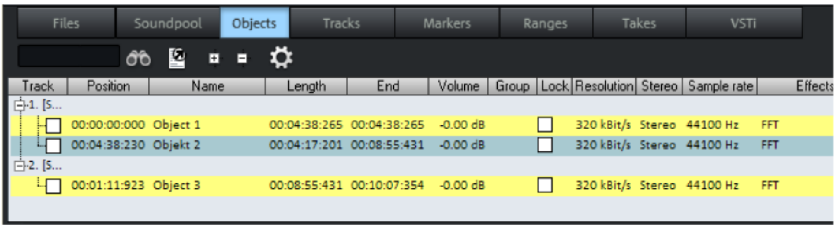
Menu: Tools -> Manager -> Object manager

Shortcut: Ctrl + Shift + O

You can export object manager information as a text file. To do this, click the "Export text" button in the toolbar. The Windows™ text editor opens with an excerpt from the object manager list. The following information will be saved:

- Project name and path
- Track and object name
- Start position in the project
- Source file path

Afterwards, you can find this file in the project folder (Projectname.txt).



Object view and selection

Objects are displayed in a tree structure and sorted according to tracks, whereby only tracks are listed that actually contain objects. As an option you can choose to display objects of the current tracks only (Toolbar: “Options”).

You can use the +/- keys of the toolbar to open and close the track object display in the entire window. Click on the “+” symbol left of the track number to explode the view of a single track.

Selecting objects: A square check box next to the object name lets you select single or multiple objects. These will then appear in the project window as “selected”. If an object is selected that is part of an object group, then the other objects of the selection are also selected in the project window and object manager. You can recognize grouped objects by the number of the object groups in the object manager group bar.

Search for objects: As in other manager windows, the object manager also provides a search option that allows you to search for objects in the current window. Enter a search item into the box and press “Return”. Found objects are highlighted, but are not selected in the project window.

Deleting, renaming and editing objects

You can delete objects directly in the object manager by selecting one or several objects simultaneously and pressing “Del”. Alternatively, you can delete an object via its context menu.

You can rename objects by double clicking on the object name and entering a new name. The procedure of changing a marker position directly in the list is the same.

To edit an object directly from the object manager, right click on the object you want to edit and start the object editor.

Edit object parameters

The following objects may be edited via the object editor:

- Object start
- Object length
- Object end
- Volume
- Lock

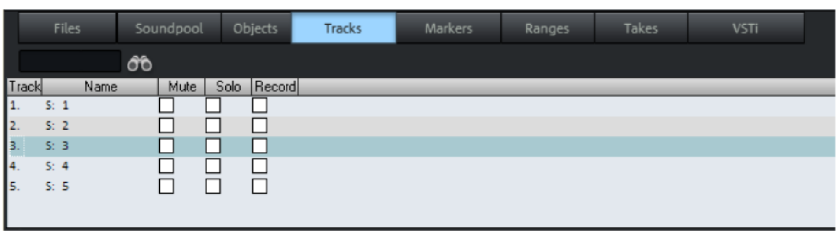
To edit a parameter, double click the respective entry and enter a different value. Numeric values may be changed via drag & drop, in which case "Ctrl + Shift" provides larger or smaller value changes. "Tab" moves to the next editable value. "Arrow up/down" navigates vertically within a text column.

Track manager

All tracks of the current project are displayed in the track manager and it enables direct access to solo, mute, and record.

To view the track manager, click the "Manager" button in the toolbar, and then select the "Tracks" tab at the top of the manager window.

Menu: Tools > Manager > Track manager



Track view and selection

The track manager contains all of the current project's tracks. You can double click on the track number to select a track. The track will be displayed in the project window. If the track is outside of the visible display, the project window will scroll to this vertical position.

Search for tracks: As in other manager windows the track manager also provides a search option that allows you to search for tracks in the current window. Enter a search item into the box and press “Return”. Found tracks are highlighted.

Rename, delete, and insert tracks

You can delete tracks via the manager by selecting one or several of these tracks and pressing “Del”. Alternatively, you can also use the context menu to delete a track.

You can rename tracks by double clicking on the track names and entering a new name. The procedure of changing a marker position directly in the list is the same. “Tab” moves on to the next editable value. “Cursor up/down” navigates you vertically within a column if this is a text column.

To edit an object directly from the object manager, right click on the object you want to edit and start the object manager. All functions are present in the same way as they would be if you opened the object manager from the project window.

You can also insert new tracks directly in the track manager. Right click on a track entry and select “Insert track” from the context menu. A new track is added after the final track of the project.

Marker manager

The marker manager displays all markers contained in the current project, regardless of type and makes it possible to jump to them directly from the list or to play them.

To view the marker manager, click the "Manager" button in the toolbar and then select the "Marker" tab at the top of the manager window.

Menu: Tools -> Managers -> Marker manager

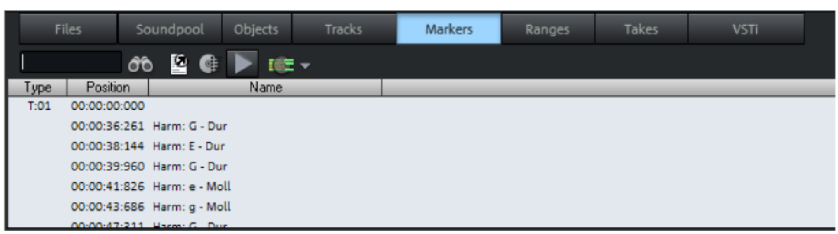


You can export marker manager information as a text file. To do this, click the "Export text" button in the toolbar.

The Windows text editor opens with an excerpt from the marker manager list. The following information will be saved:

- Project name
- Marker type
- Marker name
- Marker position in project

You can find the file in the project file (Projectname.txt).



Marker view and selection

In the marker manager you can display all of the current project's markers.

Searching for markers: As in other manager windows, the marker manager also provides a search option which allows you to search for markers in the current window. Enter a search item into the box and "Enter". Found markers are highlighted.

Jump to and play from marker position

Double click on a marker in the type column to position a playback marker on a different marker position.

Playing markers: Select a marker and click on the "Play marker" button in the toolbar. A range surrounding the selected marker is created and playback is started.

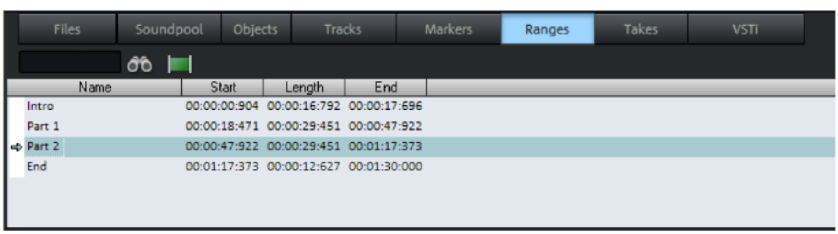
Deleting markers, changing marker name, position, and type

You can delete objects directly in the object manager by selecting one or several objects simultaneously and pressing "Del", or you can also use the context menu to delete a track.

You can rename markers by double clicking on the marker names and entering a new name, or you can use the context menu. The procedure for changing a marker position directly in the list is the same. Please use the same method to change a marker position directly from the list. "Tab" moves on to the next editable value. "Cursor up/down" navigates vertically within columns if these are name columns.

Tip: You can change the type in the context menu of the respective marker anytime, e.g. if you want to change a position marker into a CD track marker.

Range manager



The range manager represents all ranges contained in the current project and makes it possible to select them directly from the list.

In order to display the range manager click on the "Manager" button in the toolbar and then select the "Ranges" tab on the bottom row of the manager window.

Menu: "Tools -> Managers -> Range manager"

Defining and search for ranges

Defining ranges: To save a range in the manager, you first have to define a range in the project window. Next, click on the “Define new range” button in the toolbar of the range manager.

Ranges that are saved using the program's “Save range” feature ("Alt + F2", "Alt + F3", etc.) appear in the list with "F2", "F3", etc., as indicators.

Searching for ranges: As in other manager windows, the range manager also features a search option that lets you search for ranges in the current window. Enter a search item into the box and press “Enter”. Found ranges are highlighted.

Edit range parameters

You can edit the following parameters in the range manager:

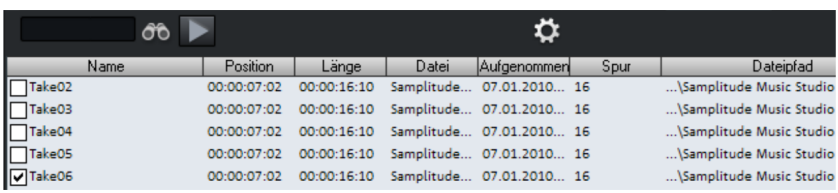
- Name
- Start
- Length
- End

To edit a parameter, double click on the respective entry and enter a different value. Numeric values can be changed by drag & drop, and "Ctrl + Shift" allows for larger or smaller value changes. “Tab” moves on to the next editable value. “Cursor up/down” navigates vertically within a column if these are name text boxes.

Take manager

Menu: Tools - > Manager -> Take manager

Shortcut: Ctrl + Shift + Alt + T



Name	Position	Länge	Datei	Aufgenommen	Spur	Dateipfad
Take02	00:00:07:02	00:00:16:10	Samplitude...	07.01.2010...	16	...\Samplitude Music Studio
Take03	00:00:07:02	00:00:16:10	Samplitude...	07.01.2010...	16	...\Samplitude Music Studio
Take04	00:00:07:02	00:00:16:10	Samplitude...	07.01.2010...	16	...\Samplitude Music Studio
Take05	00:00:07:02	00:00:16:10	Samplitude...	07.01.2010...	16	...\Samplitude Music Studio
Take06	00:00:07:02	00:00:16:10	Samplitude...	07.01.2010...	16	...\Samplitude Music Studio

The take manager offers you a convenient option for selecting and organizing recording takes and loop recordings. Following calculation of destructive effects, a new take is also created, and this becomes visible in the take manager immediately.

Take manager - basic working principle

In addition to the audio and MIDI data, Samplitude Music Studio also saves additional information like the time position and the track where the data was recorded in each recorded file. This data is stored as take information in the wave project and the MIDI

object. For multitrack recordings, the takes also contain information like which other tracks were involved in the recording.

This enables each recorded passage to be assigned to a section, marking it as a take of a certain recording.

First, record as many takes of a certain passage as required. If a new take in an arranger track is recorded over an old one at the same position, no existing data will be overwritten. The new recordings will be attached to the end or saved to a new file.

If an object from a recording is selected and the take manager is opened, takes from the same track and original position are searched for in the whole audio material of the project, and the results are shown as takes.

Note: The take manager only accepts objects that were created by recording, but not those created by wave or CD import.

Take Manager - Application Examples

- To select the best takes after some punch loop recording sequences
- To find the best takes from several recording sequences of a production by means of predefined bar positions.
- To display a clear overview of all available takes in a specific SMPTE period.
- To edit the best parts of existing takes of recorded vocals into a "perfect take"

The basis for working with the take manager is always a selected object, e. g. the most recently created object after a punch-in recording. The current object take can be identified by the checkmark preceding the names in the take list. Now all the takes suited to the selected object are shown in the list. In the basic settings, this refers to all the takes from the same track and original position.

Take manager - options

Filter recording position: Only takes that overlap the same original time positions are shown, e.g. the selected object.

Filter out takes that are too short: Only takes that are at least as long as the currently selected take are shown.

Show all tracks: Takes of all tracks will be displayed.

Manager font: Use the dialog to specify the font, format, and size for the take manager

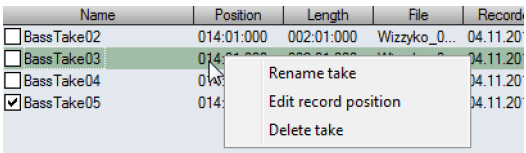
Select Takes

To select a take for the object, place a check mark before the desired take, or press Enter after you have selected the corresponding take in the take manager.

Select a take directly in the arranger window by applying "**Ctrl + right click**" to the object.

All of the takes shown in the take manager and the currently selected take are arranged one below the other in the **take composer**. Takes can be compared directly in the take composer and a combination of the various takes can be edited together.

Rename take: Right-click on the take to open the context menu and rename it or edit the recording position in the take manager. Multiple selection is also possible.



Edit recording position: This option enables you to make changes in the position field of the take manager.

Delete takes: Right-click on the take to open the context menu and delete it. Multiple selection is also possible. Once you have deleted all of the takes except for one, you can decide if you would also like to delete the referenced file. Note that the deleted audio file will not be usable in other projects.

Note: If the audio file contains several takes but is not referenced through an object, it can be completely deleted from the hard drive without having to delete each take. To do this, use the "**Remove unused samples** (view page 344)" function in the "Clean up" section of the File menu.

Note: For a better overview, easy-to-use take-naming options are available in the recording window (view page 389) even during recording.

Take management for multitrack recordings

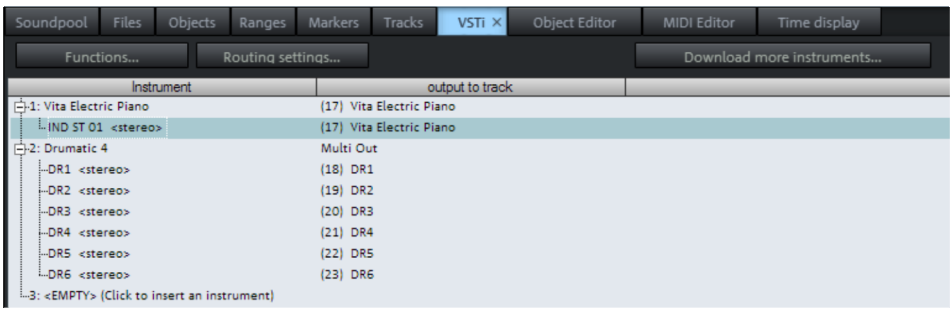
For multitrack recordings, each recording creates associated classified takes on each track. All simultaneously recorded objects are grouped and also given the same take name.

Switch takes on all tracks: This allows all takes of a multitrack recording to be exchanged in one step.

Note: Since the take manager display refers to the last clicked object, the reference track may be switched at any time.

VSTi manager

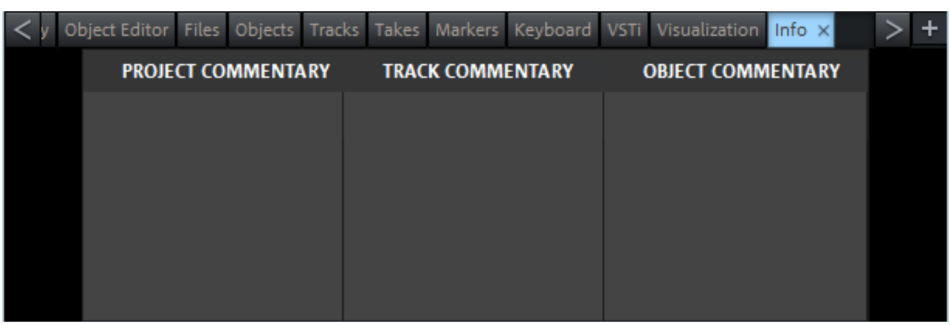
The VSTi manager enables easy display, inserting and deleting of VST, MAGIX, and Rewire instruments in the current project. If the instruments are opened, the single outputs to the assigned tracks are displayed. Right clicking on the selected instrument opens the plug-in dialog of the selected VSTi. Instrument outputs are routed in the VSTi manager in "Routing setup". Specify how the outputs should be routed in the dialog that appears. Either route all outputs to the current track or create new mono or stereo tracks for each output. Pressing the **Del** key removes a selected instrument completely from the project. If only individual output signals are selected, routing to a track is canceled by pressing the **Del** key.



Detailed information about instrument routing settings (view page 218) and about managing single outputs can be found in the chapter "Software/VST instruments -> "Routing instruments" (view page 224).

Info manager

The info manager displays notes for individual objects, tracks or the entire project on a clearly-arranged interface.



You can write notes concerning the currently selected project, track or object in the three fields.

Tempo editing

Overview

Tempo and beat changes are an important means of expression in your music and these changes can be made in Samplitude Music Studio by using extensive options.

The project window of Samplitude Music Studio is provided with a modifiable bar grid. This bar grid can be displayed in the form of grid lines.

The most important dialog in order to set the bar grid and to make it visible as a grid can be accessed through "File" > "Project Properties" > "Snap and Grid Setup (view page 500)".

The definition of tempo changes can be made using tempo markers. The tempo map displays all tempo markers, thus determining the musical position for each time position. In more simple terms: The tempo map defines the tempo changes in the bar grid.

You can adjust the bar grid to specific time positions by using grid position markers (e. g. existing audio or MIDI events). To do so, set a grid position marker and drag the entire grid of the bar grid with it to the desired time position.

It is even possible to tap the beat hits or entire beat positions of the grid live for playback. In this case, use the "Grid Fit Mode" of the tempo map (view page 305).

Besides the Tempo map dialog (view page 302), the transport console also serves as an optical control of the tempo map. The transport console displays the current values for tempo (BPM) and time signature at the current play cursor position.

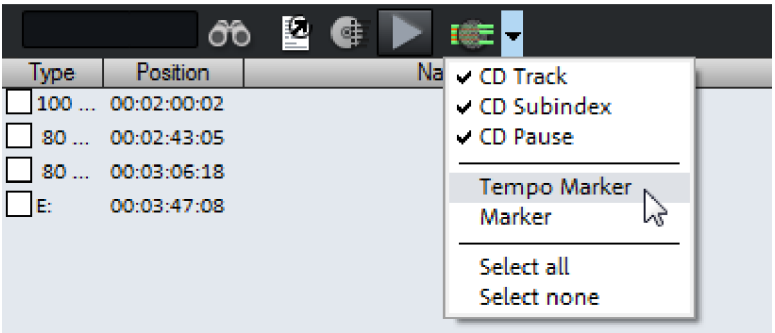
In the Tempo map dialog (view page 302) you can specify which objects' or markers' position should be adjusted when tempo changes are made.

Tempo Markers

Tempo markers signify a tempo change at a specific position in the project. They appear either as BPM markers or as Grid position markers according to the Tempo Map mode (view page 305).

You can also change the time signature when creating BPM markers and grid markers. Set the Tempo marker directly using the menu or indirectly by manipulating the tempo in the tempo track with the mouse.

Another way of accessing and editing the Tempo marker is by using the Marker Manager (view page 293).



BPM Markers (red)

You can define tempo changes for each musical position directly in the project window using BPM markers. When setting a BPM marker, a new tempo is defined at the corresponding position. A new project first has a single “Master” tempo which can be defined in the transport console or in the project settings (Shortcut: “I”).

This master tempo affects either the entire project or the start of the project up to the first BPM marker.

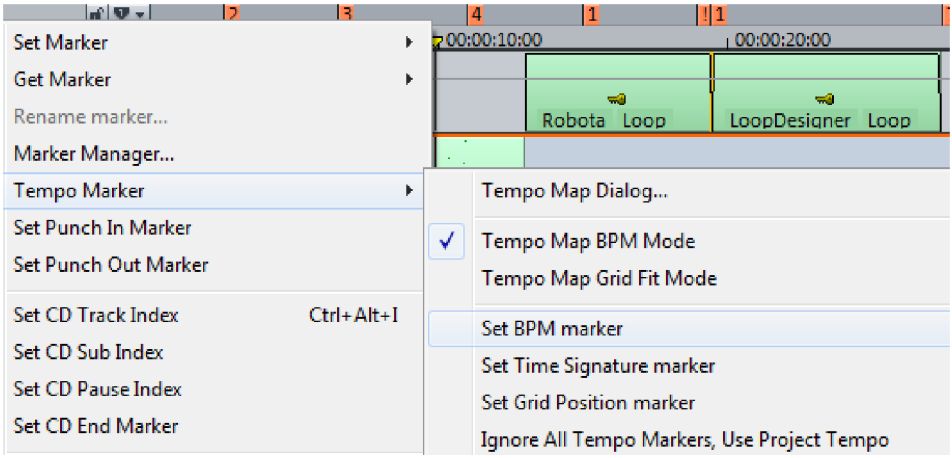
Exception: If the tempo should be interpolated to the first tempo marker, the master tempo is only effective directly at the project start in order to go linearly to the tempo of the next BPM marker.

You can define tempo changes at any time and for each musical position (even between beats) directly in the project window using BPM markers or the corresponding tempo curve points:

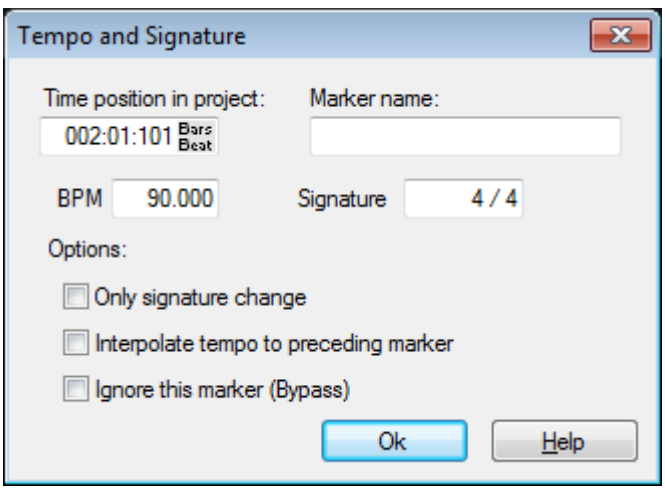
Step 1: Place the playback marker at the position where the tempo change should take place.

Step 2: Right-click on the marker bar to open the marker menu.

Step 3: Go to "Tempo markers" > "Set tempo change"



Step 4: Enter the desired tempo change in BPM (beats per minute) in the "Tempo and Beat Type" dialog and confirm by clicking "OK".



The tempo markers are set to the next snap point to the playback position when the grid is active. By dragging the tempo markers and holding down the "Alt" key, you can temporarily deactivate the grid function.

Note: In order to use tempo markers to adjust audio objects in your arrangement to match tempo changes, musical tempo adjustment (view page 311) needs to be activated for the object.

Time Signature Markers (blue)

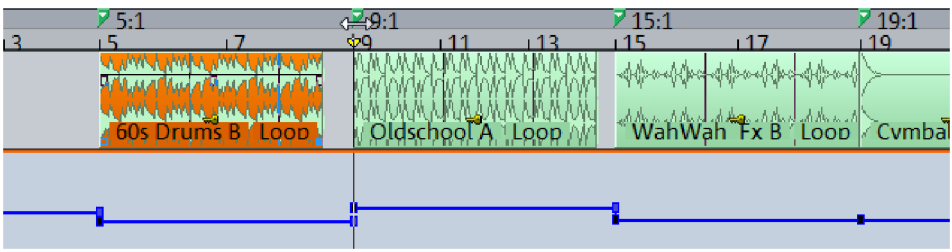
Bar markers change the time signature from the marker position, e. g. 4/4 beat to 3/4.

This means you can only insert bar markers at the borders of bars. They must also be positioned at bar borders when moved.

Grid Position Markers (green)

Grid position markers assign a specific musical position to a specific time position.

If you move a grid position marker, you'll see how the beat grid is immediately adjusted. In the tempo track (view page 307) you can apply the effects of the beat grid changes to the tempo.

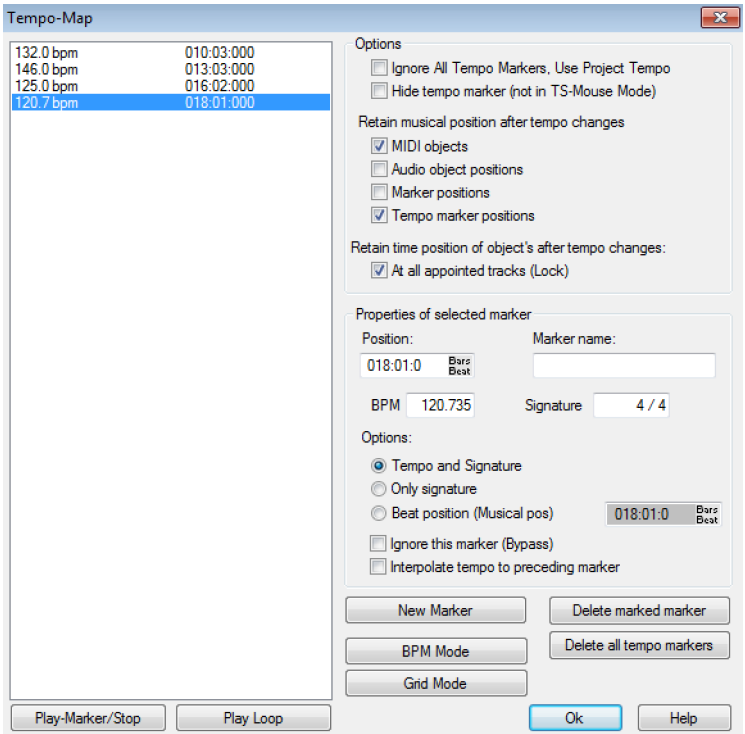


A grid position marker defines the tempo indirectly, causing the tempo before the marker to be adjusted in such a way as to reach the desired musical position exactly at the marker position. This way, the bar frame/grid and MIDI events can be easily synchronized with existing audio material.

Tempo Map Dialog

Step 1: Set the playback marker to the position at which the tempo or beat changes should occur.

Step 2: Open the tempo map dialog with the command in the marker menu (right-click on the marker bar) or through "Edit" > "Tempo".



Step 3: Now click on "New Marker". A marker is inserted at the current position.

You can now use the marker options to set the properties of this marker. Now make the new entries, e. g. the tempo in BPM for a tempo marker (view page 299) or the new time signature for a bar marker (view page 301).

Note: Be aware that the settings are only valid for the markers currently selected in the marker list. For example, you cannot set marker properties such as type or tempo after a new marker has been created.

A bar marker is always placed at the start of a new bar. If the playback marker is at a different position, the marker position is automatically moved to the beginning of the next bar.

Ignore all tempo markers, use project tempo

This option allows you to ignore any previously created tempo markers in your project so that only the project tempo is observed.

This occurs automatically for grid position markers if illogical bar positions are created while moving, e. g. if grid position markers are exchanged (bar 20 before bar 19) or are moved in such a way that this bar position originating from a previous tempo marker cannot be met by tempo interpolation.

Hide Tempo Marker: This option ensures that all tempo markers in the arranger are no longer shown. If you are in the pitch shift/timestretch mouse mode, this option is ignored.

Retain musical position after tempo changes

If a tempo marker is changed or a grid position marker (view page 302) is moved, this influences the following markers and audio/MIDI objects in the virtual project.

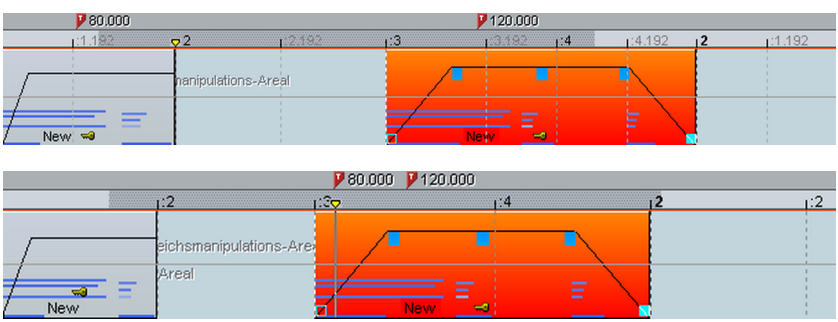
There are two main possibilities: The time position either remains constant, or the musical position remains.

The time position in the virtual project is the absolute position, the musical position is flexible and is displayed by the grid.

Maintaining the musical grid position means that objects or markers are adapted to the newly created grid and their absolute time position in the project changes. If the time position is maintained, the musical position changes accordingly.

When changing the tempo markers, the behavior of markers, audio and MIDI objects is controlled separately. By default, the musical grid position of MIDI objects and tempo markers is retained and the time position of markers and audio objects remains constant.

If you drag a tempo marker while holding down the Alt key in Grid Adjustment Mode, the time position of the object remains unchanged.



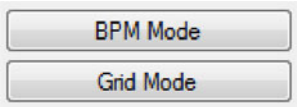
In this example, the first tempo marker in the second image has been changed. The MIDI object and the second tempo marker were moved correspondingly so that the musical position (3:01:000) was maintained.

If you generally want to **keep the time position of objects during a tempo change**, select the **option „On all locked tracks“** and activate the button in the track header  to lock all the objects on the track.

Tempo map modes: BPM mode/Snap mode

In the Tempo Map dialog (view page 302) you can choose between two modes: **BPM mode** and **Snap mode**.

- In **BPM mode** you work exclusively with BPM markers and Time signature changes.
- In **Snap mode** you work exclusively with grid position markers and time signature changes.



You can toggle between BPM markers and grid position markers at any time. The tempo markers remain the same, but change their type. The effective tempo map and beat grid remain unchanged.

For example, first adjust the bar grid in grid mode to a MIDI recording with many tempo changes. Now switch on the BPM mode and insert musical tempo changes for single sections.

Note about working in BPM mode: By holding down the "Alt" key in the time stretch mouse mode, you can also move a temporary grid position marker while dragging with the mouse in the timeline.

Grid Tapping

You can set grid position markers in the tempo map grid fit mode during playback. To do so, assign the **menu command "Insert grid position marker" (view page 357) a keyboard shortcut** of your choice, e.g. "P". Press "P" in time with the rhythm during playback and tap the bar grid or tempo map.

The following will happen: At the time of pressing the key, the nearest bar position of the selected bar grid will move to the current playback position and it will be marked with a grid position marker.

Tips:

To detect the tempo, work in the bar grid, in entire bar borders first. In a second step, you can detect slight tempo variations in the bar grid.

The BPM mode exceptionally allows you to set a temporary grid position marker while dragging with the mouse and the "Alt" key held down in timestretch mouse mode (or when loading older VIP projects).

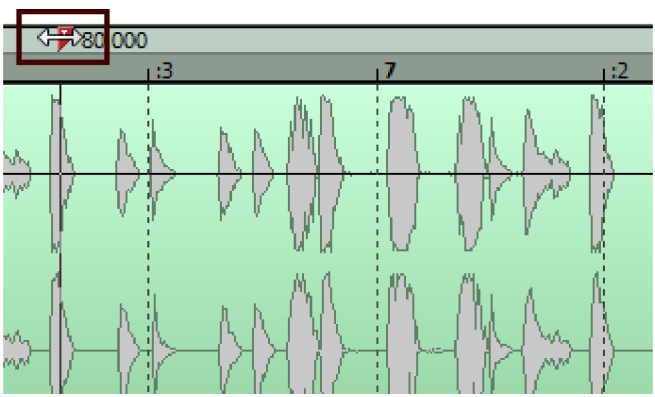
Manipulating the Tempo Marker in Timestretch Mouse Mode

The timestretch mouse mode simplifies working with tempo markers. Select "Pitchshift/Timestretch" mode from the toolbar.

Create **BPM markers by directly clicking the desired playback position and holding down "Shift"**. You can adapt this tempo by moving the mouse vertically while holding down the Shift key.

You can create grid position markers in "Timestretch" mouse mode by clicking the desired playback position and holding down "Alt".

You can move them using **"Alt" + horizontal mouse movement**, e. g. to manipulate the bar grid and adapt it to existing audio events.



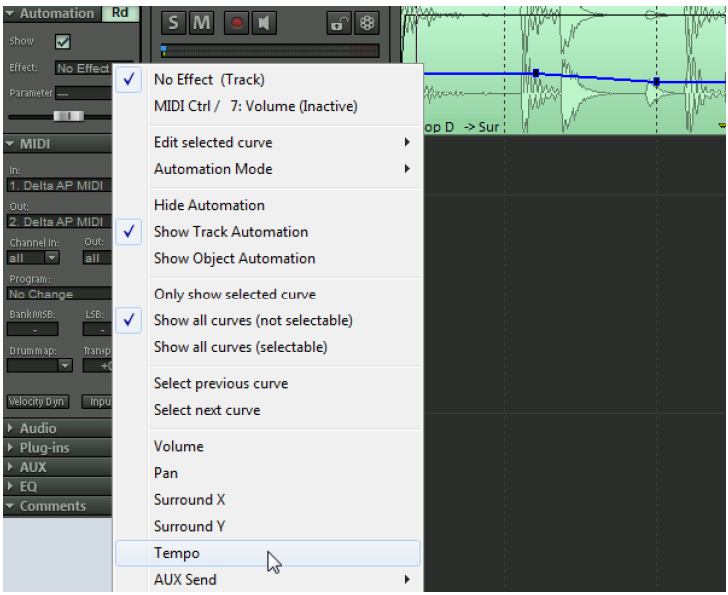
Tips - Examples of Use

- Tempo markers can be placed when composing in the MIDI Editor. Subsequent MIDI Objects and tempo markers retain their musical position (advanced setting).
- The grid can be adjusted to available audio events, e.g. assigning beat numbers to certain time positions. You can either use the "Set new grid position marker" menu command to create a marker at a position within the project and assign the corresponding bar position, or use "Alt" + mouse click on the respective beat grid position and, while holding down the mouse button, immediately move it to the required time position (e.g. to the beginning of an object).
- If the project includes MIDI data, this will be automatically adjusted (preset). The newly created tempo grid is used in the MIDI Editor for subsequent editing.
- When working with MIDI files and complex tempo changes, you can switch off the tempo map before starting to record the new MIDI data ("Ignore all tempo markers, use project tempo"). After the recording has finished you will be able to switch on the tempo map once again, which makes the newly recorded MIDI data adjust itself automatically.

Tempo Track

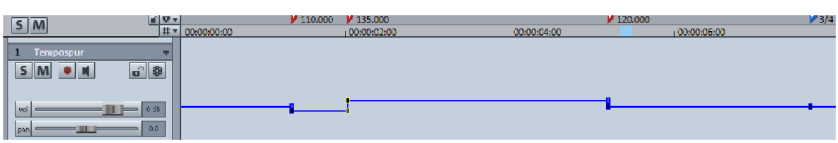
The Tempo Track can be used to display an overview of the tempo and time changes in your project. The Tempo Track is a graphic display of the project's tempo map (view page 302) as an automation curve. In principle, each automation point of the curve corresponds to a tempo marker.

The tempo map is also available as the "tempo" automation curve and can be graphically edited.



Note: You can choose any track to display the "tempo" automation curve. The track you choose will then be reserved as the Tempo Track.

If you want to create a separate Tempo Track, first add a new track ("Track" > "Insert New Tracks" > "Insert Track(s)"), name it "Tempo Track" and generate a tempo curve by going to "Automation" > "Tempo" and adding a new tempo or time change.



Changes to tempo markers or in the tempo track are automatically transferred.

The tempo automation behaves differently than track-based automation curves. Automation points are coupled with evenly increasing/decreasing tempo changes

and the pencil of the automation drawing mode doesn't create any new automation points as you drag, only when you click.

Note: In the tempo track the beat grid is constantly active (regardless of the system option "Program > General > Use snap for automation curve points"). As usual the snap can be temporarily disabled using the "Alt" key.

Edit in the Tempo track (only BPM mode)

Insert tempo changes

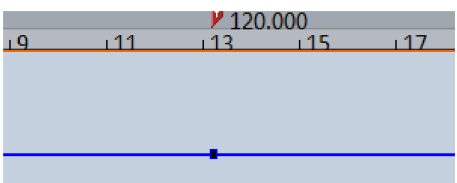
- Double-click on the tempo curve in **Universal Mouse Mode**:
- In **Curve Mode**: Click (and drag) on tempo curve.
- In **Automation Draw Mode**: Click

Change existing curve points

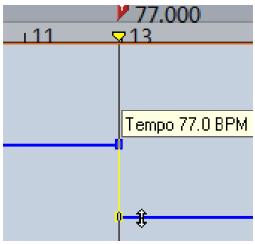
- BPM. value and positions can be changed by **clicking and dragging curve points**. For tempo levels there are always two curve points for one tempo marker, one for position and and one for tempo.
- **Alt key**: With this modification key you can temporarily deactivate the grid and convert tempo jumps into tempo curves.
- **Shift key**: With this modification key you can change BPM values and make fine adjustments to them (horizontal lock).
- **Ctrl + Shift + Click**: This key combination can be used to switch between tempo curve and tempo step.
- **Right-click**: Right-clicking on a tempo marker opens the „Tempo and Time Signature" dialog (view page 310) where numerical values can be changed.

Inserting tempo changes and tempo curves into the tempo track:

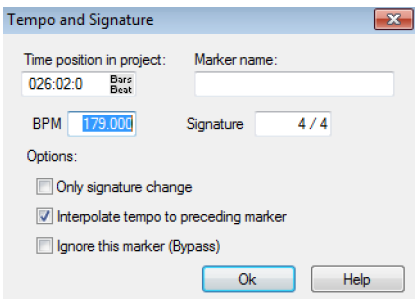
Step 1: Double-click (in Universal Mode) or simply click (in Curve Mode or Automation Draw Mode) on the desired position in the tempo curve. In addition to the new curve point a new tempo maker will appear in the marker bar.



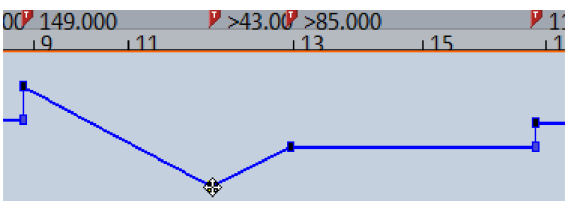
Step 2: Starting at the new curve point, drag the mouse pointer upwards or downwards to change the tempo.



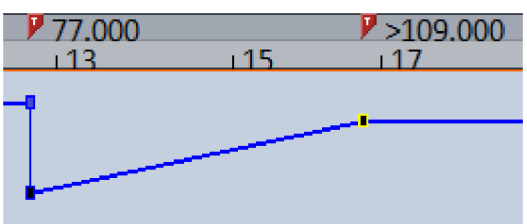
Step 3: Right-click to the open the "Tempo and Time Signature" dialog where you can change the values numerically.



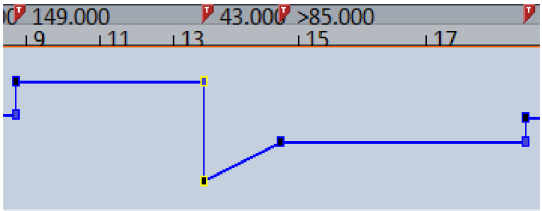
Step 4: If you hold down the Alt key while clicking on a tempo marker, the grid is deactivated and the tempo jumps to the neighboring tempo markers are converted into tempo curves.



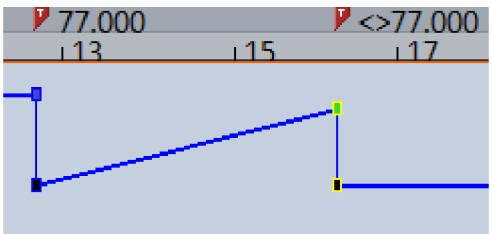
Step 5: Hold down the Ctrl key while double-clicking (in Universal Mode) or simply clicking (in Automation Draw Mode). Now drag on the created BPM marker to set a tempo curve to the previous BPM marker.



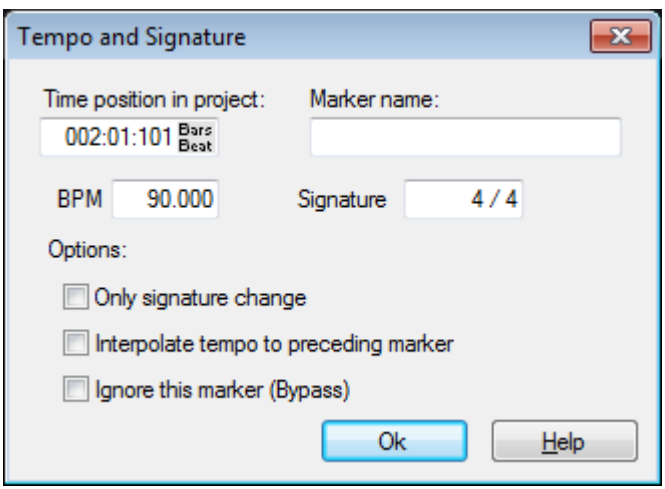
Step 6: To switch back and forth between the tempo curve and the tempo step to the previous tempo marker, click on a tempo marker while holding down the Ctrl and Shift keys.



Step 7: This creates a Ritardando or Accelerando. While holding down the Ctrl key, create a new tempo marker by double-clicking (in Universal Mode) or simply clicking (in Curve Mode or Automation Draw Mode) on the tempo curve. Hold down the mouse button and drag upwards on the created tempo marker for Accelerando, or downwards for Ritardando. This will generate a tempo curve to the previous tempo marker and the corresponding BPM marker will be displayed as a double arrow in the marker bar. The previous tempo is applied again from the newly created tempo marker position.



Tempo and time signature dialog



This dialog appears by double-clicking on an available tempo marker or curve point or if you set a new tempo or bar marker via menu command ("Edit" > "Tempo" > "Insert tempo/beat change").

As in the tempo map dialog, you can also determine the time position in the project as well as the marker name here, enter the desired tempo in BPM (not for grid position marker) and determine or change the time signature. Also you can choose here whether the tempo should be interpolated to the previous tempo marker (Ritardando or Accelerando) and whether this marker should be ignored.

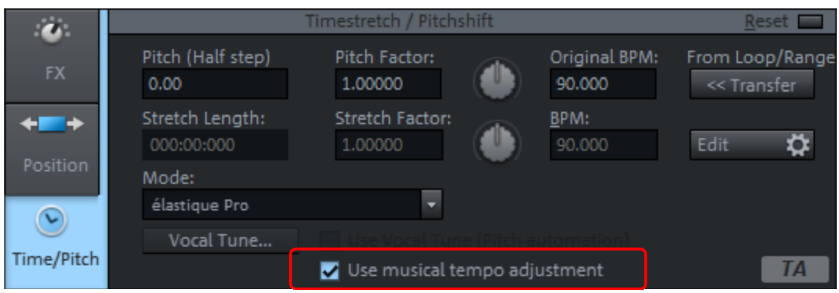
Change Global Tempo

Using the command „Edit“ > „Tempo“ > „Insert Tempo Change...“ You can scale all of the BPM values on selected tempo curve points by a set factor simultaneously.

Musical tempo adjustment

With musical tempo adjustment, audio objects are adjusted to match any changes made to the tempo of the project. This means that when you change the tempo of the project, the tempo and time positions of the objects are adjusted accordingly using tempo markers or a tempo curve. The bar position remains untouched while the start positions of objects are moved, and time stretching is applied.

You can activate musical tempo adjustment in an object by placing a checkmark next to it in the Time/Pitch section of the object editor.



Note: Musical tempo adjustment is automatically activated when you load Soundpool samples into a project. If you activate the **BMP sync** preview option when you load audio files via the file manager, tempo adjustment will also be activated for the object.

Musical tempo adjustment cannot be used at the same time as Vocal Tune (pitch automation) (view page 138) or object resampling. The indicator field in the object will show you which of these options is currently being used:

PA Vocal Tune (pitch automation).

TA Musical tempo adjustment: The length and position of the object are changed to match the tempo map of the project. The original BMP value will be used as a reference tempo for the object.



Sample rate adjustment: Adjusts the sample rate of audio objects by using object resampling if the sample rate of the Wave file is different from that of the project. If sample rate adjustment has been carried out automatically, you will be asked if you want to remove it when you activate tempo automation.

Notes

- In the current program mode, non-relevant control panels (such as stretch length, stretch factor and BMP) are grayed out.
- Remix Agent cannot be run.
- Tempo automation does not work with looped objects or objects played in reverse (view page 59).

Synchronization

Synchronization is very important to an audio system, since it is necessary to align playback and recording speeds of different system components. Synchronization enables studio equipment such as tape machines, drum computers, video recorders, or sequencers to be linked with different formats like MIDI clock, MIDI time code, or SMPTE time code so that all of the devices run at precisely the same time.

Samplitude Music Studio can be configured to as the master or slave within a synchronization system. As a master program, it generates the necessary timing information required for other system components; as slave. Samplitude Music Studio receives the time code data to follow during playback or recording.

Clock on digital systems

In case digital signal flows are processed, e.g. via ADAT, SPDIF, or MADI, it is important to define a clock reference within the overall system. The clock signal is transferred via Blackburst, World Clock, or the digital input, and it may be received by the receiving or playback computer. External devices such as converters or mixers may also provide a clock reference. For these systems, there can be only one master but several slaves.

Note: Don't confuse (Word) clock with time code. The clock signal is only a digital pulse for comparison of the timing between the connected devices and to keep the bit rate constant. This enables transmission errors to be prevented. Professional digital audio devices normally feature a word clock input and are able to generate and receive a clock signal.

Time-related synchronization of projects

For more complicated configurations, it is usually necessary to connect various audio and video systems via absolute time references. This enables them to operate

according to the behavior of the master, and the time code information (transport and progress) is implemented correspondingly.

Applications

Application 1. Synchronization using an external hardware sequencer. Samplitude Music Studio is the master.

To synchronize Samplitude Music Studio with an external hardware sequencer (drum computer, groove box, etc.), first select the type of synchronization. As these external devices usually use the song tempo or rhythm-dependent information, they are often synchronized using MIDI clock. In this case, impulses are passed on from the master to the slave. These control impulses are transmitted for each quarter note. Their number per quarter is always identical. The tempo information is always clear since the impulses do not occur in absolute time units but are rhythm-dependent. This secures the tempo synchronization of the two units that are to be aligned. Of course, the same tempo (more or less) should be set to both units from the beginning. The MIDI song position pointer is another important MIDI clock synchronization tool which provides information on how may control impulses have already been transmitted. You can therefore start at any position of the sequencer. This guarantees the same position of both synchronization units.

Attention: The value of the MIDI song position pointer is limited to 1024 bars (4/4 beat). After this, no further synchronization via MIDI clock is possible. In this case, connected slave devices remain still.

1. Make sure that your external hardware sequencer supports synchronization via MIDI clock as slave.

2. Connect the MIDI Out port of the master (MIDI Out on the MIDI interface of the computer running Samplitude Music Studio) to the MIDI In port of the external hardware sequencer.

3. Set the hardware sequencer to "Slave" mode. If you apply this setting, refer to the instruction manual for the respective device.

You will now notice that the transport control and tempo setting of the hardware sequencer are deactivated. It will now receive data from the master, i.e. from Samplitude Music Studio.

4. Open the synchronization window in Samplitude Music Studio and activate the "MIDI clock output -> MC output active" option.

5. Select the MIDI port as the device that is connected to the slave device.

Select the tempo you would like the external hardware sequencer to run at. This does not necessarily have to be the tempo of your Samplitude Music Studio VIP project (VIP BPM), but in most cases it is sensible, since the bars in the Samplitude Music Studio arranger window will correspond with the bars of the hardware sequencer.

6. If you press play in Samplitude Music Studio, the external device runs in sync with the tempo of your VIP project.

Application 2: MIDI Clock synchronization using an external device. Samplitude Music Studio is the slave.

In principle, it makes sense to choose a master within a group of devices with the most stable timing. In most cases, this would be Samplitude Music Studio. Of course, you can also set Samplitude Music Studio as slave, for example, if the main parts of a production are prepared using an external hardware MIDI sequencer and Samplitude Music Studio is only used as an additional audio device, or if the sequencer only permits MIDI Clock synchronization as a master.

The following should be observed: Unlike a MIDI-only device, Samplitude Music Studio can contain audio files which might need adjusting. This is only possible with the "Chase lock sync (time alignment by resampling) > Active" function. However, if the timing of the master is inaccurate, this may result in audible pitch deviations.

Note: This function should only be used if no common word clock is available. If a common word clock is available, synchronization variations will be created.

1. To synchronize via MIDI clock as slave, connect the MIDI Out port of the external device to the MIDI In port of the MIDI port selected in the synchronization options.

2. Now select "MC Input active" in "Synchronization/MIDI clock input" and enter the tempo of the external sequencer.

Samplitude Music Studio is now operating as the slave. Unlike many other hardware sequencers, Samplitude Music Studio does not deactivate the transport keys but "listens" to the incoming master commands.

3. Make sure that the external device is switched to "master synchronization" (many devices also call this "Internal sync mode" with "Sync Out" activated).

4. If you start the external device now, the VIP project in Samplitude Music Studio starts too.

If the "Chase lock sync" option is active, the variations Samplitude Music Studio has to compensate are displayed in cent at the bottom right of the arranger window.

If your external sequencer is set to a different tempo than from Samplitude Music Studio, this will attempt to adjust to the incoming tempo by changing the playback tempo relative to the initial BPM after starting the sequencer. However, this can take up to several beats and results in clearly audible pitch deviations. Make sure from the start that both synchronization units are set to the same tempo.

Application 3: MIDI time code (MTC) synchronization using a second software sequencer. Samplitude Music Studio is master.

Samplitude Music Studio can be synchronized with another software sequencer or hard disk recording system. MIDI time code synchronization is particularly useful for this.

The advantage of the synchronization method is that it is independent of a song's tempo entries. Rhythm and beat-dependent tempo changes are therefore no longer a problem within a project since communication now takes place via time values. There is a division corresponding to the SMPTE code into hours: minutes: seconds: frames (format: 00:00:00:00). Frames are the smallest SMPTE units. These originate from movie technology and state the number of images per second (e.g. 24 frames for film, PAL: 25 frames for video).

Note: If Samplitude Music Studio should be synchronized with audio data and not film, then the frame rate can be set however you like. It is important that the same sample rate is selected on both of the systems to be synchronized.

The second software sequencer can be running on the same or on a different computer from Samplitude Music Studio. If two sequencers are running parallel on one computer, make sure that the audio drivers being used permit simultaneous use of multiple sound card outputs. Alternatively, you can also use two different audio interfaces.

During synchronization via the MIDI interface, note that a MIDI port that is opened by the software cannot be used by other applications. To overcome this limitation, two MIDI interfaces that have been connected can be used. It is more elegant to use a freeware program like "Hubis Loopback", "Marblesound Maple" or "MIDI Yoke". These programs install virtual MIDI ports to be opened multiple times on the PC that can be "connected" freely with the respective applications.

For synchronization with a second software sequencer via MTC with Samplitude Music Studio as a master, proceed as follows:

1. Start both programs first.

2. Now connect the MIDI output of the MIDI port used by Samplitude Music Studio with the MIDI input of the system to be synchronized, or patch this virtually using an auxiliary program.

3. Select the corresponding MIDI port in Samplitude Music Studio's "MTC output" window and activate the MTC output.

4. On the slave system select the corresponding "slave" or "receive MTC" option. This setting is dependent on the second program being used. Now activate the used MIDI input.

5. Ensure that the same frame rate is set for both systems.

6. Now start playback in Samplitude Music Studio. The slave system will follow and run in sync with the master.

Important: Always observe that the sync start position of the slave system is identical with the start position of Samplitude Music Studio. If SMPTE sync start cannot be set for the other sequencer, you can also enter the start time of the other system in Samplitude Music Studio in "Synchronization -> SMPTE settings -> Offset".

Application 4: MIDI time code (MTC) synchronization using a second software sequencer, Samplitude Music Studio is slave.

This program is generally the same as in point 3 but the master/slave setting has to be reversed, i.e. MIDI Out from the other sequencer to MIDI In of Samplitude Music Studio.

Synchronization formats

There are different types of synchronization formats. The synchronization format contains slave device information about the start position, start and stop signals and, in extended formats, the precise timing information, which is continuously transmitted.

Samplitude Music Studio understands and transmits the synchronization formats MIDI clock (MC), MIDI timecode (MTC) and SMPTE.

MIDI Clock

MIDI Clock only contains the SPP (song position pointer) and the start/stop signals. There is no continuous timing information embedded in the MIDI clock signal, nor is this transmitted. This type of synchronization is principally therefore only suitable for starting and stopping. The greatest drawback of this type of synchronization is the fact that although Samplitude Music Studio can verify whether the audio tracks are played back in full sync, MIDI Clock does not provide further continuous time information to allow the internal position to be compared with the external signal.

You can use this type of synchronization if your system combination shows no timing changes.

MIDI Time Code (MTC)

If you require reliable integration of the MIDI tracks of an internal sequencer into the audio tracks of Samplitude Music Studio, use of the MTC format is recommended.

MIDI Time Code or "MTC" also includes so-called time information in addition to the MIDI clock signals. However, only start synchronization occurs in Samplitude Music Studio without subsequent re-chasing. It is therefore important that both systems have a word clock or are connected to any other type of digital audio clock. This helps to successfully avoid drifting.

Chase Lock Sync

If fluctuations in speed occur, Samplitude Music Studio can make adjustments in slave mode that ensure exact temporal synchronization. This function is called "Chase Lock" and can be changed in the synchronization dialog. This option should always be used if a part of the synchronization cannot be clocked centrally via black burst, word clock or the digital input, and Samplitude Music Studio is the "slave". This is the case if the timecode is located on a track featuring a multi-track cassette player. If the systems are coupled via a central digital audio clock, then chase lock should not be activated. Please note that resampling to the recording in realtime according to the timecode fluctuations will be applied if "Chase Lock" is active. This causes increased CPU load and may result in unwanted changes to the audio material if this is played later with other timecode references.

Samplitude Music Studio supports real "Chase Lock" synchronization, i.e. audio playback can be controlled precisely by a received timecode signal (MC or MTC). In this case, not only is the starting point of audio playback controlled externally, but also the playback speed. Samplitude Music Studio is therefore capable of following analog tape devices or VCRs that always have a certain amount of slip for longer periods.

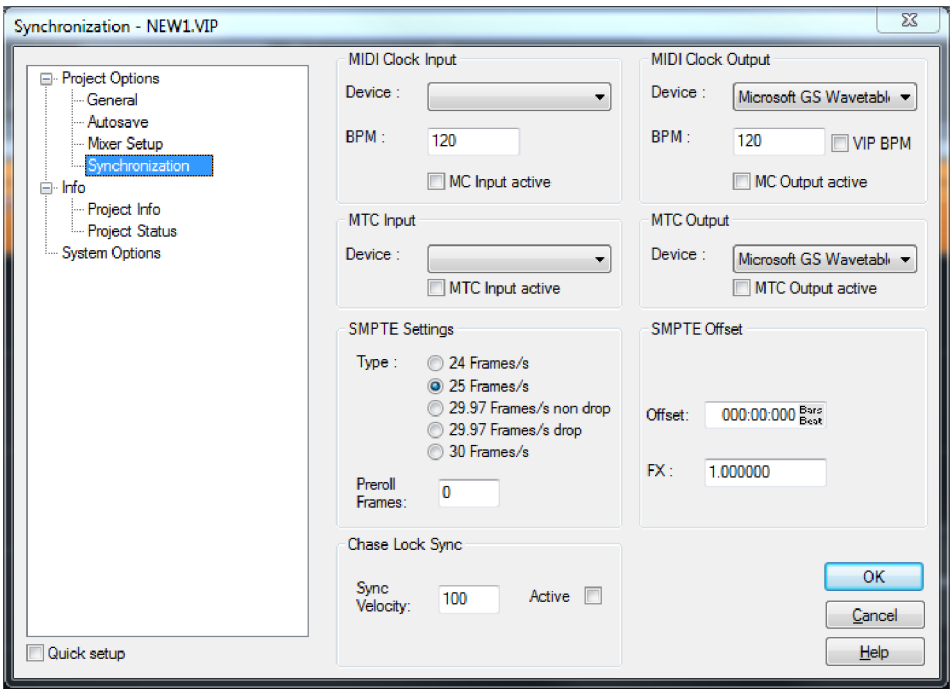
SMPTE Timecode

SMPTE Timecode is a conventional synchronization standard for linking different audio and imaging devices via absolute time reference. Every SMPTE message sends exactly how much time has passed since the beginning of the projects.

The SMPTE Timecode refers to the units hours:minutes:seconds:frames. The concept of "frames" originates from the film and video industry, which the SMPTE code was originally developed for. The different frame rates specify the resolution in the individual images per second, which is common in the film and video industry.

Synchronization options

Open the synchronization dialog in "File" > "Program Preferences" > "Synchronization settings".



MIDI Clock Input

MC input active: Activate the input for the incoming MIDI clock signal by clicking this check box.

Device: Select the device here that the MIDI clock signal should synchronize.

BPM: Define the desired project tempo for the synchronization project here.

MIDI Clock Output

MC output active: This check box activates the output for the MIDI clock signal generated by Samplitude Music Studio.

Device: Select the device that should receive the MIDI clock signal for synchronization.

BPM: Define the desired project tempo for the synchronization project here.

VIP BPM: This check box defines the project speed set in Samplitude Music Studio for the synchronization project.

SMPTE/MTC Input

MTC input active: This check box activates the input for the incoming MIDI timecode signal.

Device: Select the device that should create the MIDI timecode signal for synchronization.

MTC Output

MTC output active: This check box activates the output for the MIDI timecode signal generated by Samplitude Music Studio.

Device: Select the device that the MIDI timecode signal should be sent to for synchronization.

SMPTE settings

Type: Select a suitable frame rate, e. g. 24 for video/movies, 25 for PAL video and audio synchronization, 29.97 for NTSC video, 30 for HDTV.

Offset: Specify an offset to be deducted from the incoming SMPTE time before the time is used for synchronization. An offset of 01:00:00:00 (1 hour) therefore allows you to synchronize a tape with an SMPTE code that starts at 1 hour. The SMPTE offset behaves relative to the project start time (view page 498).

Pre-roll frames: Enter the number of frames that Samplitude Music Studio should ignore before synchronization begins. This takes into account the fact that analog devices normally require a certain amount of time before they reach the correct speed. Samplitude Music Studio will now synchronize at a valid time since this startup time can be skipped according to the set pre-roll frames.

FX: This factor allows you to equalize possible irregularities with regard to positioning in long samples. Perfect synchronization at the beginning of the sample is nevertheless a requirement.

Chase Lock Sync

Active: Activate chase lock synchronization by clicking this check box.

Sync Velocity: Entering the sync velocity enables you to influence the speed of the tempo adjustment. The greater the sync velocity value, the faster Samplitude Music Studio will follow master device tempo changes; however, this also means that the pitch deviations in the audio material are greater. The preset value for the sync

velocity is 100; experiment with values greater than 100 if the synchronization does not run exactly.

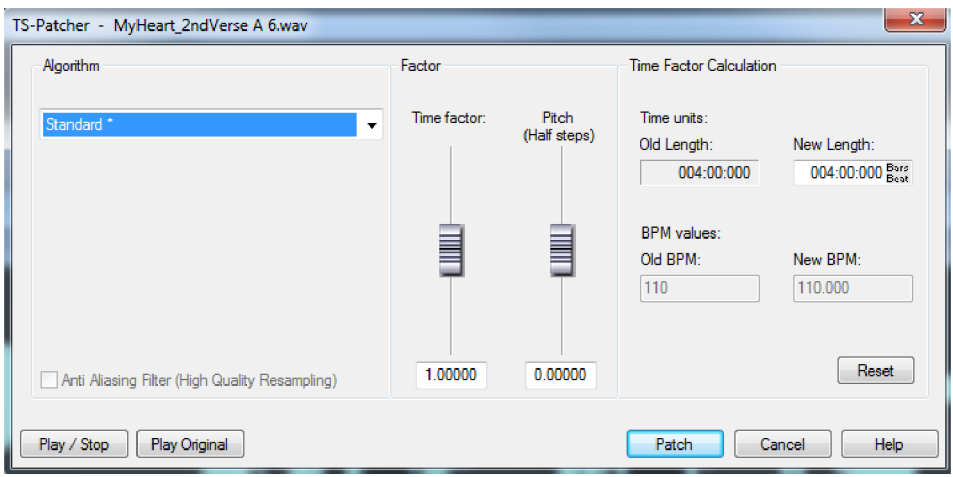
Note: Please note that Samplitude Music Studio will apply resampling to the recording in realtime according to the timecode fluctuations if chase lock is active. This causes increased CPU load and may result in unwanted changes to the audio material if this is played later with other timecode references.

If the systems are coupled via a central digital audio clock as master clock, chase lock should not be activated.

When using the **Hardware Pitching** feature, chase lock synchronization uses direct access to the sample rate of the sound card in 1 Hz steps. This achieves particularly precise synchronization without additional CPU load. However, this feature has to be supported specially by the sound card.

Shortcut: G

Time Stretch/Pitch Shift Patcher...



Time Stretch/Pitch Shift Patcher - Overview

Use this tool to patch wave files for use in Samplitude Music Studio. In this case, additional information and settings may be written into the wave project. These enable the processing of Time Stretching and Pitch Shifting Algorithms at optimum quality. Without the patcher, you would have to search and set the settings and additional information for each wave file you wish to edit.

The following may be patched individually:

- Algorithms for Time Stretching/Pitch Shifting
- Time factor/pitch

- Time factor processing (new length/new BPM)

Timestretch/Pitchshift Patcher - Patching Process

Patching only works when you have opened the audio file in audio editing. It can also not be open in a virtual project at the same time.

Select the algorithm you want to use from the dialog. You can also specify the tempo of the wave file using the "Time Factor" controller.

You can now test the selected algorithm in conjunction with the "Play/stop" and "Play original" buttons. If you click the "Patch" button, Samplitude Music Studio will write the information permanently to the wave file.

Algorithm for Time Stretching/Pitch Shifting

In Samplitude Music Studio you can use the algorithms élastique Pro, élastique Efficient, Resample and Monophonic Voice for realtime time stretching and pitch shifting.

Detailed information about this is available in "Effects" > "Time / Pitch" > Resampling/Time Stretching (view page 162)". When you find a time stretching algorithm that meets your requirements you can use the Patcher to save it in the audio file. This ensures that this selected algorithm will be used automatically when you apply time stretching/pitch shifting to your audio files.

Beat Markers

Beat markers synchronize the audio material so that the groove remains perfectly intact. When using the beat marker-based algorithms, the beat markers are also saved in the wave project.

Note: Unlike with the Time Stretching dialog in the "Effects" menu, the patcher is non-modal, meaning that you can move the beat markers in the wave project and simultaneously control the result of the Time Stretching.

BPM Value

The desired BPM value (beats per minute) can be patched here. This is useful for when the Time Stretching factor must be determined later to adjust the wave project to the tempo of an existing arrangement. If the "New BPM" field in the dialog is grayed out, you can change the value using the "Time factor" controller.

MAGIX Audio Remote

The MAGIX Audio Remote app is for remotely controlling certain functions of Samplitude Music Studio via smartphone or tablet. Your computer and device need to be on the same Wi-Fi network for this to work.

This app is continuously under development and will be used as a "universal remote control" in the future for all MAGIX products.

Here you can download the app!

Connect

Setting up a connection between Samplitude and MAGIX Audio Remote is simple.

1. Make sure that your PC and the mobile device are connected to the same network. The connection will be automatic if both devices are using the same internet router.
2. Open the app and click the gear icon in the top right corner. The settings screen shows the name of the computer on which Samplitude Music Studio is running under "List of found devices".
3. Click "Connect". The connection is now established.

General operation



Settings

The gear icon opens the settings screen. This is where you set up the connection to the program. Use the slider to adjust screen brightness.



Menu: Here you can choose how many pages you want in the control area. Currently, there are four pages in the control area

- Filter
- Reverb
- Transport
- Live Pads (only available in MAGIX Music Maker)

The small **transport console** is visible on every page.



Loop on/ off

To start

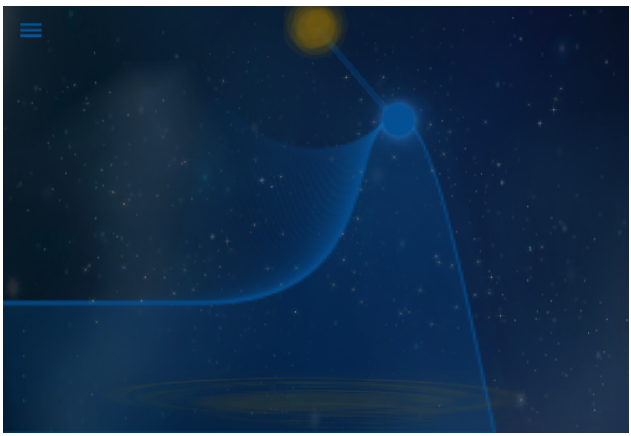
Stop

Play / Pause

Record

Filter

Filter is a remote control / modulation source based on physical modeling for the filters in MAGIX Vita Solo Instruments.



The vertex of a filter curve is controlled by a sphere graphic that hangs from a thread in a set position (the sun). When the whole thing is set in motion, things start to get exciting. Depending on how the graphic is manipulated, you can carry out slow filter changes, LFO modulations or chaotic reflections. Even if you're not an expert, the interface makes it easy to experiment.

To use the filter, load one of the Vita Solo Instruments with filter. How to set the filter in motion:

- Click on the graphic and drag it. You can also click in space and drag to illuminate the sphere with a tractor beam.
- The sun can be moved.
- Zoom between the sun and sphere to change the length of the thread.
- Click on the sun to undo the connection between the sphere and the sun. The sphere now flies freely through space. It bounces off walls and the sun and gains energy in doing so. The "ground" is in the lower part of the screen.
- Drag below left or right to the change the gravity.
- Two-finger zooming in free space changes the damping. As damping is increased, the quicker the sphere comes to a stationary position.

Reverb

In the reverb page you can control reverb in the Vita synths.



- Set room size in the rectangle
- Zoom with a two-finger gesture to define the amount of reverb (Dry/Wet).

Transport console

The transport console performs exactly the same function as in Samplitude Music Studio (and in the small transport console on the edge of the app).



Tip: For anyone creating music and producing at the same time, a recording in a recording booth can be controlled remotely.

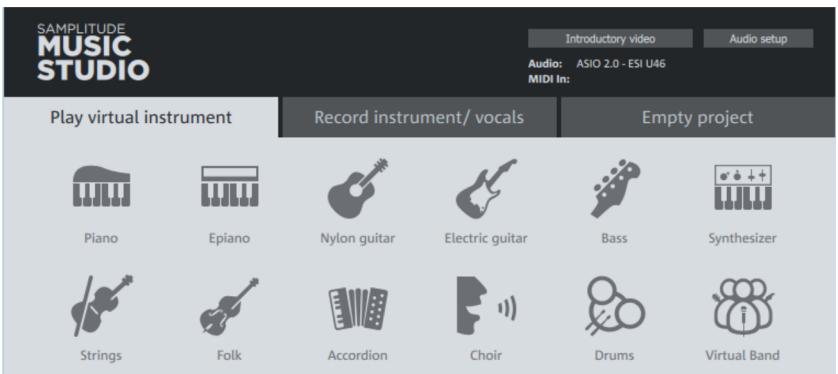
File Menu

This allows you to apply comprehensive settings for creating, managing, loading, and saving projects.

New Virtual Project (VIP)

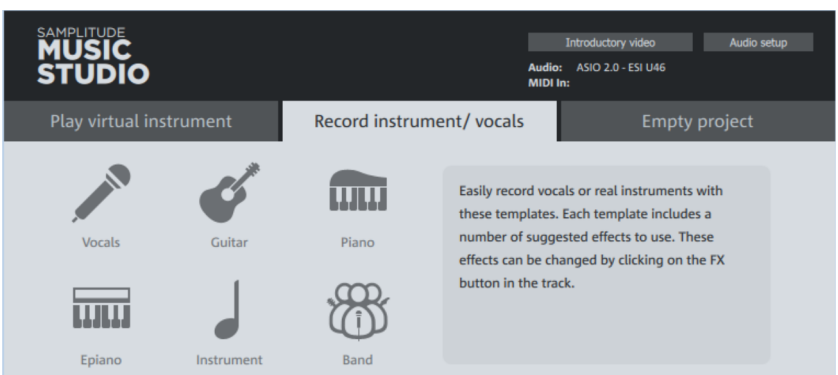
A new virtual project is created and presented in a new window on the screen. The first two tabs in the dialog offer useful project templates.

Play virtual instrument



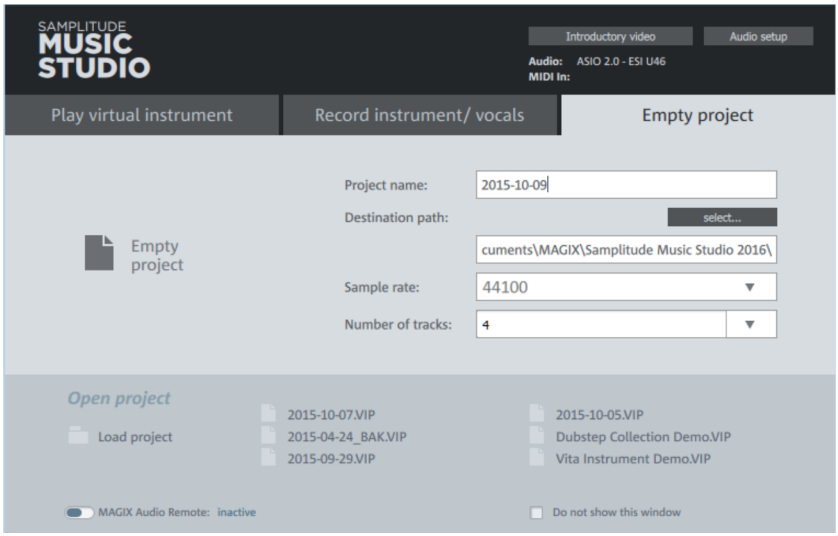
A new project is added when a virtual instrument is already loaded according to the selection. The last option "virtual band" loads a complete band directly including percussion, different guitars, and other instruments.

Record instrument/ vocals



Here you will find templates for recording vocals, instruments, or a complete band. Suitable effects are preset on these tracks but not activated.

Empty project



If you do not want to use templates, then you can specify your own settings for a new project here.

Project name: A suitable name for the new VIP should be entered here. A subfolder with the name of the project is added automatically in the standard folder selected via the "Target path".

Target path: You can select the folder where you want to save your project here.

Project template: You can choose between previously saved project templates in this list field. These contain all project settings such as number of tracks, device settings etc. You can create new project templates with "File -> Save Project as Template".

Sample rate: The sampling rate of the virtual project is preset here.

Note: Independent of the project sample rate, audio material can be opened with various sample rates, formats and codings in each project.

Number of tracks: The number of tracks of the virtual project is set in advance. You can add new tracks later at any time with the "Track" > "Insert new tracks..." command.

Open projects

The dialog always display a list of the virtual projects that were recently opened; click a project to open it. Load project allows projects to be loaded via a file selection window.

MAGIX Audio Remote: Activate support for the MAGIX Audio Remote (view page 323) app here.

Do not show this window: If this option is activated, Samplitude Music Studio always adds new virtual projects with the selected settings. This can be reset in program settings.

Shortcut: E

Open

You can open various file types here and load them into Samplitude Music Studio. To load audio files, use the command "Import -> Load Audio File".

Virtual Project (*.VIP)

Use this menu command to load a multitrack project as an arrangement.

Shortcut: O

RAM Wave (*.RAP)

RAM Wave Projects contain audio data in an audio format unique to Samplitude Music Studio that is loaded into the RAM memory. Additional information for display of the audio data, marker positions, etc. is contained by this data.

HD Wave (*.HDP)

HD Wave Projects contain audio files that are loaded directly from the hard disk. Additional information for display of the audio data, marker positions, etc. is contained in them. The files use WAV audio format.

Shortcut: Shift + L

Note: If a VIP is active, the loaded wave projects are loaded immediately into the VIP as objects. The range of the active track displays the position. "CD arrangement" mode is the exception. In this case, the objects are displayed below one another independent of the range. The distance between the objects corresponds to the pause time (CD/DVD menu -> Set start pause time (view page 418)).

Object (*.OBJ)

An object contain playback instructions for the underlying wave project. The object contains information about the time position as well as the editing steps involved. Objects are used in virtual projects.

Session (*.SAM)

This command loads a Samplitude Music Studio session. This opens all projects and arranges the windows as they were distributed on the screen when the session was saved.

Import

Load audio file

Here you can open a dialog for loading of audio files.

The following formats are supported and read directly by Samplitude Music Studio:

Wave files (.wav), MP3/MPEG files (.mp3, .mpg, .mus), QuickTime files (.aif), MS Audio files (.asf, .wma), Ogg Vorbis (.ogg), FLAC (.flac), MIDI files (.mid), video files (.avi), and playlists (.m3u, .cue).

Note: Open all other formats with the import audio function "Import audio" to convert these to wave files for local storage on the hard drive.

You can also load several files simultaneously. To do this, expand the selection via "Ctrl + click" (just like with Windows Explorer), or select a range of files via "Shift + click".

If a virtual project is opened, new objects are created simultaneously in the VIP which refer to loaded audio files. If an area has been selected in the VIP, the files are positioned at the beginning of the range or with a separating pause of 2 seconds after the last object. The length of the pause can be adjusted in the "CD/DVD" menu via "Set pause index".

If you want to load the audio file as a separate wave project, click the corresponding check box.

Clicking the payback button enables each audio file to be listened to in advance.

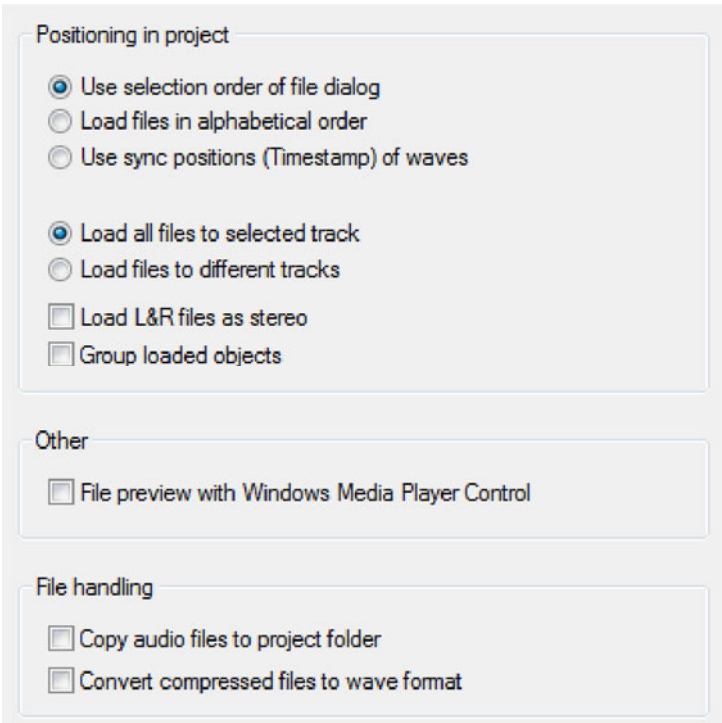
Attention: The monitoring function uses the Windows Multimedia MME standard output device. Many audio cards shut down the Windows MME system when ASIO

drivers are used, which means problems may occur during monitoring. For this reason, the preview function is deactivated by default when ASIO drivers are used.

The "load audio file" option activates the monitoring function again at any time.

The "options" button opens the options for loading an audio file (view page 330).

Options for loading audio files



Use selection order of file dialog: If this option is activated, Samplitude Music Studio remembers the sequence in which the files were selected and then sorts them accordingly.

Load files in alphabetical order: With this option activated, Samplitude Music Studio sorts the selected files alphabetically in the VIP.

Use sync positions: Broadcast wave files containing timestamps are positioned precisely at this position in the VIP.

Load all files to selected track: The selected files are loaded successively in one of the selected tracks.

Load files to different tracks: The files are now sorted in vertical order from the selected track to the next one. If necessary, an additional track is added.

Group loaded objects: All loaded files are grouped. They can be ungrouped anytime.

Other (only present for "Load audio file")

File preview with Windows Media Player Control: Files may be previewed via the Windows Media Player.

File management

Copy audio files to project folder: Files are copied into the corresponding project folder automatically.

Convert compressed files to wave format: Compressed audio formats such as MP3 may also be loaded and played directly by Samplitude Music Studio. This requires increased CPU calculation. Activate this option to convert files like this into an uncompressed wave format.

Load MIDI File

This function loads a MIDI file. Detailed information about this topic is provided in "MIDI in Samplitude Music Studio -> MIDI - record, import, edit -> Importing MIDI files".

Shortcut: Shift + M

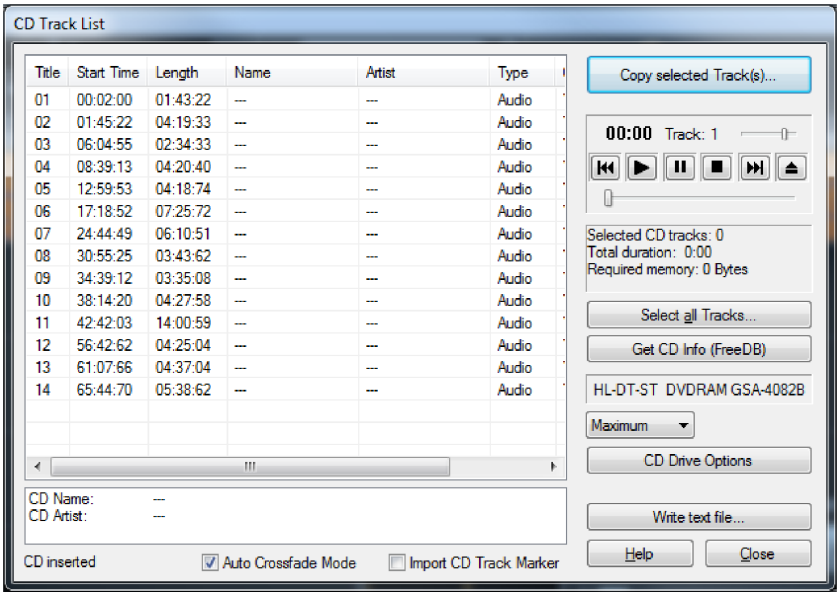
Loading audio CD tracks

This function allows the import of audio data using most CD/DVD ROM drives. Data import takes place completely digitally, i.e. without any sound loss. The data are created as WAV files and can also be loaded in other audio programs without any problem.

To import audio CD tracks, proceed as follows:

1. Insert an audio CD into the drive.

2. Select "CD" > "Load audio CD track" (or "File" > "Import" > "Load audio CD track"). The dialog appears with the list of tracks.



If there is more than one drive, you can select the right one using the "CD drive options" button.

3. Mark the desired track (with the key combination "Shift" or "Alt" and the arrow keys) in the track list.

4. Click on "Copy selected tracks..."

5. Select a name for the WAV file being created and click on "Import".

The audio material is then copied from the drive onto the hard disk. A progress indicator is displayed.

6. Close the dialog.

You now see the loaded tracks as objects in the project.

The track list dialog

Copy selected track(s): This button starts audio copy. All selected tracks will be copied in a wav file or an HD wav project.

Play: Starts audio playback of the first selected track in the list (as a test).

Stop: Stops playback.

Pause: Pauses playback By clicking the play button, playback can be continued.

Select all tracks: All audio tracks will be selected, e. g. for copying the complete CD. Tracks markings can also be created using Shift and Alt and arrow keys. Multiple tracks can be selected by pressing "Ctrl + mouse click".

Get CD info (freeDB): Compares the created CD to the freeDB data base and fills out metadata automatically.

Drive and speed selection: Here you can see the name of the current drive and set read velocity. "Maximum" is the standard setting. If you notice read errors, gradually decrease writing speed.

CD drive options: If you have more than one CD/DVD drive, you can set which you want to be displayed here.

Write text file: Opens a TXT file with all information on the currently created CD.

Auto crossfade mode: The auto crossfade mode is turned on during import of audio tracks. Crossfades will be automatically set between imported titles.

Take over CD track markers: If this option is activated, track markers will be set at the start of imported tracks.

Save Project

The current disc project is saved with the name displayed in the project window. If you have not yet specified a name for your project, Samplitude Music Studio will ask you to do so.

Shortcut: Ctrl + S

Save Project as...

A standard dialog will open, where you can specify the path and name of the project to be saved. If you would like to save wave projects and virtual projects under a new name and in a different location, the original file will remain untouched. Then you can continue working in the new project (automatic).

Shortcut: Shift + S

Save Object...

This function allows you to save a single object. This file contains all the data of the object editor like fades, effects, object names, etc.), but not the actual audio data. The wave project referenced by the object also has to be available if you want to reload the object.

Save Session...

A Samplitude Music Studio session is a meta project that includes the file paths and window positions of all loaded projects upon saving. This is useful for starting to work again at the same position where you ended, without having to load various projects.

If you save a session with the name "startup.sam" and place it into the directory with the program folder, Samplitude Music Studio will load that session automatically the next time you start the program.

Export

This menu point allows you to export projects in various formats.

The export dialogs for the respective formats are almost identical.

1. **Selection of path and file name**.
2. **Format settings:** Here you'll find a dialog with a selection and settings options for the corresponding export format.
3. **Export settings:** Here you can specify which area of the project should be exported. You can also export several tracks with beginnings that are indicated by track markers or some other kind of marker. This enables an almost automatic export of single files from the arrangement. When exporting a single file it is possible to save the contained markers as a playlist .cue file with the same name and burn it to a CD later.

Note: The audio data from HD Wave Projects can be further processed or imported directly as WAV files from HD Wave Projects. The use of the "Export" function is only necessary when the data is to be copied.

WAV

Here you can export Wave files.

Format settings: A dialog window featuring a list of all compression codecs appears here. Select the codec and compression rate you require. If you click the "**Dithering**" button, the dithering options dialog will open. Detailed information about this is available in "File > Program Preferences > Dithering Options".

MP3

This exports the project as an MPEG Layer 3 with the included encoder. Clicking on format settings opens a window for setting encoder options. Here you can set the export format, encoder quality, stereo coding, VBR (variable bit rate) options and labeling using the MP3 ID editor.

AAC

Exports the project as an AAC file (Low Complexity or High Efficiency). The encoder can be set up in the advanced dialog that is opened through "Format Settings". You can also set the quality and transport format here. AAC export uses the file ending *.m4a.

Note: During AAC export the sample rate varies depending on the bit rate.

For example, if you load a 44.1 kHz wave file into a 44.1 kHz VIP and then export it as an AAC with 128 kBit/s, you will get a 44.1 kHz file.

However, if you load a 44.1 kHz wave file into a 44.1 kHz VIP and export it as an AAC with 256 kBit/s, you will get a 48 kHz file.

Windows Media...

Exports the project in Window Media Format.

This format is an optimized audio/video format for the Internet from Microsoft. This format also enables streaming playback of audio files over the Internet. Select a profile for the Windows Media file in the "format settings" dialog. Enter the track and artist names, copyright details, and descriptions.

FLAC...

The FLAC format allows you to compress 16-bit or 24-bit files during export. The properties of the FLAC encoder may be accessed via the "Format settings" button. Set the compression degree, bit resolution, format, sample rate, and dithering here.

OGG Vorbis...

Exports the project in OGG Vorbis format.

The "Format settings" button opens an additional dialog to select the desired bit rate. The scale of compression ranges from 46 kBit/s to 500 kBit/s (for MP3 from 32 kBit/s to 320 kBit/s). In the stereo options, choose between "Stereo" and "Mono" and also select the "Variable bit rate" mode.

AIFF...

The project will be exported in AIFF format. In the advanced dialog, select the bit resolution, stereo format, sample rate, and quality level of sample rate adjustments.

Mono / Stereo Convert

Stereo Wave -> 2 Mono

This function saves both the left and right channels of a stereo wave file (file.wav) separately as a mono file (file_left.wav, file_right.wav).

"Stereo to 2 Mono" may also be applied to objects in the VIP. Stereo objects to be split are replaced by two mono objects that are arranged one below the other and which feature panorama settings at the object level to the left or right.

2 Mono -> Stereo Wave

This combines two mono wave projects to one stereo wave project.

After executing this command, a dialog opens displaying all loaded mono files. You can load additional files with "Load file". From the opened wave projects, select the right and left files with the "^" keys. With "<->" keys you can switch channels. After clicking "Link files", specify the name of the new file to be created in the project folder.

Please note that only mono wave projects of the same word width and sample rate can be linked. The length of both projects are adapted to one another, the longer mono file sets the total length.

LR Wave -> 2 Mono

LR wave projects may be split into two independent mono projects using this function.

LR Wave -> 1 Mono

The active LR wave project is set to mono mode. In this case, the two channels are mixed together by adding the corresponding samples each at 100% and then splitting the sum in two in order to avoid overmodulation. This corresponds to sinking the level by 6 dB.

2 Mono -> LR Wave

This creates an LR wave project with two channels from two mono wave projects, in which case one mono wave project in panorama view is positioned to the left, and the other one to the right. Select both mono files with consecutive mouse clicks. In the following dialog you can decide to "Link". "Convert to stereo" creates a stereo wave file.

1 Mono -> LR Wave

In this case, LR wave project with two identical channels is created from a mono wave project. The original sample is duplicated here.

Save in format

Use this function to save wave projects in various formats.

This can be useful when, for example, RAM projects are to be converted into HD Wave Projects or LR Wave Projects (two mono samples linked to one another) are to be converted into Stereo Wave Projects.

In "**Area settings**", select whether only the **selected area** or the **entire wave project** should be saved in the new format.

Under "**General options**", select whether the **maximum amplitude** should be displayed or not and if the **master effects** should also be copied when the file is saved.

The **Dithering Options** can also be adjusted here.

In the "**Format**" section you can determine in what format the file should be saved (**Wave**,**MP3**, **AIFF**, **Ogg Vorbis** or**FLAC**).

In the case of Wave, AIFF and FLAC projects you **also** have the **options "Stereo"**, **"left & right"**, **"only left channel"**, **"only right channel"**, **"mono mixdown"** and **"Mono"** and the **selection/quality of the sample rate** options open to you.

By clicking on the **format settings** for **MP3 format** a new window opens, where **encoder options** can be defined. Here you can set the **Output format**, **Encoder quality**, **Padding-mode**, **Content options**, **VBR** (variable bit rate)**options** and tagging using the **MP3 ID Editor**.

In the dialog for **AIFF** you can specify the **bit resolution**, **stereo format**, **sample rate**, and **quality level of sample rate adjustments**.

Change Bit Resolution

Select the desired word width/bit resolution of wave projects here.

Working with 8 Bit Wave Projects

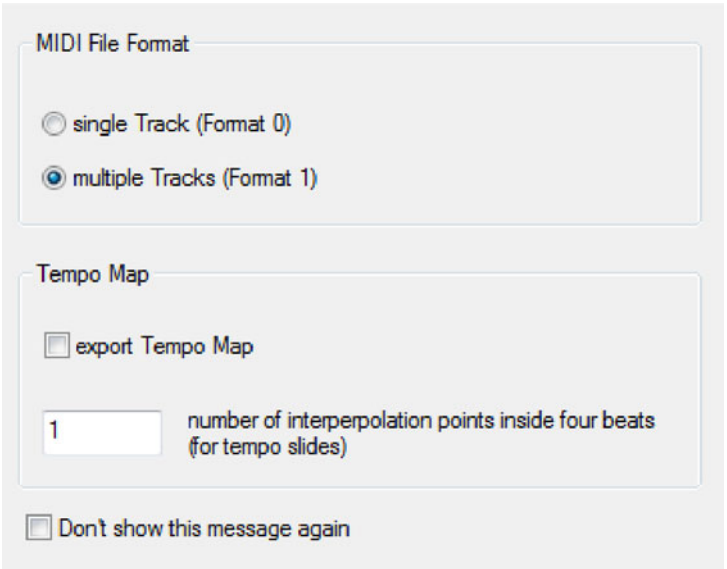
A smaller word width may be useful when editing audio for multimedia applications, since these applications may use a resolution of 8 bits to save storage space.

The downside of such a low bit resolution is that as the quality of the so-called SNR (signal-to-noise ration) drops, and the quantization noise increases. This quantization noise is not consistent, but is modulated by the signal and may be unpleasant.

The word width of the project is always indicated in the title bar of wave projects. To perform manifold destructive editing on an 8-bit project, you should convert it into 16 or 32-bit float before editing. The created calculation precision will then occur in the

16-bit range, this being considerably smaller. After editing, convert the sample back to 8 bits.

Export MIDI File...

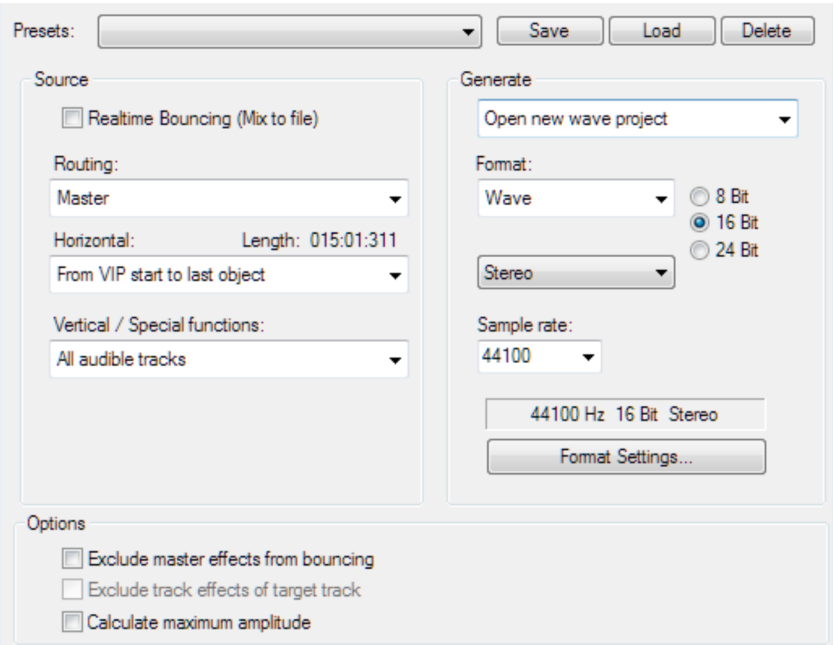


The particular file format may also be specified when exporting a MIDI file. One track **corresponds to format 0**, **multiple tracks to format 1**. In addition, the tempo map may also be exported, in which case the support point count per beat for tempo runs can be selected freely.

The standard MIDI file (SMF) export always takes place in the current VIP-PPQ resolution. The markers are also exported.

Track Bouncing

This command can be applied to compile a project, a specific range or selected objects and tracks of a virtual multitrack project (VIP) into one audio file and save it under a new name. All realtime editing (cuts, crossfades, mixer settings including mixer effects and plug-ins, volume and panorama curves, realtime effects in the object editor, etc.) can be integrated into the new project.



Normalize your project before bouncing using the Master Normalization function in the mixer ("N" button) in order to get a precisely calibrated file. You can always save the affected settings as presets.

Track Bouncing Settings: source

Routing:

In this field you determine the outputs to be written to the file.

Only master: The master output of the mixer is written to a file. This is the standard for all exporting processes.

All outputs: All tracks that are not muted will be mixed down together, independent of their routing. Suitable for bouncing at object level.

Field:

Only selected range: Here track bouncing will be conducted only over the length of the range selected in the arranger.

From project start to the last object: The bounce process includes all objects from project start until the end of the last object, including reverberations.

Complete project: If you select this option, the complete virtual project will be bounced.

Track Bouncing Settings: Generate

Create new wave file: The selected range or the virtual project (VIP) creates a new wave file.

Open new wave project: The selected range/virtual project (VIP) is converted into an wave project.

Create new object in VIP: The bounced objects are inserted as new objects in a new track in the existing VIP.

Replace objects in VIP: The objects used in trackbouncing are removed and the result is inserted into the selected track.

Create new VIP: A new virtual project (VIP) will open. The bounced audio material is inserted into the first track of the created project.

Track Bouncing Settings: Format

The target format may be set flexibly. **Wave** and **AIFF** files in 16/24-bit mono/stereo at 4 variable sample rates are supported, as are **MP3**, **Ogg Vorbis**, and **FLAC** files at **variable sample and bit rates**. For wave files, you can select special codecs such as ADPCM by clicking the "**Format settings...**" button. For other formats such as MP3, you will find there further format settings.

- The format setting "**Stereo**" creates a file that contains the stereo information as an "**Interleaved file**".
- The format setting "**Left & right**" may be used to create two files, i.e. "**Filename_L**" and "**Filename_R**", which provide separate information about the left and right channels.
- The format setting "**Left channel only**" monitors and outputs the **left channel only**.
- The format setting "**Right channel only**" monitors and outputs the **right channel only**.
- The format setting "**Mono mixdown**" calculates the left and right channels together according to the formula "**(L+R)/2**" and then outputs these.

- The format setting "**Mono**" is especially useful for hard left or right tracks, since it bounces these at the same level. Mono is formed according to the formula "**L+R**". If **panorama** is set in the middle in the format settings, the trackbouncing process will automatically result in a **level reduction of 6 dB** per channel (panning law -6 dB). This will ensure that even centered mono signals are not bounced at a too high level, but at the original level.

Note: All files created as a result of trackbouncing are opened in Samplitude Music Studio.

You cannot bounce to the same project twice in succession. You have to close it first. If you bounce often and do not require any special mastering options, you can work more effectively by using the "File > Export" (view page 334) command instead of the trackbouncing dialog.

All formats that cannot be directly opened by Samplitude Music Studio cannot be created in the trackbouncing dialog. For bouncing into the WMA format, use "Menu File" > "Export" (view page 334) as well.

Track Bouncing Settings: Options

Skip master effects during bouncing: Master effects are not included during bouncing.

This option is important in combination with the "Create" functions "Create new object" and "Replace object(s)". This is set automatically when selecting these options so that the master effects are not applied twice.

Display maximum amplitude: Display the maximum volume in dB after bouncing in order to correctly set equipment for additional editing or to correct the master level. Once bouncing has been completed, the corresponding information window will be displayed.

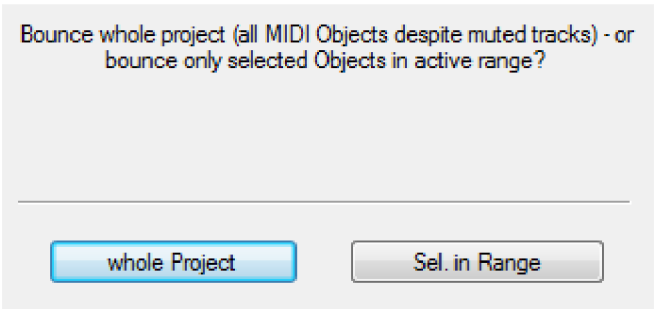
Range trackbouncing

Use this function to convert the objects within the currently selected range to a new WAV file or a HD Wave project. The objects are then replaced in the Arranger. This is useful if you wish to combine multiple objects into a single object which can then be further edited easily.

To create performance room, you can render object effects using the range trackbouncing feature.

MIDI bouncing

In another prompt you can choose whether you want to mix the entire project with all MIDI objects or just the selected MIDI objects within the current area into one single MIDI object. In this case, the MIDI track and object effects like timestretching, track MIDI transpose, program change, etc. are bounced into the resulting MIDI object.



Note: Don't confuse MIDI bouncing with the "MIDI object freeze (Object -> Object freeze)" function, which replaces the MIDI objects with audio objects in the software instrument's audio return signal.

Rename Project...

The current project may be renamed using this dialog. For HD wave projects, all the files involved will be correspondingly renamed.

Clean up

Delete Virtual Project (VIP)

Use this menu command to easily delete wave projects from the hard disk. The integrated wave files may be individually blocked from deletion by removing check marks under "Delete" next to each file. The remaining files belonging to a virtual project will be deleted.

Warning: Once the dialog has been confirmed, the data will be deleted without a repeat query.

Save Complete VIP in...

The complete virtual project and all associated wave files will be saved in the specified folder. This function is useful for making backups on a different drive, etc.

Keep project subdirectories: If you have already created subfolders in your project directory, e.g. to sort samples, then these will also be copied into the new directory.

Copy unfreeze data: Copies all unfreeze data in the VIP into the new directory.

Copy Revolver track data: Copies all Revolver track data included in the VIP.

Copy ClipStore data (Sequoia only): Copies all of the ClipStore data used in the VIP.

Copy video data: Copies associated video files.

Copy effect used files: Copy the files used by effects into the new directory, e.g. Room Simulator or the vocoder.

Copy only samples used in VIP: Only the sections of wave projects that are actually used by objects in the VIP are copied.

This function is practical for saving disk space; however, the objects in the newly saved project may be only shortened, and not extended. This is because all of the audio data outside the object edges is not copied with it, and therefore, cannot this cannot be used.

A security area in may be defined in samples for this purpose. The **number of samples** will be left as **additional space** in front and at the end of the corresponding object limits to leave a reserve, in case the object may be altered with a fade in/out. A value of 22,050 samples is preset (this corresponds to 500 ms at a rate of a 44.1 kHz).

Burn Project Backup on CD/DVD

Use this menu command to burn an entire project backup onto multiple CDs or DVDs. Samplitude Music Studio's burner program, MXCDR, will open for this.

Delete Wave Project(s)...

Use this menu command to easily delete wave projects from the hard disk. All files belonging to the HD wave project (the wave file containing the audio files, files with the graphics data, and the HDP file with the project information) will be deleted together.

Note: An HD wave project may only be deleted once it's closed. As long as parts of the project are still active as objects in the VIP, deletion is impossible. Once the dialog has been confirmed, you will be able to delete the data.

Delete Unused Samples

This function lets you edit all wave projects belonging to the current virtual project in such a way that all ranges that aren't used are deleted. It basically deals with the part of the audio data to which the objects in the arranger do not refer and don't get played at any point. The objects in the virtual project are customized automatically so that nothing changes in the arranger view.

This function deletes physical data and does not feature an "Undo" option. You should therefore apply this command carefully.

If multiple virtual projects refer to the same wave files, all of these projects should be open as well. This is the only way to monitor and prevent data loss.

Using the "Remove unused samples" function saves storage space, but corrections to the objects' lengths are limited, since all audio data outside the object borders are removed. For this reason, specify backup reserves with "**Save additional samples for each object**". This number of samples is left in front and behind the object borders in the audio material. The default value is 22,050 samples, which corresponds to 500 ms at a 44,100 kHz sample rate.

The dialog lists all of the wave projects used in the virtual project. You can see the total memory space used by the wave projects in the "Size" column here, and beside this the free space in the "Unused" column. In the "Edit" column, you'll find a check box for each file that may be used to add files to the process. Only those files that contain unused sections of audio data are selected. To keep these, remove the check.

Note: The list may also contain files not actually referenced by the VIP, but referenced by the VIP's undo chain. These files are 100% unused samples and will be deleted completely when checked.

For example, if you have discarded an entire recording session, you can delete the unused files as well. However, if you had opened audio material from other sessions or your private sample library and didn't use them any more after that, you should uncheck these files so that they don't get deleted.

We recommend deleting the "Undo" chain and closing all unused wave projects before using the function.

Tip: If the relevant audio files are required later on for additional production work, the following procedure is recommended for archiving the finished production:

Save your entire project in a new folder ("File -> Save complete VIP in..."). In the save dialog, select the command "**Copy only samples used in VIP**". Now only those audio files/samples that are actually required by your archiving project will be found in the few folder. You can now save the content of this folder to a backup medium (e.g. CD-ROM or DVD).

Delete Freeze Data

Use this function to delete unused data that was created when freezing but is no longer needed after "unfreezing".

Close Project

This menu point closes the active project.

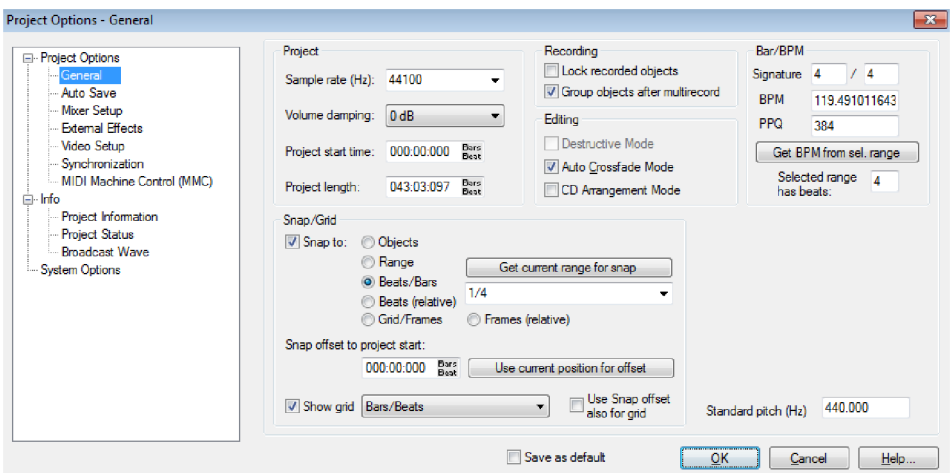
Project Properties

Snap and Grid Setup

In the general project options dialog you can choose the kind of grid and its activation.

Shortcut: I

Virtual projects have an object grid, area grid, beat grid, and frame grid. In the object grid, the objects may only be moved to the start, end or the hotspot ("Object -> Set hotspot/delete hotspot (view page 383)"). The reference point is normally the front edge of the object that is to be moved. As soon as a hotspot has been defined for the object, this is what will be used. If several objects are selected, alignment takes place at the forward edge of the hotspot of the object that was selected last, and is currently located under the mouse cursor. The intervals between the selected projects stay constant.



Grid: Checking the tick box turns snap on globally.

Object grid: This option activates the object grid. This lets objects snap exactly to the edges of other objects.

Snap to range: Activates the range grid with the option to use the current range as the basis for snapping.

Grid/bars: Activates a grid with bars as the basis. The objects snap to the the next beat grid.

Grid/bars (Relative): Activates a grid with bars as the basis. This means that the relative distances between the objects adhere to the beat grid when you move them about.

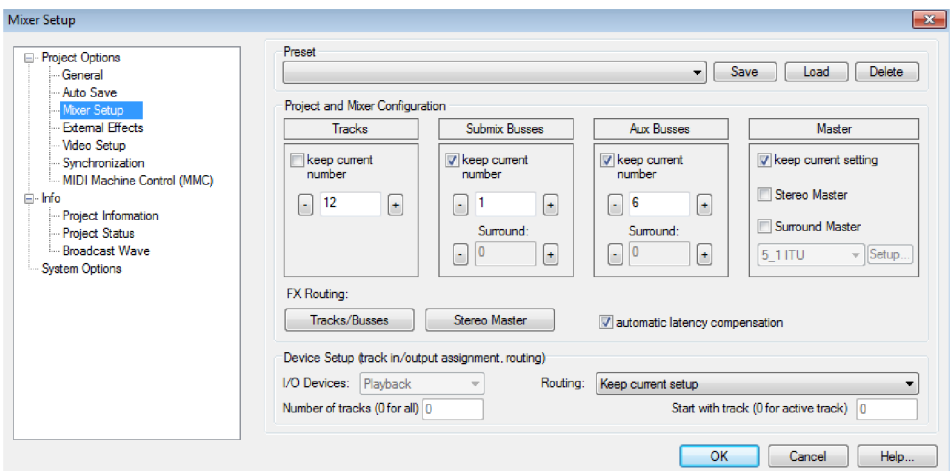
Grid/frames: Activates the frame-based grid.

Snap offset to project start: Here the snap offset can be set relative to the beginning of the project. "Use current position for offset" specifies the current position as the grid's zero position.

Use snap offset also for grid: The snap offset is used as a reference size for the grid.

Mixer Settings

In this dialog you can easily configure, save and load project and mixer settings.



Shortcut: Ctrl + Shift + M

Project and Mixer Configuration

Here you can set the number of tracks, AUX buses and submix buses. You can also determine the effects and signal routing for the tracks and the master section.

Automatic Latency Compensation: Activate this option for automatic latency compensation of VST plug-ins. This is active by default.

Master Routing

- Keep Current Setting: Each track is assigned to an audio device (or a submix bus). The final mix then takes place in external equipment or on the sound card.
- Stereo Master: Normal mixing in the Samplitude Music Studio Stereo Master. If the sound card has several outputs, select one in the mixer (in the "out" bar below the volume faders) or in the playback parameters (shortcut: "P").

Keep Current Number (Tracks, AUX and Submix Buses)

Check this box to prevent the current settings from being overwritten when loading a mixer preset. The current status of this checkbox is also saved along with a preset. If you quickly want to add a few tracks, (e.g. 4 AUX buses and 4 submix buses), you only have to load the "4 Busses 4 AUXes" preset.

When loading a preset, the respective tracks and buses will be added where the box is not checked. In other words, place a check for settings that shouldn't be included in the preset before saving.

Device Settings

In this section you can conveniently select the input and output device assignment for several tracks simultaneously.

I/O Devices: Here you can define the routing for playback, recording or both.

Number of tracks (0 for all) / Start with track (0 for active track): This option permits a change to I/O routing for a certain number of tracks. If you set the number of tracks to 4 starting at track 8, the selected routing setup is applied to tracks 8-11.

Note: To be able to switch these commands to active, you must first replace the "Keep current setup" option in the neighboring "Routing" field with another option from the selection menu.

Routing

Keep current setup: No routing assignment takes place if a preset is loaded.

Assign all tracks to stereo master: All tracks (incl. AUX and submix buses) are routed to the master. **L/R panning** sets the panorama settings for the tracks to alternate between left and right. Use this option if stereo sources are recorded as mono pairs.

Assign tracks to available stereo/mono devices: All tracks are assigned to the individual output devices. In the system options window (shortcut: "Y") you can define which devices are available in Samplitude Music Studio and which are not. When routing in mono, the tracks are set alternately right/left in panorama

Use setup from preset: The settings saved in the preset are used.

Playback Options

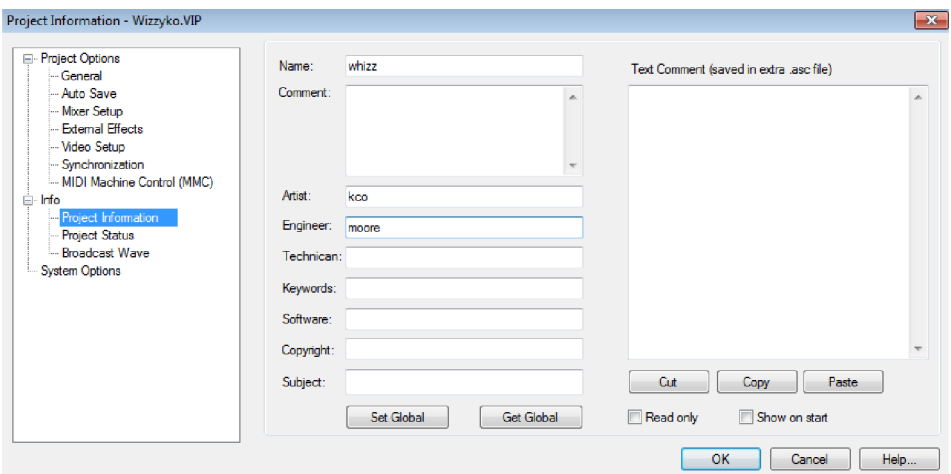
More information is available in "Playback -> Playback parameters (view page 487, view page 385)".

Shortcut: P

Project Information...

Enter information about the project here.

There is also a text field for comments. These may be set to show each time the project is opened.



Project Status...

This indicates all project status information like the name, path, number of ranges, markers and objects, wave files used in the current project, or the date of creation. You can also create a text file which includes all of this information.

CD Arrange Mode

If this is activated, Samplitude Music Studio arranges recently added objects to insert a Red Book Standard-compatible pause between the objects.

Detailed information about "CD arrange" mode is provided in "CD arrange mode (view page 418)".

Destructive Wave Edit Mode

Wave projects can be edited destructively as well as virtually. You can select the desired editing method here. More information about this can be found in the chapter "Audio editing in Samplitude Music Studio" (view page 71).

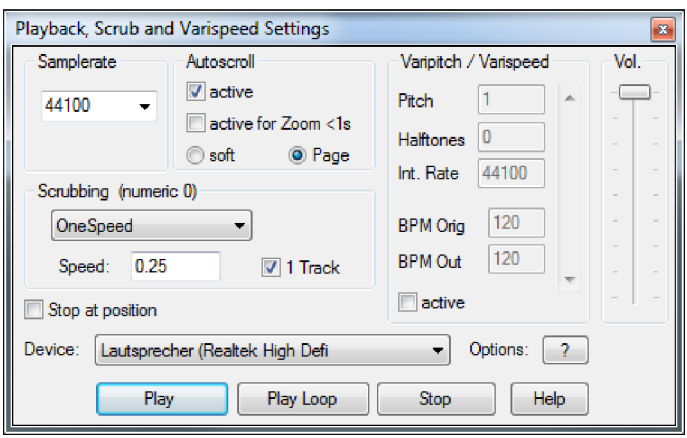
Program Preferences

System / Audio

This menu item opens the system/options (view page 434) dialog where most general project settings can be made for Samplitude Music Studio.

Shortcut: Y

Varispeed / Scrub Settings



In this part of the dialog you can make changes to the playback tempo for virtual projects. Right-click the scrub control button in the transport controls.

Sample rate: The preset project sample rate is displayed here. If you want to change this value, a dialog window appears where you can optionally adjust all audio objects to the new sample rate. The customizing is conducted, if necessary, through moving and resampling. MIDI objects can also be adapted to the new sample rate. These are also moved if necessary without changing the musical position.

Autoscroll / Scrubbing: See "Playback Options (view page 487, view page 385)".

With **Stop at current position**, the playback marker stays at the current position when the "Stop" button is pressed and doesn't jump back to the original position.

With "**Device**" you can specify the driver of the sound card that you want to use for playback.

Varipitch / Varispeed Mode

Vertical slider: This controller defines the playback from -200% to +200%, in which case negative values cause the project to play in reverse.

Pitch: Double-clicking on this field enables the speed factor to be input directly, e.g. 0.5 for half speed, 2.0 for double speed.

Halftones: This field specifies pitch changes according to semitones; a value of -12 causes the project to play an octave lower at half speed, and a value of +12 plays back the project one octave higher at double speed.

Internal rate: Here you can specify the sample rate for the Varispeed calculation. At a sample rate of 44100 kHz, a value of 22050 plays the project an octave lower at half the speed.

BPM orig: Displays the original speed in BPM.

BPM out: Enter the target speed in BPM. Samplitude Music Studio calculates the Varispeed pitch factor from the quotient from the target to the original tempo.

Active: Checking this box activates Varipitch/Varispeed.

MIDI Options...

More details about MIDI settings are provided in "System settings -> MIDI settings".

Synchronization Active

This command activates synchronization.

Shortcut: G

Synchronization

Opens the synchronisation dialog (view page 319). Here you can specify whether Samplitude Music Studio should operate as master or slave, which protocol to use, and which interface should be used to send or receive synchronization data.

Editing keyboard shortcuts and menus

Here you can open the dialog for Editing keyboard shortcuts, menu entries and mouse functions (view page 491).

Edit Toolbars

Samplitude Music Studio lets you customize toolbars however you like. The corresponding editing dialog may be opened by double clicking any toolbar.

- Select an available button and press "**Insert**" to add the selected button to the toolbar.
- Select an available button and press "**Del**" to remove the selected button from the current toolbar.

Reset Toolbars

Resets the toolbars to default settings. Select whether individual toolbars should be reset or if all of them should be reset via "**Reset all toolbars**". If the file "Samplitude Music Studio_TB.ini" is deleted from the Samplitude Music Studio folder, then the default settings will be reset.

Recent File

In the last section of this menu the 10 projects opened last will be displayed.

Edit Menu

This menu features functions that are applicable only to wave projects (e. g. „Copy “ > „Copy as“), and others that are only for VIP projects (e. g. „Insert Silence“).

Edit functions like "Delete > Extract" require a selected range; other functions like "Copy" are available only for active objects. The start and end points of the selected range determine the start and end points of a cut, and the vertical position indicates the tracks that are affected by the edit.

Activate the auto crossfade function and all the newly created fade edges will automatically be made soft or disappear.

Mouse mode

Here you can find available mouse modes You can find detailed information in "Mouse functions and mouse modes" (view page 74).

Note: Not all mouse modes are available in Wave projects.

Object Mode

Detailed information about object modes can be found under "mouse functions and mouse modes > object modes (view page 85)".

Undo

Samplitude Music Studio offers a secure way of tracking your changes in Virtual and Wave Projects, which makes it easier to undo work steps. Up to 100 changes can be kept in the memory using the undo function in "Menu > File > Program Preferences > Undo Definitions".

When editing audio material with destructive effects ("Offline Effects menu"), the Undo option only works when the option "Create copy" is activated in each dialog.

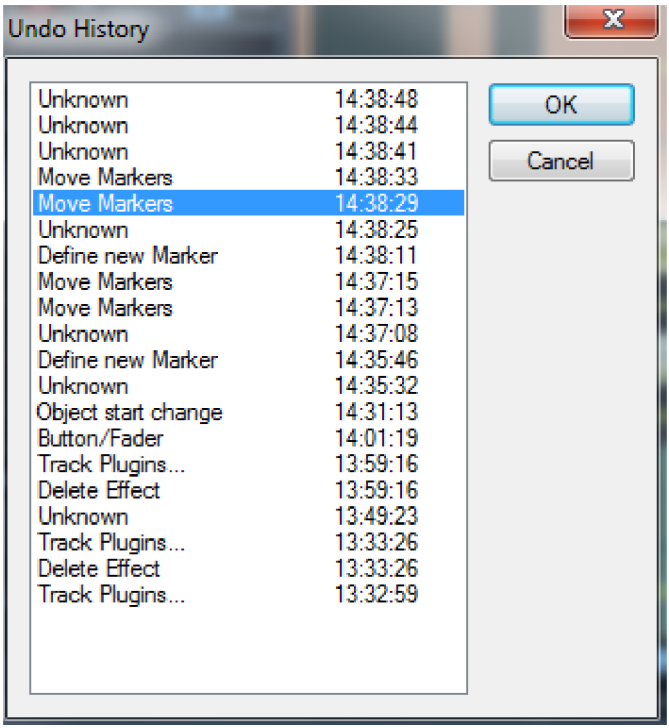
Shortcut: Ctrl + Z

Restore

"Redo" (undoes) the most recent Undo command.

Shortcut: Ctrl + Y

Undo List



A list with the last undo commands will open. You can return to any work stage.

Copy

Copy

The current range is copied into the clip, but is not deleted from the project. The sample or track length remains unchanged. Please note that any previous clip contents are deleted. The properties of the project will be applied to the clip.

Shortcuts: C

Ctrl + C

Ctrl + Ins

Copy as... (Wave-Project)

This function copies the selected range from a wave project into a new file.

Shortcut: Shift + C

Copy + Clear

Copies the current range to the clipboard (clip), removes it from the project, and replaces it with silence.

Shortcut: Ctrl + Alt + C

Cut

Cut

Virtual Projects (VIP)

In the case of virtual projects, the selected area will be copied into the virtual clip (VirtClip) and removed from the active project. The VirtClip, like the virtual projects, does not contain the actual audio files, just the links to them. The VirtClip spans over the same number of tracks as the selected area.

Shortcut: X

Wave projects

The data of the selected range is copied into the clip and removed from the current project. Data behind that range takes its place. The Wave project is reduced in size by the length of the removed segment.

If you cut a piece out of a mono wave project, the clip will be a mono wave project, and if you cut out a piece from a stereo wave project, the clip will also be a stereo wave project. Similarly, the bit resolution and the sample rate from the project are applied. The old content of the clip is overwritten.

After the function has been carried out, the playback marker will be at the cut edge of the removed segment. You can now place the clip back into the wave project with the command "Paste from clip".

Split

Split Objects

Use this option to split all selected objects at the cursor position and separate them into individual objects. If the range is selected, the cut will be made at each border. Ensure that the object that is to be edited is contained within the active range. If necessary, all objects may be activated by double clicking on the range selected in the range bar. In this case, it is not necessary to select the objects beforehand.

Shortcut: T

Split objects at the project marker position

The selected objects are spilt at the positions of the project markers. The newly created objects will be named after the previous markers.

Split Objects at CD Track Indices

The object is split into separate objects at the marker positions within the object borders. The newly created objects will be named after the previous track markers.

Insert

Paste/Insert Clip

The data contained in the clip or VirtClip is inserted at the current position of the playback marker (position line) or at the beginning of the current range.

In the "Link objects" modes, objects behind the insert point are moved to the end. In all other modes, the inserted material replaces the existing objects.

A new area will automatically be defined for the inserted files.

Shortcut: V, Ctrl + V, Shift + Insert

Overwrite with Clip

The current range will be overwritten with the contents of the clip. The length of the clip will not be reduced. The data previously located at this position will be overwritten.

In virtual projects, the selected range determines the start position and track for the clip contents.

Shortcut: Alt + V or Insert

Mix with Clip

The content of the range is mixed with the content of the clip. This command is available only in the destructive wave edit mode. Please note that with this function both components are entered into the mix at 100%, being added together. This can cause overmodulation. You may have to adjust the amplitude of the project by normalizing prior to this.

Crossfade with Clip

The content of the range is crossfaded with the content of the clip. This command is only available in the destructive wave edit mode. In this case, the position of the

playback marker specifies the end of the clip to be faded with the wave project. The length of the clip sets the length of the crossfade.

Delete

Delete

The data in the current range is deleted. The sample data after the deleted range is added at the position the deleted range started. The sample length becomes shorter.

Please note that this command will not save the deleted data to the clip. If you want to preserve the deleted sample data, use the “Cut” command. Using this the “Delete” command will delete the data from the current sample and preserve the contents of the clip.

Shortcut: Del

Extract

Press "Extract" to trim your project by deleting the areas outside of the selected segment.

Virtual projects (VIP)

The extraction function results in all objects outside of the selected segment in a virtual project being deleted. All tracks stay unchanged, even if no object is found in the selected segment. This function is not track-specific.

Individual objects can be cropped using "Object -> Trim Objects".

Extracting Audio Files

In Wave Editing Mode only the part of the audio file below the selected area remains. The data before and after the range is deleted.

Silence

Insert Silence

This command inserts silence to all tracks at the position of the current play or at the start position of the selected range. The objects will be split at this position and the files after it will be added after the silence.

If a range is selected, its length will be adapted as default. The selected range is not adjusted after the operation. It's possible to change the value in the input field. The project is extended by the length of the inserted object.

Replace with silence

The data in the selected range will be deleted. The data behind this will not be moved, silence will be added behind the affected range. The length of the track stays unchanged.

Shortcut: Alt+Del

Tempo

Tempo map...

Detailed information about the tempo map dialog can be found in the chapter "Tempo editing > Tempo map dialog" (view page 302).

Tempo map BPM mode/grid adjustment mode

Detailed information about the tempo map grid fit mode can be found in the chapter "Tempo editing > Grid tapping" (view page 305).

Insert tempo change

This opens the Tempo and time signature dialog (view page 310) to insert a tempo change.

Insert time signature change

This opens the Tempo and time signature dialog (view page 310) to insert a time signature change.

Insert grid position marker

Here you can insert grid position markers (view page 302) at the current playback marker position.

Change Global Tempo

Using the command „Edit“ > „Tempo“ > „Insert Tempo Change...“ You can scale all of the BPM values on selected tempo curve points by a set factor simultaneously.

Ignore all tempo markers, use project tempo only

All tempo markers are ignored, only the project tempo is used.

Metronome active

Activates/deactivated the metronome. This function can also be activated via the "Click" button of the transport console.

Metronome settings

This menu item opens the metronome settings (view page 486).

Range

Range All

This expands the range to include the entire project. Double clicking the timeline or pressing "A" selects the range in the selected track; double clicking again or pressing "A" again selects the range over all tracks, and double clicking or "A" once again restores the simple timeline selection.

Shortcut: A

Manipulate Range

Move Range Start Left

This function moves the beginning of the range in the current arranger window one grid unit to the left. The length of the movement depends on the set grid value. This may be adjusted via "Project options -> General" (shortcut: "I", "Ctrl + Shift + #").

Shortcut: "Alt + ÷" (number block), right arrow

Move range start to right

This function moves the beginning of the range in the current arranger window by one grid unit to the right. The step size is defined by the set grid value.

Shortcut: "Alt" + " * " (number pad), right arrow

Move range end to left

This function moves the beginning of the range in the current arranger window one grid unit to the left. The step size is defined by the set grid value.

Shortcut: "Alt" + " - " (number pad), "Shift" + left arrow"

Move range end to right

This function moves the end of the range in the current arranger window one grid unit to the left. The step size is defined by the set grid value.

Shortcut: "Alt" + " + " (number pad), "Shift" + right arrow

Range to Beginning

Choose this option to extend the currently marked range to the beginning of the project (Wave Project or VIP).

Range to End

Choose this option to extend the currently marked range to the end of the project (Wave Project or VIP).

Flip Range Left

Choose this option to flip the currently marked range to the left (this swaps the start of the marked range to the end of the marked range.)

Shortcut: Ctrl + Shift + left arrow

Flip Range Right

Choose this option to flip the currently marked Range to the right. (What used to be the end of the marked Range is now the beginning of the marked Range.)

Shortcut: Ctrl + Shift + right arrow

Find zero crossings

Beginning of Range -> 0

Choose this option to move the beginning of the currently selected range to the next zero amplitude crossing. "Zero" is the next sample value featuring a ZERO value or that indicates the boundary between a positive and a negative sample value (or vice versa). This function is especially useful when searching for loop points. Remember to zoom into the waveform display far enough so that you'll be able to see the actual changes in the arranger window.

Shortcut: Ctrl + Page up

Beginning of Range <- 0

Choose this option to move the beginning of the currently marked range left to the previous zero amplitude crossing.

Shortcut: Shift + Page up

End of Range -> 0

Choose this option to move the end of the currently selected range to the next zero amplitude crossing.

Shortcut: Ctrl + Page down

End of Range <- 0

Choose this option to move the end of the range left to the previous zero amplitude crossing.

Shortcut: Shift + Page down

0 -> Range <- 0

Choose this option to move the beginning of the range right to the next zero amplitude crossing, and to move the end of the range left to the previous left zero amplitude crossing.

Range start to left marker

Choose this option to extend the Range to the next marker on the left.

Shortcut: Shift + F2

Note: This command also takes set object audio markers into account as soon as they have been selected via menu "File > System preferences > System/audio -> Design -> View options".

Range Start to Left Object Border

The start of the range is set to the next object edge on the left.

Range end to right marker

The end of the range is set to the next marker to the right.

Shortcut: Shift + F3

Note: This command also takes set object audio markers into account as soon as they have been selected via menu "File > System preferences > System/audio -> Design -> View options".

Range End to Right Object Border

The end of the range is set to the next object edge on the right.

Area Above all Selected Items

Choose this option to extend the range over all selected objects.

Remove Range

This command removes the current range from the grid and marker bar. This function is also available by right clicking in the grid and marker bar.

Range Not Over Tracks

This command selects the selected range from the grid and marker bar only, and not in the tracks. Switch between the "Range not over tracks", "Range over current track", and "Range over all tracks" functions by double clicking in the selected range in the grid and marker bar.

Range Over Current Track

This command selects the selected range from the grid and marker bar as well as in the selected track.

Range Over All Tracks

This command selects the selected range from the grid and marker bar as well as in all selected tracks.

Range Length

Set the range starting from the playback marker to lengths of 1, 2, 4, 8 or 16 beats here.

Split Range

Use this function to split the arranger window into three sections. In this case, the upper section displays the entire project in an overview, while the left lower section displays the start of the range and the right lower section displays the end of the range (enlarged sections).

The range borders may be set precisely in the lower sections, provided the grid setting "Grid/frames" is set in the "Project options" beforehand (shortcut: "I").

Shortcut: B

Back to range: "Shift + B"

Store Range

Samplitude Music Studio enables ranges to be stored by selecting the corresponding range number. All current ranges in a project may be viewed via "Tools -> Manager -> Range manager".

Shortcut: Alt + F2 ... F10

"Alt + F4" however, should not be used, since this is a Windows command that closes the current screen. Similarly, "Alt + F9" should not be used either, since this is used for the 4-point cut command in Sequoia.

The "Other..." dialog may be used to define additional ranges featuring freely assigned names.

Shortcut: Alt + F11

Get Range

Open previously saved ranges via this command. Getting a range is also possible during playback. This enables you toggle between various ranges in order to compare them acoustically.

Shortcut: Ctrl + F2 ... F10

Ranges may be named and accessed via "Tools -> Manager -> Range manager".

Get Range Length

Use this function to set the current range to the length of the corresponding saved range.

Shortcut: Ctrl + Shift + F2 ... F10

Range manager

All saved ranges of the current project are displayed in the range manager.

A colored bar highlights the current range.

By selecting a range name, the corresponding range in the project is selected/activated.

In the lower line you can enter/modify the range name. You can also delete ranges and save new ranges in the range manager.

With the "Play once" button you can play the selected range once, "Play loop" activates looped playback. This makes the range manager particularly useful as a jingle player.

Recall Last Range

Use this function to recall the last selected range. Repeated application accesses ranges up to five levels back.

Shortcut: Shift + Backspace

Crossfade

Crossfade Editor

This menu entry opens the Crossfade Editor (view page 277) that allows you to easily set and edit crossfades.

Auto crossfade active

If this option is turned on, then all newly recorded or cut material in a VIP or material copied from a wave project into a VIP track has an automatic crossfade applied to it.

Global settings for fade-in and fade-out parameters are assigned to the object. These settings can be changed with the crossfade editor via "Edit -> Crossfade editor".

If two objects which had an automatic crossfade applied to them are overlapped, a real-time crossfade is the result.

Auto crossfade mode is an excellent tool to easily perform a linear cut of a spoken voice track, jingle, etc. requiring a soft passage without unwanted sounds. If needed, each crossfade can be edited using the editor or by manually manipulating the handles.

Track menu

Insert new tracks

Add one track

The virtual project is expanded by one empty track.

Add several tracks

The virtual project is expanded by one empty track (inserted below the selected track).

Insert empty track

The virtual project is expanded by one empty track (inserted below the selected track).

Insert Several Tracks...

To add multiple tracks, select the command "Insert several tracks". A dialog window appears to select the desired number of new tracks.

New MIDI track

A track is added to the project which is already set for MIDI recording.

New Folder Track

This command adds a folder track in front of the selected track. If a range across several tracks is selected before creating the folder track, each of these tracks will be added to the new folder track.

You can find detailed information about folder tracks in the section "Working in the Project Window" > "Folder Tracks" (view page 70).

New submix / AUX bus

In the "New submix bus" menu item you can add a new submix bus as a new track. The "New AUX bus" option is identical. The new bus is always inserted after the active track.

Cut tracks

All of the tracks that are affected by range selection are copied to the clipboard and deleted from the project.

Copy tracks

All of the tracks that are affected by range selection are copied to the clipboard.

Paste Track(s)

This function inserts all tracks copied into the clipboard (VirtClip) above the selected track.

Delete track(s)

All selected tracks are deleted from the actual VIP.

Track Type

Here you can specify whether the track should be an **audio** track or a **MIDI track**. The track can also be defined as a **submix** and/or **AUX bus**.

Input

Stereo in: The channel input is switched to stereo and the signal will be picked up on two channels.

Mono in: The channel input is switched to mono and the signal will only be picked up on one channel.

Mono mix in: The track input is switched to mono, the signal is recorded like a stereo recording (dual channels), and then mixed into a single channel.

MIDI track record: If you click this menu entry the MIDI section of the track editor will open, allowing you to record MIDI files.

Track size

Minimize none

This option maximizes all tracks.

Maximize track

This option minimizes all tracks except the selected track.

Track Freeze

Track freeze

The selected track is rendered into a wave file which replaces all objects on the active track. Object and track effects are added to reduce the PC's processor strain of having to process effects and plug-ins.

The advantage of track freeze is that the frozen track is saved in a separate VIP and can be edited/recalled at any time. This way it's also possible to work flexibly and to keep resource usage at a minimum even when working with less powerful computers.

Track freeze for AUX buses/submix buses

Bus/Aux bus tracks can be frozen just like regular tracks. This enables a complete group of tracks to release the required CPU load including all effects, fades, crossfades, and automation settings in one step.

Submix bus

- Tracks routed onto the submix bus are not changed but remain instead.
- The submix bus is muted ("Track -> Track options -> Mute bus input").
- The file created while freezing is inserted into the AUX track as an audio object.
- Changes made to the tracks after freezing which are routed to the submix bus have no effect on the signal output while playing.

AUX bus

- Only AUX send settings in tracks are taken into account (not in objects).
- Tracks routed onto the frozen AUX bus are not changed but remain unchanged instead.
- The AUX bus input is muted ("Track -> Track properties -> Mute bus input").
- The color of the AUX send fader (mixer) in the affected tracks is blue.
- An asterisk is added before the name above the AUX send faders (mixer).
- The file created while freezing is inserted into the submix track as an audio object.
- Changes made after freezing to the tracks transmitting to the AUX bus are not updated in the file created while freezing. Therefore, if objects are moved into tracks transmitting to an AUX bus, the audio signal on the corresponding AUX will remain the same.

Track unfreeze

This menu item removes the wave file created during "Track freeze" and brings back the track that was saved in the temporary trackbouncing VIP.

Changes made in this project are applied to the track as well.

Note: If tracks were added in the reference project (the project created while freezing), "Track unfreeze" is not possible.

Track effect settings

Copy / Paste track effects settings

With this command you can copy the complete effects settings of the active track into the clipboard.

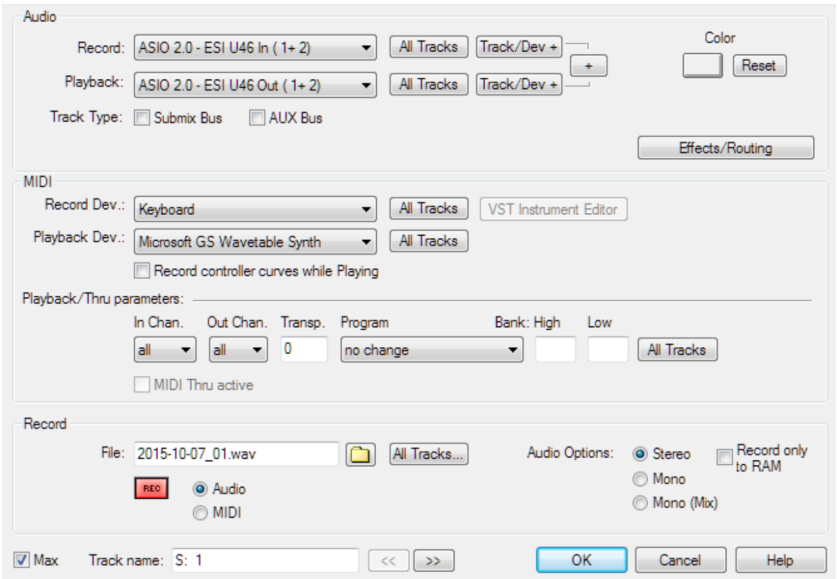
Copy / Paste track effects settings

With this command you can copy the complete effects settings of the active track into the clipboard (to paste it on another track).

Reset track effects settings

Reset all track effects settings to its defaults, i.e. no effects are applied at all.

Track Options...



Audio

Change settings for recording and playback of audio tracks here. These settings also include settings for audio created by VST instruments.

Record: Select the sound card device to record this track here.

All Tracks: Applies the same recording device selected for this track to all tracks.

Track/Dev+: Sets the recording device for this tracks to the next, e.g. if inputs 1 + 2 of the sound card are set, it will be switched to 3 + 4. The button with the "+" sign to the right sets the recording and playback devices to the next ones simultaneously.

Playback: Select your sound card device to record this track. You can also select a bus track.

All Tracks: Applies the same record device chosen for this track to all tracks.

Track/Dev+: Sets the playback device to the next, e.g. if set earlier to outputs 1 + 2 of your sound card, this will be switched to 3 + 4. The button with the "+" sign to the right sets the recording and playback devices to the next ones simultaneously.

Track Type: This indicates if the track is a aux/submix bus. One track may also be both.

Color: Select a color for the corresponding track and its objects.

Effects/Routing: This button opens the effects routing dialog for the corresponding track.

Track Name: Use this field to change the name of the current track.

MIDI

Recording device: Set up the MIDI interface to be recorded.

Playback device: Set up the MIDI interface on which the track's MIDI information will be output.

All tracks: Applies the settings to every track.

Play/Thru parameters

In Channel: If a MIDI channel is set here, then ONLY this will be used for recording.

Out channel: If the MIDI object includes multiple MIDI channels, then you can use this option to filter out other MIDI channels than the one set. Only events for the MIDI channel set here will be output via the MIDI interface.

Transp.: Transposes the played pitch in semitones up or down. Set the value here to 2 and play C2, for example: D2 will be played or recorded. The value 12 transposes an entire octave up; -12 correspondingly transposes down.

Program: Sets the MIDI program for the current track.

Bank Hi (MSB): According to MIDI specification, "Bank Hi" is required if a bank number should be addressed which exceeds the 7-bit MIDI range (0-127 or 1-128).

Bank Lo (LSB): Enter a bank number. If it exceeds 127/128, remove 128 and enter 1 in the "Bank Hi"-field; if higher than 255/256 enter a 2, and so on.

Note: If you need to switch banks and programs within a track, it's recommended that you set this in the MIDI object editor (view page 172), and that you separate (view page 377) the objects at the corresponding positions.

MIDI Thru active: The incoming signal is immediately forwarded to the set output device.

Recording

The section "recording" contains settings for recording from audio and MIDI.

File: Indicate the name of the file to be recorded here.

Assign file name automatically

Click "All tracks" on the right of the file name box and then select the desired command from the popup that opens:

- File name_track number: Transfers the file name of the track to all other tracks and adds the corresponding track numbers to them, for example, funky_01.wav, funky_02.wav, etc.
- Project name_track number: Transfers the project name to all tracks and adds the corresponding track number to them, for example, demo_01.wav, demo_02.wav.
- Track name: Sets the track name of each track as file names for the audio recording, for example, Drums.wav, Bass.wav, etc.
- Track number_track name: Sets the track number and the track name of each track as file names for the audio recording, for example, 01_Drums.wav, 02_Bass.wav, etc.
- Project name_track name: Transfers the project name to all tracks and adds the corresponding track name to them, for example, demo_Drums.wav, demo_Bass.wav, etc.
- Get track name from first object name: This option gives the track name the same name as the first object in that track.
- Get track name from first object file: This option gives the track name the same name as the first file in that track.

REC: Specify whether or not you want to record MIDI or audio here.

Audio options

You may also choose between recording in **mono** or **stereo** on the selected track. A **mono mix** of both device channels is also possible.

The option "**Recording only in RAM**" allows recording to be done directly in the system RAM.

More

Track effects

Please read the chapter “Menu effects”.

Track properties

This submenu enables access to all track properties.

Note: These menu entries are used to operate Samplitude Music Studio using the keyboard. Use the mouse to access these functions faster via the associated buttons in the mixer, track header, or track editor.

Mute: Mutes the active track

Shortcut: Alt + M

Solo: Switches the active track to Solo mode

Shortcut: Alt + S

Solo exclusive: This setting switches the active track to exclusive solo mode, i. e. only this active track is audible. All other tracks are silenced in solo mode.

Shortcut: Alt+Shift+S

Record: Arms track for recording.

Shortcut: Alt + R

Monitoring: Switches manual monitoring for the corresponding track on/off

Shortcut: Ctrl + Alt + Shift + F

Lock: Locks the active track.

Shortcut: Alt+L

Edit volume: Here you can enter a numerical value in dB for the volume.

Shortcut: Ctrl + Shift + K

Pan panorama: Here you can enter a numerical value for the panorama curve.

Shortcut: Ctrl + Shift + P

Global mute: The mute settings for all tracks are switched on/off

Global solo: Enable/disable all solo states of the tracks

Track properties

Here you can edit the properties of the active track. These are:

Mute: The mute button mutes the active track.

Solo: Switches the active track to solo mode.

Solo exclusively: This setting switches the active tack to solo exclusive mode, i. e. you will only hear the activated track. All other tracks are muted, unlike solo mode.

Record: Activates record mode.

Lock: Locks the activated track.

Volume/Pan-curve active: Displays the volume or pan curve of the activated track.

Submix/AUX bus: If the activate track is a bus, it can be defined as a submix and/or AUX bus.

DirectX plug-Ins

Please read the corresponding explanations in the "Effects" chapter.

Activate Previous/Next Track

Use this command to activate the next (lower) or previous (upper) track in the VIP from the view of the currently activated track. With the cursor keys you can conveniently scroll up or down.

Shortcut:

Activate next track	Alt + cursor down
Activate previous track	Alt + cursor up

Object menu

In contrast to the "Edit" menu, all functions in this menu exclusively manipulate selected objects in virtual projects. Selected ranges have no effect with these functions.

Ranges are used to determine insertion points or cut positions of objects. When inserting material into a virtual project, the range beginning has the same function as the play cursor.

Object editor

Use the object editor for object-oriented editing. This way you can quickly and easily edit each selected object independent of your general settings.

Shortcut: Ctrl + O

MIDI editor

This menu point opens the MIDI editor. Here, the content of the MIDI object selected in the VIP can be displayed and edited. Here, you can choose from the matrix editor, drum editor, score editor, event list, and velocity/controller editor.

If a MIDI object is not selected, you will be asked if you wish to create one. If you confirm this with "YES", a MIDI object in the current track is created at the cursor position/start of the range.

Read more about the MIDI editor in the "MIDI editor" chapter.

Wave Editing

This opens the audio file associated with an object in the wave window. The range corresponds precisely to the part of the audio data that the object accesses.

More information about this can be found in the chapter "Samplitude Music Studio Basics" > "Audio editing in Samplitude Music Studio" (view page 71).

Destructive Editing

Destructive audio edit mode is the standard mode when the command "Edit a copy of wave content" in the Object menu is used to open audio files that belong to a VIP object.

Audio files (e. g. Wave files) opened directly through "File -> Open -> HD Wave" are opened in the virtual wave editor by default. This can be changed in the program settings (Y key, "Program" > "General > Open wave projects in destructive editing mode").

Regardless of the mode you load your wave project in, **you can switch between destructive and virtual wave editing through "File -> Project Properties -> Destructive Wave Edit Mode"**. If the box is checked, the extension "destructive" will appear in the title bar of your project.

In destructive mode audio files are edited directly on the hard drive. Changes made in the editing window are immediately applied to the audio file. To be able to undo actions in the opened file in this mode using "Ctrl + Z", you have to activate the undo function for audio files in the program settings ("Y -> Program -> Undo").

Note: At any time, a selected range from an audio file in destructive mode can be transferred to a VIP using "Copy" and "Paste".

Real-time Audio Editing

You can also load audio files without a VIP and edit them in a virtual real-time mode. To do this, deactivate "Open wave projects in destructive editing mode". in the program settings (Y key, "Program" > "General). Now the files that are loaded through "File > Import... > Load Audio file" can be opened in an audio file that works virtually similar to a VIP.

The advantage of this editing mode is that it combines real-time editing of the audio material with the features of non-destructive virtual editing that are the standard in VIPs.

In contrast to destructive editing you will notice the following differences:

The features "Cut", "Copy", "Delete", and "Insert" are non-destructive. The positions where these operations are performed are marked with dotted lines. These operations can be performed in real-time because it is no longer necessary to copy data to the hard drive for undo functions. The edits performed are only applied to the audio file when it is saved.

"Wave editing" mode – volume and panorama curve

Volume and panorama editing is also virtual in "Wave editing" mode. Activate "Volume Draw/Automation Draw" Mode. You can now draw level and panorama curves with the mouse, just like in the VIP.

Real-time Audio Editing - Master Section

If you open the mixer window by pressing the "M" key, you will see a minimized mixer on the master channel. All of the real-time effects that you are already familiar with from the VIP master section are now available for real-time audio editing.

This allows you to use several effects simultaneously during real-time editing. However, during destructive editing only one effect at a time can be written to the audio file.

"Wave editing" mode – auto-crossfade

The auto-crossfade option may be activated during any cut or insert operation in non-destructive wave projects

New MIDI object

A new MIDI object is created on the selected track. After choosing the command, you can select a prefabricated MIDI template (from the subdirectory “Templates” in the Samplitude Music Studio directory) from a small pop-up menu. It deals with normal standard MIDI files which can be copied into this directory or directly exported from Samplitude Music Studio as a template. If only one file is in the template listing, no menu appears the object is created immediately.

New MIDI object in the range

This function creates a new MIDI object in the current track within the selected range.

New synth object

Please read the "Synth objects" chapter!

Edit

Cut objects

The currently selected object is replaced with empty space and copied to the VirtClip. The length of the current project remains and all other non-selected objects remain in their positions. The previous contents of the VirtClip are replaced with the cut object.

Copy objects

To place a copy of the currently selected object into the VirtClip select this option. The contents of the VirtClip can then be inserted into the project using the “Insert objects” option (see below). The previous contents of the VirtClip are replaced.

Insert objects

Objects in the VirtClip can be inserted in the project at the current play cursor position. The other objects in the project maintain their positions. Please note that the newly inserted object might cover portions of existing objects.

Delete objects

The selected objects are deleted from the current project. The length of the current project however remains the same. Previously unselected objects keep their positions. The contents of the VirtClip remain unchanged.

Keys: Ctrl + Del

Duplicate and move

Duplicates all selected objects, that is, a copy is created in the original project at the same point. The original object is underneath (covered). The duplicate can be moved to the new desired position using the mouse (in Object/Universal Mode). Duplication is also possible using drag & drop (in Object/Universal Mode):

If multiple objects were selected before duplication, the Ctrl key should be pressed before moving so that all objects remain selected and are moved together.

This way, you can quickly duplicate objects.

Duplicate objects multiple

This function duplicates multiple objects and places them in a sequence. Another dialog is displayed which allows you to determine how many copies of the selected objects are to be duplicated, the separating distance, and the overall length of the duplication.

This is also another way to build loop objects.

The following parameters are available:

Number of objects: Determines the number of objects created.

Group created objects: All created objects are grouped together when checked.

Delta time: This determines the relative position of each created object to the next (from the beginning of one object to the beginning of the next). The default setting is the length of the selected object. The default setting lines up the duplicated objects without any gaps between them to create a seamless loop.

Duration: Alternatively, the duration can be specified, i.e. the combination of the time difference and the number of duplicated objects.

Build loop object

A loop can be defined within an object with this function. An area which indicates the loop length must be selected in the object first.

The object becomes the loop object, and the number of loops can simply be “raised” using the “length handles” at the bottom of the object.

Loop objects generated like this are ideal for generating long drum sequences from only one drum loop! Loop objects also help to save memory, since in the VIP only one object is handled rather than multiple objects or copies of the same material or very long samples!

Split objects

This function splits or separates selected objects so that individual object sections can be manipulated further. All selected objects are separated at the current play cursor position, resulting in two independent objects.

If a range is selected, the cut occurs on both range boundaries. It is not necessary to select objects prior to choosing the range and using the "Split objects" function. If an underlying object is separated, then the newly created object covers the original underlying object.

Keys: T

Split objects at project marker positions

The object will be split into partial objects at the marker positions located within the object borders; the new objects will be named using the project marker names.

Split objects at track marker positions

The object will be split at the position of the markers located within the object borders; the new partial objects will be named after the track marker names.

Trim objects

This function trims the object borders to the currently selected range borders. The selected range needs to be located within the confinements of the object you want to trim.

Keys: Ctrl + T

Trim MIDI objects

This function moves the object borders of a selected object to the edges of the current range. For this to occur, the range must be fully within the object's borders.

Mute objects

The selected objects will be muted.

Lock objects

Use this option to protect objects from accidental shifting. First, select the objects you want to “lock” in place and activate the lock function. A diagonal line is placed across the locked object.

In the "Options" menu you can specify the functions you want to lock.

Unlock objects

An object can be unlocked so that it can be moved again. All of the objects selected will be unlocked.

Separate MIDI objects according to channels

If a MIDI object contains several channels, you can use this menu item to split it up into several MIDI objects.

Hint: Please note that the created tracks have to be allocated to the corresponding instrument/MIDI device.

Quantization

MIDI Quantization (Standard)

This command conducts standard quantization of the lengths of the MIDI notes of all selected MIDI objects according to the MIDI quantize settings.

Detailed information about quantization can be found in the chapter "MIDI in Samplitude Music Studio > Quantization (view page 203)".

MIDI Humanize Q

This command applies the current **Humanize** value in the quantization options.

Detailed information about quantization can be found in the chapter "MIDI in Samplitude Music Studio > Quantization (view page 203)".

MIDI quantization settings

This command opens the dialog for MIDI event quantization. To find out more, read "Quantize" (view page 203).

Advanced

Start Q / MIDI Start Quantization

This command quantizes the start positions of the MIDI notes for all selected MIDI objects according to the MIDI quantization settings. The grid view corresponds to the start quantization value.

Detailed information about quantization can be found in the chapter "MIDI in Samplitude Music Studio > Quantization (view page 203)".

Start and Length Q / MIDI Quantization (Start and Length)

This command quantizes the start and length of the MIDI notes for all selected MIDI objects according to the MIDI quantization settings.

Detailed information about quantization can be found in the chapter "MIDI in Samplitude Music Studio > Quantization (view page 203)".

Length Q / MIDI Length Quantization

This command quantizes the length of the MIDI notes for all selected MIDI objects according to the MIDI quantization settings.

Detailed information about quantization can be found in the chapter "MIDI in Samplitude Music Studio > Quantization (view page 203)".

Soft Q (approximation quantization)

This command lets you can take the current Soft Q (power) value into consideration while quantizing.

Quantize Note Ends

This command quantizes the end of the MIDI notes for all selected MIDI objects according to the MIDI quantization settings.

Detailed information about quantization can be found in the chapter "MIDI in Samplitude Music Studio > Quantization (view page 203)".

Reset MIDI Quantization

Use this command to restore the original offset of start and length values of MIDI notes for all selected MIDI objects. This enables you to undo quantization at any time (even after the VIP has been saved).

Detailed information about quantization can be found in the chapter "MIDI in Samplitude Music Studio > Quantization (view page 203)".

MIDI Input Q (global)

Use this option to quantize the MIDI recording destructively. The original position may be restored via the menu item "Object -> Quantize -> Reset Quantization".

Object effects

Please read the chapter “Menu effects”.

Select objects

Select objects under playback marker/range

Selects all objects found under the playback marker or selected track ranges.

Select objects

Selects all objects located partially or entirely in the selected range, or at the current play cursor position.

Select all objects

Selects all objects in the arranger window.

Shortcut: Ctrl + A

Object lasso

The normal way to select several objects at once is to click on the free space to the right of the object in the lower area of the track and drag a window out around the selected objects.

Sometimes, however, there is not enough space between the objects. The object lasso solves this problem.

Once activated, you can click on an object and pull up a selection frame without moving the object you clicked on.

Once you selected the objects you want, the mouse returns to the standard mode, and that you will have to reactivate the object lasso each time you want to use it.

Select previous object

Use this command to select the previous object on the same track.

Shortcut: Ctrl + Alt + Q, <

Select next object

Use this command to select the next object on the same track.

Shortcut: Ctrl + Alt + W, >

Select objects > Switch selection

Selects all objects located partially or entirely in the selected range, or at the current play cursor position.

Unselect objects

Unselects the object selection.

Shortcut: Ctrl + Shift + A

Groups

Create group

Orders all selected objects into groups. As soon as an object is selected in the group, all objects in the group become highlighted so that you can work on them collectively.

Shortcut: Ctrl + G

Dissolve group

Turns all selected objects into free-standing objects again.

Shortcut: Ctrl + U

Move object

This menu contains functions for moving the objects themselves and also for moving the wave project within the object. There are also other functions for moving a crosswire between two objects and for changing the loudness of the object.

This menu mainly exists for issuing keyboard commands (visible next to the entries themselves in the menu) and can be changed using the “Keyboard shortcuts and menu editing” function.

In the picture shown here the menu contains the standard settings for the keyboard commands.

Commands for moving objects can also be found in the lower toolbar (range bar).

Object to play cursor position

This moves the selected object to the actual play cursor position.

Move objects step-by-step

Samplitude Music Studio contains a complete set of functions for object and crossfade editing. Simply select two overlapping objects; only select the corresponding object for object editing. Use the "Ctrl" key to select the left object and the "Alt" key to select the right object.

Object(s) to the left	Ctrl + Alt + 1
Object(s) to the right	Ctrl + Alt + 2
Object start to the left	Ctrl + 3
Object start to the right	Ctrl + 4
Object end to the left	Alt + 3
Object end to the right	Alt + 4
Crossfade to the left	Ctrl + Alt + 3
Crossfade to the right	Ctrl + Alt + 4
Increase volume	Ctrl + Alt + 8
Reduce volume	Ctrl + Alt + 7
Object content(s) to the left	Ctrl + Alt + 9
Object content(s) to the right	Ctrl + Alt + 0

Please note the useful "Object content to the left/right" functions. Here, object length and object position are kept, the assigned audio material from the corresponding wave project is moved into it.

Snap point (Hotspot)

Hotspot

The current play cursor position is turned into a reference point for the snap function. Instead of the object's beginning, the hot spot is now used when the object is snapped to the grid. Stroked vertical lines illustrate hot spots, and hot spots may stand outside an object (in front of or behind the object). This function is very useful for a case where the portion of an object to be synchronized does not line up with its beginning.

Delete hotspot

The set hotspot is removed, the object snaps again to the object start when the object grid is switched on.

Object color / name

Object name

The selected new name is applied to all selected objects.

Object foreground color

After selecting the desired color, all selected objects in the project will have the same foreground color.

Object background color

The background color selected in the color grid is applied to all objects.

Tempo and beat recognition

This menu entry opens the Tempo and beat recognition (view page 280, view page 280). Tempo and beat recognition is a powerful tool for determining the BPMs (beats per minute) and the time position of quarter note beats of any song. This is important, for example, when a track on an audio CD has been imported into Samplitude Music Studio and other sounds like drum loops, effects, or synthesizer voices are to be mixed in.

Playback / Record menu

Play once

The project or the range is played once.

Shortcut: Space bar

Play loop

The project or the range is played in a loop.

Shortcut: Space bar

Play in range

If you have specified a range, selecting this menu option (or button) will start playback of the sample from the beginning; enter the range and continue to loop through the range until you press stop. This mode is very useful for testing loops for instrument samples.

Shortcut: Space bar

Play with preload

All buffers are loaded and the playback is ready to be started. Another window will appear with which playback can be started at your convenience. No delays will occur. This function is useful on slower systems and if synchronization must be started in manual mode and an exact start has to be performed.

Keys: Shift + Space bar

Play only selected objects

Only selected objects will be played. All not selected objects will be muted. If the play cursor is not located at the beginning of the first selected object, it will be moved there.

Shortcut: Ctrl + Spacebar

Restart playback

Choose this option to restart playback from the original play cursor position.

Stop

The playback is stopped for all projects types.

Stop and go to current position

The playback is stopped; the play cursor goes to the current position.

Playback mode

Loop Mode

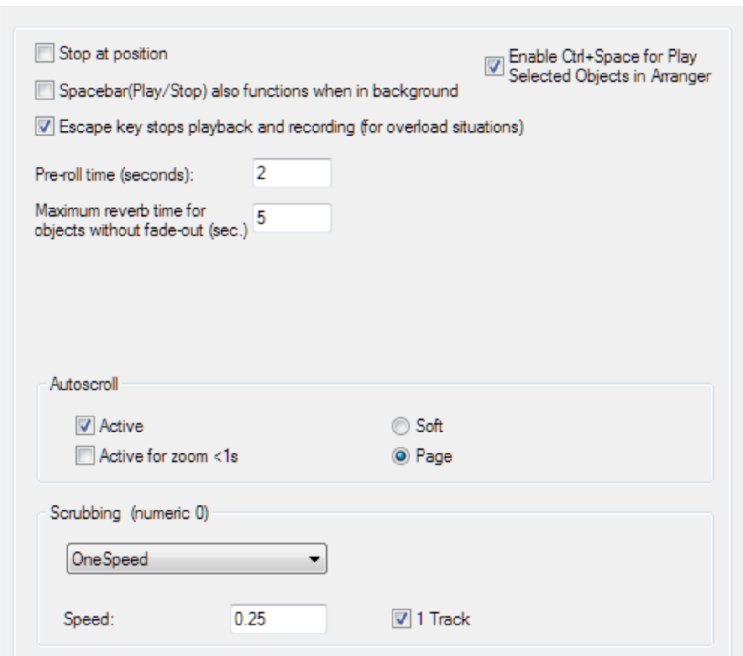
This mode plays the selected ranges in a loop. This corresponds to switching on the "Loop" button in the transport control.

Change play direction

The playback direction can be changed even during the actual playback.

Playback parameters

This option opens the playback parameter window.



Shortcut: P

Check the "**Stop at current position**" option if you want the playback marker to remain at the same position after stopping playback. If this option is not active, the playback marker will jump to the original position or back to the start of the range when playback is stopped.

The option "**Spacebar (Play/Stop) also functions when in background**" allows the spacebar to be used for "Play" and "Stop" in Samplitude Music Studio while using a different software application.

An additional function can be used in the case of CPU overload, i.e. "**Escape key stops playback and recording (for overload situations)**".

The **pre-roll time** is a necessary parameter for editing in Samplitude Music Studio. Pre-roll time is used to define the time section in seconds which is to be played before the start of the selected range.

Here the **Maximum reverb time for objects with no fade-out (sec.)** can be set up to 60 seconds.

Note: Please note that long reverberation times can lead to performance problems.

To use **cue mode** you have to specify whether playback control will be carried out at the **object edges** or the **CD track indices** (track markers). You can also ensure that the **the first track in cue mode is set to „Solo“**. Here you can enter the **pre-roll in milliseconds** which determines the delay between the execution of the record command and the actual start of the recording.

Detailed information about Cue Mode is available in "Play / Rec > Playback mode > Cue Mode".

With **Autoscroll** the graphical display constantly moves even before the playback marker leaves the visible section. This provides a constant overview. Switch to Autoscroll Mode by checking "**Active**". "**Active for zoom < 1 s**" causes autoscrolling to begin at very high zoom levels of less than a second.

You can choose between "**Page**" and "**Soft**" autoscroll modes. With page scrolling, the section changes before the playback marker moves outside the section, while with soft scrolling, the playback marker always remains in the middle of your chosen section and the arrangement moves along beneath it. At smaller buffer sizes (e.g. < 4096 samples), scrolling will be softer.

Note: The autoscroll process can overload the processor in some cases which may lead to dropouts during playback. Deactivate Autoscroll Mode if this happens.

Scrubbing

If you press "**0**" on the number pad or the key combination "**Alt + Shift + Page down**" and hold these keys down, Samplitude Music Studio switches to "Scrub Mode".

This provides special control via the mouse over the selected track's playback speed.

The keyboard shortcut for scrubbing to the left is "**Alt + Shift + Left arrow**"

The keyboard shortcut for scrubbing to the right is "**Alt + Shift + Right arrow**"

There are four different scrubbing modes to choose from:

Shuttle: The relative distance between the playback marker and the mouse position is used to control the speed. The playback marker follows the movement of the mouse. The further you move the mouse from the playback marker, the faster playback will be. This means:

Scrub control faders at the left edge = double speed backwards,

Scrub control fader in the middle = no movement,

Scrub control faders at the right edge = double speed forwards.

Absolute: Use the absolute position of the mouse in the window to control the speed.

Two speed: Two speeds are provided for scrubbing. The object plays back slower or faster depending on the distance between the scrub control fader and the mouse position, in which case slow scrubbing at a speed of 0.25, or 1/4 of the original speed is preset, and fast scrubbing is set to 1.0, i.e. the original speed. Change the value for slow playback in the "Speed" field.

One speed: The preset scrubbing speed is 1.0, i.e. original speed. The "Shift" key reduces this value by half. The "Ctrl" key uses the speed set in the "Scrubbing speed" field.

Scrubbing speed: This specifies the factor of the original speed applies to the scrubbing speed. The range of values stretches from 0.01 to 10.0, i.e. 1/100 of the original speed up to ten times the regular speed.

Scrubbing only on active track (1 track): If this check box is active, Samplitude Music Studio will only scrub the active track.

Global play device: Specifies the sound card driver for playback.

Record

Start audio recording according to the Recording options.

Shortcut: R

Record mode / Punch in

Play while recording

This option corresponds to the option in the recording options with the same name.

Record without playback

Use this option to record without playing the VIP.

Punch in mode active

This option activates the punch mode. Punch in and punch out are processes for automating the recording start and end of an audio segment. Once punch mode is active, the punch in record feature can be used to record audio segments without stopping playback.

The requirement for this mode is an armed record track. Use the “Rec” button on each track to select it for punch recording!

Punch recording can be done in two ways:

1. Punch in/ out “On-the-fly”: This allows you to start the recording (punch in) at any time during the playback. Once the recording commences, it can be stopped at any time (punch-out), while the playback continues.

This is very similar to tape based multi-track recorders, which allow you to correct mistakes during previous recording takes by overwriting segments of the tape.

Simply start the playback with the space bar. Punch-in recording can be started by clicking "Punch record" in the toolbar.

2. Punch in/ out with markers: The second method is to punch in and out of recording using special markers. This is a more automated way of dealing with punch-in/-out recording. This is useful when specific punch in and punch out points are determined and you don’t want to take any risks in possible punching in or out of the recording. "Punch in and out with markers" lets you specify the exact points where the recording should start and stop. To operate in this mode, a range has to be selected which defines the beginning and end of the recording. The "Set punch-in marker" and "Set punch-out marker" functions are used to tell Samplitude Music

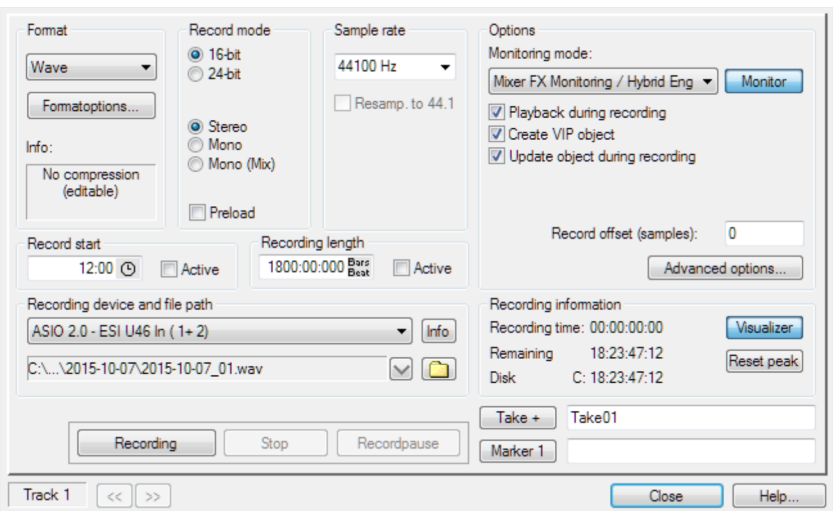
Studio where to punch in and where to punch out. Next, set the play cursor to an appropriate position prior to the punch-in point and start playback/recording with the "Punch record" button in the "Punch" toolbar.

Important: When working with the punch in/out functionality, make sure that "Auto crossfade" mode is activated by clicking on the corresponding button in the toolbar. The auto crossfade will create smooth transitions between the takes. This helps to prevent little pops and clicks!

There is also a way to perform looped punch-in recording. Simply select a range over the desired punch region. The range is played back until you stop the playback with the space bar. Each time the program loops through the range, new takes are recorded at the punch markers. To find the best take after the recording is completed, use the take manager!

Recording Options

This menu option opens the Record window. All recording settings can be changed here.



Shortcut: Shift + R

Format: Set the corresponding recording file format (Wave, MP3, MPG, WMA, Real Audio, AIFF, Ogg Vorbis, and FLAC). In the infobox below, you'll find information about each of the formats available. This way you can see if the format is editable in Samplitude Music Studio as well as the compression it uses.

Bit rate: Select the desired bit rate here for your recording.

Recording mode: Choose between stereo, mono, and mono mix.

- If you select "**Stereo**", the channel input will be switched to stereo, and the signal will be picked up on two channels.
- If you select "**Mono**", the channel input will be switched to mono, and the signal will be picked up only on one channel.
- If you select "**Mono (Mix)**", the channel input will be switched to mono, and the signal will be picked up on two channels, and then mixed together.

Preload: The recording is prepared and all buffers will be loaded. Thereafter, the message "Data loaded. Waiting to start..." appears. As soon as you press "OK", the recording starts without any delay.

Sample rate: This option allows you to select the sample rate of the recording. Take note that your audio card must support the selected sample rate.

Resampling to 44.1: If you have set a sample rate of 44,100 Hz and then activate this option, Samplitude Music Studio will apply resampling at 44.1 kHz. The quality of resampling may be set via "**System options -> Effects -> Resampling/Bouncing.**".

Recording start: Set the recording start time in this field. The recording is then controlled automatically by the internal system clock to a specific time.

Recording length: Specify the recording length in this field. Using "Recording start" and "Recording length" you have the option of executing timed recordings even when away. "Recording" is armed as soon as Record has been activated and starts at the set time for the set length. If no length has been selected, recording continues until the hard disk is full and then stops automatically.

Record device: Here you can select the sound card driver that should be used for recording. If there is no entry here, or a wrong one, then the card is not installed in Windows correctly. Use the "Info" button to find out the recording properties of the recording device.

File path: Specify the path to the files where the data should be recorded. The yellow folder button opens a query for selecting the path and file name.

Further Recording Options

Monitoring Mode

Detailed information about monitoring can be found in "System Options" > "Monitoring Setup" (view page 436).

Monitor: Use this button to activate the LED control displays. Please note that the recording device must be selected prior to beginning this. During recording the LED level displays move slower, but still show each maximum level.

Play while recording: Activate synchronous recording and playing here if this supported by your sound card.

Note: If you want to record and play over multiple sound cards, small differences may result during playback of longer passages. This is a result of sample rates of cards which are not 100% synchronous. Ideally you should use the same card for recording as you do for playback if possible. If your card creates a delay between the start of recording and the start of playback, you can balance it out in the "Record Offset" field. To do so play a sample with a noticeable impulse and record it using a loop from the sound card's output to the sound card's input. Then zoom into the Arranger to such a depth that you can precisely pinpoint the offset value.

Create VIP object: Specify via this mode whether or not all recordings should be integrated automatically into a virtual project. The created objects are named with the specified object names.

Update object during recording: This object updates the graphical display of the object while recording.

Recording offset (samples): If recordings exhibit a constant, undesired shift in relation to the existing audio material in the arrangement, set an offset here which can be used for positioning all recordings.

Advanced options: Detailed information about advanced options is available in File > Program Preferences > System/Audio > Record".

Recording information: This area provides information about the last recording that was made, i.e. **Recording time** (length of the recording), **Remaining time** (remaining recording time), and **Drive space** (remaining storage space on the hard disk being used).

Visualizer: Opens or closes the visualization window.

Reset Pk.: Reset the visualization's peak hold display.

Record: Click this button to start the actual recording.

Note: Please note that during active external synchronization as a "Slave", recording does not start immediately, but rather when the master starts.

Stop: Ends a running recording process (Shortcut: S)

Recording pause: Use this button to interrupt the recording process. The playback marker continues to run. Pressing "Recording pause" again restarts the recording from wherever you want it to continue.

Take +: Each object or take number (Take 1, Take 2...) is given a marker so that it can be found again quickly.

The Take Manager (view page 295) is ideal for managing the individual takes.

Marker 1: While recording, the option is available to select a marker at the current position of the playback marker, e. g. to mark a take with errors for correction later on.

Close: Use this button to exit the recording options window.

Monitoring

New, more flexible input signal monitoring is now available via ASIO driver support.

Monitoring > Input monitoring on/off

This function activates/deactivates the input monitoring (corresponds with “Rec M” button on the transport control). When actively monitoring, the input signal of the tracks for active monitoring (loudspeaker button in the VIP or mixer is activated) are played according to the selected monitoring type at the output. Furthermore, the LED peak meters in the VIP and mixers react according to the input signal.

Note: If the "Rec" button is activated on a track, then the loudspeaker button is activated simultaneously in order to switch on monitoring.

Monitoring > Tape player monitoring

The preset method for monitoring, similar to tape players and familiar from earlier versions of Samplitude Music Studio:

When "Stop" is displayed, the input signal is rendered, "Play" renders the track contents, "Record" renders the input signal. If the option is deactivated, the user has to choose whether the input signal is shown or not. Use the "Force monitoring" button (small loudspeaker symbol beside/above the peak meter in the VIP/mixer).

No audio monitoring (only peakmeter)

This corresponds with the normal characteristic of the VIP: The peak meter of the tracks displays the level at the sound card input.

Monitoring > Software monitoring / Software FX monitoring

Software monitoring for cards with ASIO drivers is also possible if the card does not support hardware monitoring (ASIO direct monitoring).

Software FX monitoring also calculates the track effects into the monitoring signal with the exception of all high latency-affected FX inserts. The amp simulator, however, is applicable. Samplitude Music Studio can therefore also be used as an effects device to play live directly.

If you need all of the mixer effects, then use the conventional live input mode (functions without ASIO, but is afflicted with higher latencies).

Furthermore, software or software FX monitoring must be active to be able to play VST instruments live using the "MIDI in" port.

Move Play Cursor

to Beginning

This option positions the playback marker at the beginning of the project.

Shortcut: Home

to End

This option positions the playback marker at the end of the project.

Shortcut: End

to Range Start

Sets the start position of the playback marker at the beginning of the currently selected range.

to Range End

Positions the start position of the playback marker at the end of the currently selected range.

to Start of Section

This option positions the playback marker at the beginning of the visible section.

Left/Right Move in Page/Scroll Mode

Use these commands to move the playback marker to the right or left.

In "Page" mode, the playback marker moves across the screen to the end of the visible section; at that point, the window view shifts to the start of the following section.

In "Scroll" mode, the playback marker jumps to the middle of the section and remains there as the project moves through it.

Shortcuts:

Movement in "Page" mode: Right arrow/left arrow

Movement in "Scroll" mode: Alt + left/right arrow

Note: Once a range open is open, use the "left/right arrow" keys to control the beginning of the range.

Object Border Left

The playback marker jumps to the left to the next object edge in the selected track.

Shortcut: Ctrl + Q

Object Border Right

The playback marker jumps forward to the right to the next object edge in the selected track.

Shortcut: Ctrl + W

Marker Left

The playback marker jumps to the left to the next marker in the arranger window.

Shortcut: Alt + Q

Marker Right

The playback marker jumps forward to the right to the next marker in the arranger window.

Shortcut: Alt + W

Section to play cursor/last stop position

If you have not selected the option "Stop at current position" in "System options > Playback", then the play cursor may be set to the last stop position with this command.

Shortcut: Ctrl + Alt + ,

Repeat Last Position(s)

This command jumps the playback marker to a maximum of 5 previous stop positions.

Shortcut: Backspace

Marker

Marker with name

Sets a marker at the cursor position. In the dialog that opens, you can give markers names.

Shortcut: ?

Markers with auto numeration

Sets a marker at the cursor position. Every marker set in this way will be number consecutively.

Shortcut: Shift + ´

Place marker at recording position

If this option is activated, a marker will automatically be set at the positions where recording starts.

Shortcut: Alt + ?

Set marker

An indefinite number of positions can be saved at the start position of the playback marker (position line). This enables you to set markers.

Shortcut: Shift + 1 ... 0

Jump to marker

The new start position of the playback marker (position line) is set at the saved position of the corresponding marker number. Playback continues from the new start position. Please note that the range between the new start position and the end of the sample is played back.

Shortcut: 1 ... 10 (via the alpha keyboard)

Markers on range borders

This function sets two markers to the beginning (S) and the end (E) of a selected range.

Set markers on silence

This function sets markers on silent regions in the sample (only in wave projects, i.e. HDP or RAP). You can choose the minimal length of the pause, a threshold level, the start number, and a prefix for the marker name.

This is very useful to select the regions of sample CDs, etc.

Min. time (ms): This is the minimum length in ms of a "silent" area.

Threshold (dB): This is the maximum volume of a "silent" area. The level of the area in the project will be set on the level of the threshold in the graphic display!

Starting number: The markers will start to count from the number you type in this dialog box.

Prefix: This allows you to insert additional symbols (letters would be appropriate), which will be placed in front of the marker-numbers. By doing this, you will able to distinguish between new and older markers.

Rename Marker

If a marker is selected in the marker list (by clicking it), then this function may be used to rename it.

Delete marker

The selected marker will be deleted.

Delete all markers

All markers of the project will be deleted.

Delete Markers in Range

All the markers in an activated range are deleted.

Set start marker

This function/button sets the punch-in marker

Set end marker

This function/button sets the punch-out marker.

Remove punch markers

This function/button deletes the punch-in and punch-out markers.

Insert tempo change

This opens the Tempo and time signature dialog (view page 310) to insert a tempo change.

Insert time signature change

This opens the Tempo and time signature dialog (view page 310) to insert a time signature change.

Insert grid position marker

Here you can insert grid position markers (view page 302) at the current playback marker position.

Ignore all tempo markers, use project tempo only

All tempo markers are ignored, only the project tempo is used.

Marker manager

The marker manager lists all of the markers contained in the current project and makes it possible to jump directly from the list to them or to play them.

Shortcut: Ctrl + Shift + Alt + M

MIDI record modes

The MIDI record modes define how the newly recorded MIDI data is inserted into the VIP if there are already MIDI objects at the recording position.

Normal

In this recording mode, a new MIDI object is created over the existing object for each recording. All objects are maintained. This way, you can record multiple takes of a passage and then compare them to the object with "Alt + right click".

Overdub

In this mode, the data for each new MIDI recording is mixed with already existing takes.

Replace

In this mode, MIDI files of the existing object will be replaced with newly imported ones. If you record over several objects, these are combined into a single new object.

MIDI panic – All notes off

This command sends a note off command to all MIDI devices which are not deactivated in the MIDI options for all 128 notes on all 16 channels. Furthermore, sustain (Controller 64) is switched off and the pitch wheel and modulation are set to 0. In addition, an all notes off command is sent to all VSTi's used in the project.

If MIDI tracks or objects exist in the project, the same function is also accessible by clicking the stop button in the transport console or toolbar when the project is in "STOP" state.

Automation Menu

First entries in the automation context menu

The first entry indicates which parameter you have automated, e.g. **Effect 0 volume** or **Effect 1 pan**. By checking the corresponding entry you can activate the corresponding automation curve. If you haven't activated an element, **No effect (track)** will be displayed.

Edit selected curve

Curve generator

This menu item opens the curve generator.

Invert

This command inverts the activated automation curves.

Thin Out

This function "thins out" the activated automation curve by reducing the number of automation events. During recording, the automation events are placed in very short intervals. The "Thin out" command reduces the number of curve points. The course of the automation is then displayed and reproduced more accurately.

Inactive

Use this command to deactivate the selected automation curve.

Curve Color...

This command displays a color palette to specify the color of the active curve.

Copy, Paste, Delete

The active automation curve may also be copied, pasted into other tracks, and deleted.

Delete All Curves

This command deletes all automation curves in the corresponding track.

(Track) Automation Mode

Specify the track automation mode here. "**Copy to All Tacks**" applies the currently selected automation mode to all tracks/channels. Select "**Write Only Existing Curves**" to apply the automation data to existing automation curves only.

Detailed information about the automation modes is available in the chapter "Automation -> Automation modes".

Hide Automation

Use this option to deactivate the display of automation curves for all tracks.

Show Track Automation

Select this display option to display only the track automation.

Show Only Selected Curve

Views only the selected curves for the corresponding track. This helps to maintain a clear overview if several automation curves have been created.

Show all curves (not selectable)

The deselected automation curves are grayed-out. They cannot be activated with the mouse.

Show all curves (selectable)

The deselected curves are also shaded, but may now be activated with the mouse.

Effects Menu

This menu entry provides fast access to the relevant real-time effects at object level. Correspondingly, menu entries for all object effects are provided here.

Note: All effects opened using this menu are calculated destructively, provided the option "**Apply effects offline**" is active. The option to work with a copy is available in order to preserve the original audio material. The "**Create copy**" option is already selected in the corresponding dialog.

Amplitude / Normalize

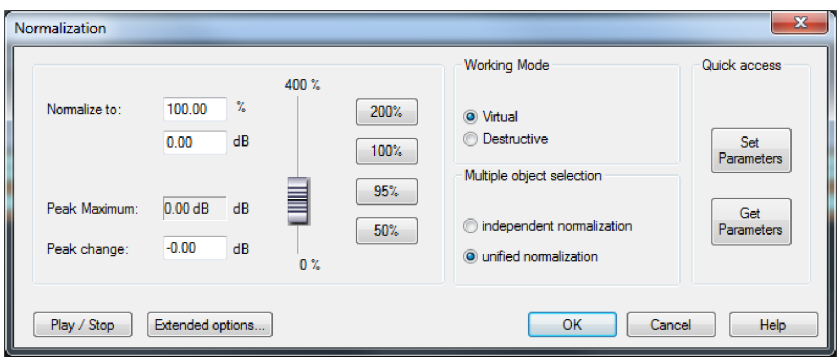
Normalize

Use this function to change the amplitude of the sample data. It will be amplified in such a way that the highest amplitude that appears in the range is set to 100% (or another value between 1% and 400%) of the value range. In this case, the maximum is first detected and calculated with the selected percentage value. All values are then weighted by the new factor.

Use this function to fully modulate samples or overmodulate targeted audio segments. Note that the noise level also rises during normalizing.

This function is especially useful when converting from high to lower bit rates. This guarantees that the otherwise low dynamic range is used to its full extent at lower rates.

Shortcut: Shift + N



Note: If you experience very slight clipping during recording and then proceed to normalize the material, you won't achieve the same quality as when you produce an overmodulated recording! For example, if you only modulate half of the material,

then your recording will have a quality of 15-bit samples – normalizing to 100% will not change anything.

Normalize to: Set the value which the audio material should be normalized to by entering it into the input field, moving the fader, or selecting one of the presets (50, 95, 100, or 200%). The value will be shown in % and dB (100% = 0 dB = max.). Values above 0 dB will cause digital clipping.

Level maximum: This indicates the highest resulting volume for the selected range or object in the corresponding setting.

Level change: Displays the level change in dB according to the selected normalize level and the detected level maximum.

Quick Access

Set parameters: Use this button to make the settings of the normalization function accessible via quick access.

Get parameters: Use this button to get the current quick access parameters in the dialog.

Normalize (Quick Access)

This function enables the specified settings in the "Normalize" dialog under "Quick access -> Set parameters" to be used immediately.

Shortcut: N

Amplitude / Normalize > Loudness adaption

This function raises the sound volume of all objects to the maximum level without the clipping the material. Unlike the master normalization function, each object is normalized separately. It serves the purpose of reconciling finished songs (each as one object) in volume. This makes the volume of the songs uniform.

Titles with full volume control can still sound different, since a crucial factor in the perception of volume is also the relationship between the soft and the loud parts of a piece of music. The average loudness (RMS) of the song therefore has to be identified in addition to the absolute level (which is the loudest part of the song) and the object level has to be adjusted accordingly.

Therefore, it may happen that songs with high peak values but a lower level of loudness are normalized to a value above 0dB (full volume). In order to avoid clipping, the limiter (see MultiMax) is activated automatically.

Tip: Volume fluctuations within a song can be removed with the “Leveler” presets in MultiMAX.

Amplitude/Normalize > Fade in/out

This function allows sample ranges to be faded in or out. The amplitude is varied according to time characteristic from the beginning start value to the range's final end value. When the function is activated, a window appears to specify the operations's parameters.

A simple fade-in operation would be performed with the parameters from 0% to 100%, whereas normal fade-out requires specification from 100% to 0%. Of course, you can also try other values to achieve interesting results. The transitions can be created with different curve types, from logarithmic to exponential.

Please note that high-performance real-time fade and crossfade options exist in virtual projects, which normally eliminate the requirement of using destructive fade routines.

Shortcut: F

Amplitude/Normalize > Set zero

Sample data values in a selected range are set to zero to eliminate noise and imperfections in a sample (reversible).

Dynamics

Rack Compressor...

Access the compressor from the FX rack.

Multimax (Offline)

The Multimax effect from the mastering suite can be accessed here. As an object effect, this elaborate effect module can only be used offline, i.e. the effect is calculated destructively into a file copy.

efx_Compressor

The **(essential) eFX Compressor (view page 148)** is a simple, efficient tool for reducing dynamics with soft characteristics and adaptive control processing. It is a very musical compressor.

AM-Track SE

The AM-Track SE (view page 115) vintage compressor can be accessed here.

Frequency/Filter

Rack equalizer

Access the graphical equalizer of the FX rack here.

Parametric EQ

Access the parametric equalizer (view page 102) of the FX rack here.

Vintage Filter

Opens the Vintage Effect Suite Filter (view page 126)=.

Delay / Reverb

Delay/Reverb

Access the echo effect (view page 104) from the FX rack here.

Reverb

The reverb effect (view page 106) from the FX rack.

eFX_StereoDelay

Opens the Stereo Delay (view page 146) in the essential FX (view page 410).

Vintage Delay

Opens the Vintage Effect Suite Analog Delay (view page 128).

Time / Pitch

Resampling/Time stretching

The "Resampling/Time Stretching/Pitch Shifting" dialog for changing the pitch or speed (view page 162) can be accessed here.

Vocal Tune

The Vocal Tune effect (view page 138) can be accessed here.

Distortion

Vintage Distortion

Opens the Vintage Effect Suite distortion effect (view page 130).

Vintage BitMachine

This opens the BitMachine (view page 131).

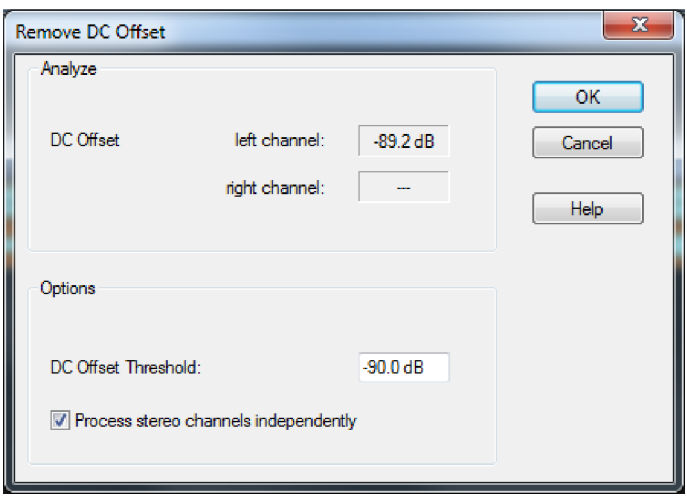
Vandal SE

Vandal SE is a high-quality guitar amplifier simulation that will raise the heart rate of any guitar fan!

Restoration

Remove DC offset (offline)

This function removes the DC offset of an audio file/object. This is useful if the sound card overlays a recording of your sample with a constant DC offset, which may cause clicks during cutting or editing.



Options: Here you can enter a minimum DC offset threshold, which would indicate where DC offset removal will kick in. If you unclick the corresponding check, stereo channels will be edited together. This serves to save computational time, especially when working with long files.

DeClipper

If the input level of an audio recording is too high, distortion may result at the louder parts (the signal peaks). This digital distortion is also called "clipping". At the overmodulated area, the values that are too high are simply cut off and the typical, annoying crackling and distortions are heard.

Samplitude Music Studio has a special function for dealing with digital clipping.

Distorted sections are discovered and filtered out based on the material in the selected object. Lastly, the master volume of the material can be reduced so that the interpolated parts can be played back without distortion.

The declipping algorithm is particularly good for audio material with clearly audible clipping, e. g. distorted piano or vocals. The sound of distorted drumbeats on the other hand is hardly ever improved.



Peak meter: The peak meter displays the input signal, the output signal, and the level of the declipping.

Clip level: Enter the level at which the algorithm registers the samples as distorted and corrects them if necessary here. This is important, as different sound cards show different clipping methods.

Stereo / Phase

Switch channels

This function switches the left and right stereo channels.

This is useful for correcting recordings with switched channels. This function can be reversed if you don't re-select the range; opening it again will bring back the original material.

Stereo processor

Access the stereo processor from the mastering suite, which may be used here as an object effect,.

Invert phase

The sample data is inverted along the amplitude axis, which means that negative values become positive and vice versa. This function allows you to adjust recordings with different phases to one another.

An incorrect phase occurs if during an analog recording parallel cables are switched. To correct such errors, some mixers have a switch that can be used to invert the phase of an input. If you press the switch by mistake, errors might occur as well.

This function is reversible, so if you repeat it, the original signal is restored.

Modulation / Special

Vocoder

The vocoder (view page 110) can be accessed here.

eFX_ChorusFlanger

This opens the Chorus/Flanger effect in the essential FX.

eFX_Phaser

Opens the Phaser in the essential FX.

eFX_Vocalstrip

Opens Vocal Strip (view page 157) from essential FX.

Vintage Chorus

Opens the Vintage Effect Suite chorus (on page 135). Chorus is one of the most familiar and popular effects.

Vintage Flanger

The Flanger (view page 137) is a relatively unknown effect, but it is useful in many areas and is an indispensable part of the Vintage Effect Suite.

Vintage Tape Simulation

Using Tape Simulation you can give digital recordings the missing warmth of the tape saturation effect produced by analog equipment.

Reverse

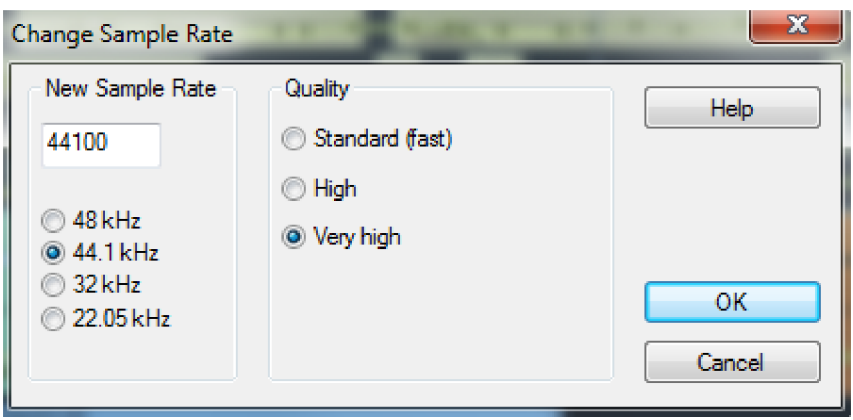
The sample data in the selected range is reversed along the time axis, i.e. the file will now play backwards with the end placed at the beginning. This can create very interesting effects, not to mention hidden messages frequently rumoured to be in various songs....

This function is reversible: if you do not select a new range, activating this function again resets the original material. The option is only available when working in destructive editing mode, i.e. on an HD wave file directly.

Sample manipulation

Change sample rate

Use this function to change the sample rate of a whole audio file. This may be needed to convert a DAT recording at 48 kHz to 44.1 kHz for use on an audio CD.



After choosing the new sample rate you can select a file name for the new project.

If the resolution is increased the sample rate change will take place without any quality loss, and the sample material will not experience fidelity reductions, but the required hard disk space will increase.

If the resolution is reduced, then the overtones or high frequencies may be lost during the sample rate change. For example, if the resolution of a 44.1 kHz sample is reduced to 22.05 kHz, the frequency response of the resulting sample is reduced to 11.025 kHz. The frequency response is always half of the resolution specified. For a conversion from a 48 kHz sample to 44.1 kHz, this loss in quality is not significant, since the human ear only recognizes frequencies up to 20 kHz. (A resolution of 48 kHz is often only used because the digital to analog conversion can take place with much higher precision without a lot of effort.)

Please note that resampling to 44.1 kHz can also be done while recording in real-time.

The "Playback parameter" window ("P") contains a "Vari-speed" option for real-time resampling during playback. The "Record" window ("R") lets you resample to 44.1 kHz in real-time from any of the selected sampling rates.

Reverse

The sample data in the selected range is reversed along the time axis, i.e. the file will now play backwards with the end placed at the beginning. This can create very interesting effects, not to mention hidden messages frequently rumoured to be in various songs....

This function is reversible: if you do not select a new range, activating this function again resets the original material.

The option is only available when working in destructive editing mode, i.e. on an HD wave file directly.

Build physical loop

This function utilizes a complex algorithm for optimizing loops in wave projects. It is useful when samples are to be used for instrumental sounds as well as the wave table synthesizer.

Before you can process a sample you need to select a range in your sample that already defines the rough edges of the sample loop. Remember that you can shift and vary a range during playback to find the best loop position. A comfortable way to look at the loop positions is by activating the split range mode (“B”). The sample will be displayed in 3 sections.

To gain an interruption-free loop, the outer limits of the range will be set to zero. By applying a crossfade to the material at the loop end containing the sample data in

front of the loop beginning, Samplitude Music Studio will create a "smooth" transition between loop's end and beginning.

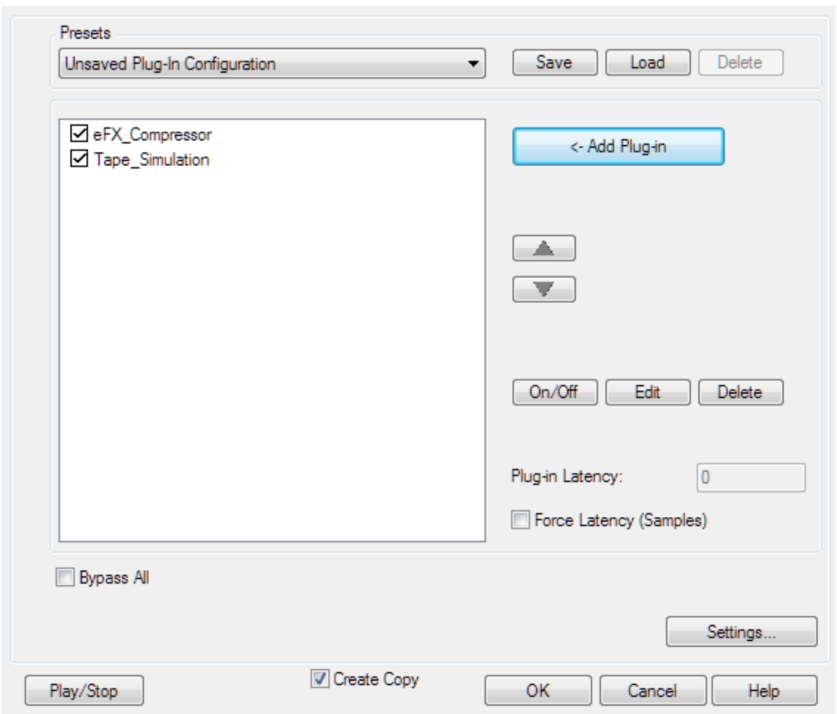
When a marker is set in front of the selected range, the range between the marker and the beginning of the loop will be used for the crossfade. This offers you a feature found in professional hardware samplers. To achieve a short crossfade set the marker close to the loop beginning. To receive a long crossfade position the marker further away from the loop beginning.

Notice that the distance between marker and beginning of the loop range needs to be smaller than the loop range itself to make a crossfade possible.

plug-ins

Use this menu item to insert plug-ins quickly as object effects without opening the object editor.

If "**apply effects offline**" is active, a special dialog opens. This provides you the option to use multiple plug-ins.



essentialFX

MAGIX essentialFX (view page 140) is a collection of "bread and butter effects" for the most important applications.

These are simple but solid tools with clear feature sets for daily application. They include fewer controllers and require less resources.

Waveform Generator

This menu entry opens the Waveform Generator (view page 279).

Process only left (right) stereo channel

Only the left/right channel of a stereo wave project will be affected by effects when "Left/Right processing only" is activated. This options is only available when in wave editing /destructive editing mode.

The same effect have the L/R buttons in the lower left corner of the wave project window.

Process Effects Offline

All effects opened using this menu are calculated destructively, provided the option "**Apply effects offline**" is active. The option to work with a copy is available in order to preserve the original audio material. The "**Create copy**" option is already selected in the corresponding dialog.

CD menu

The CD menu contains all special functions for audio CDs and CD mastering processes, e.g. setting CD tracks and subindexes as well as the "Create CD" function. The options at a glance:

Load audio CD tracks

This menu entry opens the dialog for loading audio CD tracks (view page 331).

Make CD

This opens the dialog for burning audio CDs (view page 274).

Indices (Track markers)

Set CD title index

Use this function to set a track marker at the position of the playback marker (index makers). The numbers of previously set markers are adjusted automatically. Each title of a CD requires a track marker, which is typically placed shortly before the track starts.

Use the function "Set Track Indices on Object Edges (view page 413)" to create a track marker automatically at each object in the virtual project.

To manage the markers or rename them, use the "CD track/index manager (view page 414)".

Shortcut: Ctrl + Alt + I

Set CD Sub Index

Choose this option to place a sub-index marker at the current playback marker position. The numbers of the subsequent sub-index markers are customized automatically.

Sub-index markers are not required for CD creation, but they allow CD players to cue to specific points within an audio track.

Set CD pause index

The CD pause index is a special Sub index (Index 0). Choose this option to place a pause marker at the current playback marker position.

Pause markers allow CD players to switch their output to absolute silence until the next Track Marker. and to count backwards to the start of the next track.

Set CD End Index

This command marks the end of the CD. Setting an end marker corresponds with two main applications:

1. It may be the case with some projects that the last object reverberates after its actual ending. To prevent Samplitude Music Studio from cutting this section of audio during burning, you can place the CD end marker at an appropriate distance after the last object.

2. If you only want to burn a project partially to a CD, place the first track marker at the desired position in the arrangement and mark the end of the burn process with the CD end marker. Remove all track markers prior to the first track to be burned and then set the end marker after the last track to be burned.

Set Track Indices on Silence...

If you are working with a longer audio file that contains multiple tracks, this function can be used to set track markers between the titles automatically.

Min time: Period that the signal must be below the set level before a marker is set.

Threshold db: A marker is set at the positions in the arrangement where the signal sinks below the threshold volume for the set period of time.

Start number: Marker number after which automatic indexing starts.

Prefix: Enter additional characters which will precede the marker numbers set by this function. This makes it possible to easily differentiate them from markers that may already exist.

Add time (ms): Use this value to specify how many milliseconds will be set in front of the markers in the arrangement.

Delete all markers with prefix: Deletes all markers in the project featuring the set prefixes.

Delete all markers: Deletes all project markers.

Set Track Indices on Object Edges

Choose this option to place a track marker at the beginning of every object in the VIP.

Set Track Indices on Object Edges - Options

Set also Pause Indices on Object Ends

This option automatically generates pause markers at the object ends. This option allows you to set an offset for the generated track markers.

Time Offset for Indices on Object Edges

This dialog provides options for adding an offset before the object edges when placing indices.

No indices on Object Crossfades

This option prevents track indices from being placed between objects that are connected by a crossfade.

Remove Index

This function deletes a previously set track or sub-index marker. First, click the marker and access this function.

Shortcut: Del

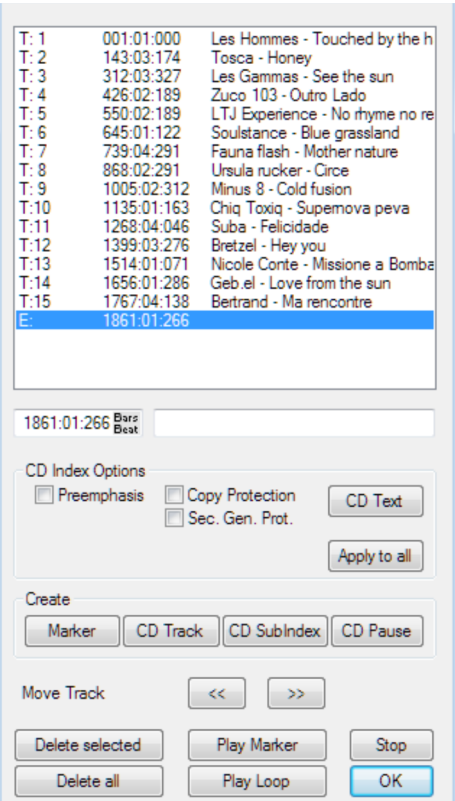
Remove All Indices

Choose this option to delete all previously set track and sub-index markers.

Shortcut: Ctrl + Alt + Shift + I

CD track/index manager

This dialog displays all the CD tracks and sub-indices in the current project in a list.



If you select the markers, you can change their numerical position in the list via the corresponding time input field and name or rename them.

CD Index Settings: Here you can set several options for the individual CD tracks, including **Copy protection (SCMS)** ,**Pre-emphasis** or **Second generation protection:** These settings can be transferred to all indices.

Pre-emphasis means that high frequencies are accentuated before A/D conversion when creating a CD's. Even during A/D conversion high frequency quantization noises will emerge. Now the Audio signal with high accentuation will be written to the CD. When playing the CD player itself will use "Emphasis Bit", which means that the frequency accentuation (highs) will be curbed. This guarantees a 'true to original' sound, likewise Pre-emphasis leads to a reduction in quantization noises.

In practice Pre-emphasis is rarely used owing to the fact that the signal noise gap in the CD creation process already large enough (16 Bit) that quantization noises are negligible anyway.

"CD text" opens a separate dialog field for entering CD text information.

You can set **new markers, CD tracks, CD sub-indices, and CD pauses** by clicking on the corresponding buttons.

Use the **double arrow buttons** to jump to the previous or next marker.

"Delete selected" Deletes the selected markers.

"Delete all Markers" Deletes all markers.

"Play marker" starts playback from the position of the selected marker.

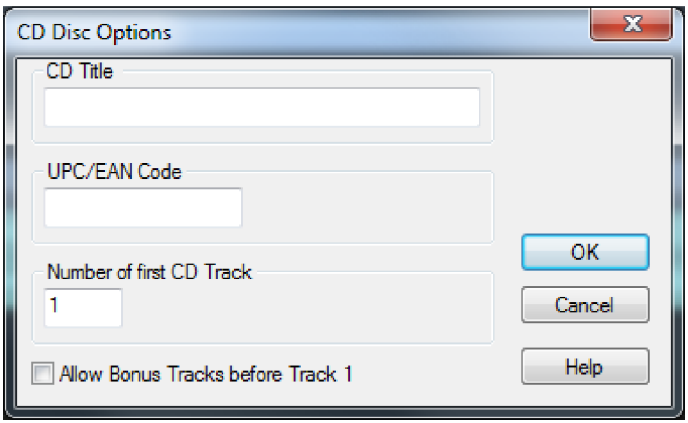
"Play loop" plays a loop around the marker.

"Stop" stops playback.

"OK" Applies your settings.

CD disc options

This dialog opens the settings for the current CD.



CD title: The title which will be written to the CD with the CD text.

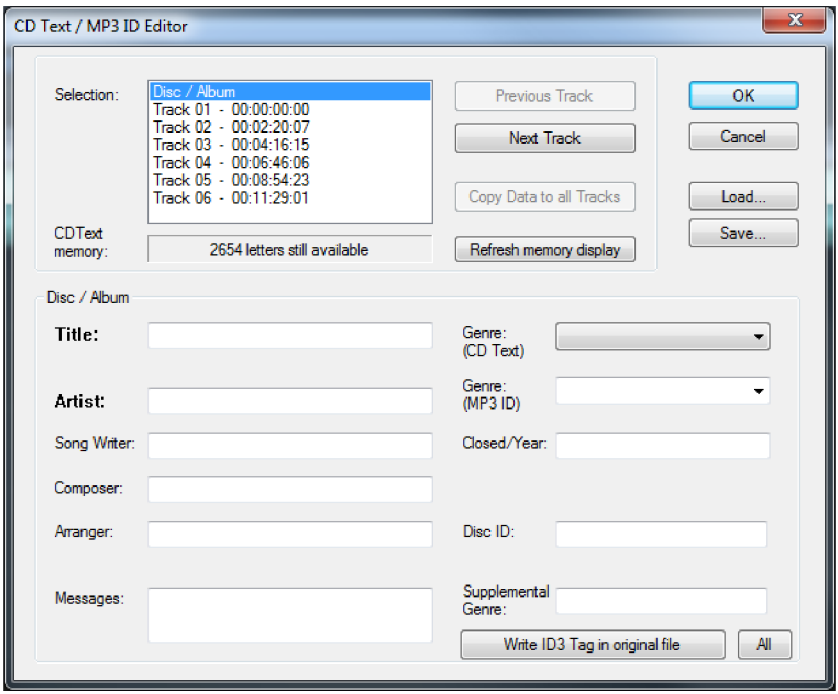
UPC/EAN Code: The EAN code (European Article Code) is a 13 digit number which is used in retail. The 12 digit UPC (Universal Product Code) is exclusively used in Canada and America and can, if necessary, be extended with a final '0'.

Number of first CD track: Under some circumstances (such as "track at once" writing), the title number of the first CD track may be set. This is not important in "disc at once" mode, since the CD will always start with title no. 1.

Allow bonus tracks before track 1: If this option is active, a so-called "hidden track" may be burned on the CD. The first track marker will now be applied to the second audio object. The "hidden track" may only be accessed on standalone CD players via the "STEP BACKWARD" button.

CD-Text/MP3-ID-Editor

Here you can enter text information for the CD you are going to burn. The CD track names are adopted from the CD track marker's labeling in the VIP. All information is also contained in the project, but in this dialog window you also have the possibility to save all entries in a separate file. (*.cdt)



Note: The number of maximum available characters for the entire CD is 2824.

If you can used MP3s in a VIP that have ID3 tags then using of the "Write ID3 tags to original file" button you can ensure that data made in the CD text/MP3 ID editor is written back to the corresponding MP3 file without separate export. This will be applied to all corresponding MP3s by pressing the "All" button.

Set Pause Time

Use this function to set the preset pause duration between objects. Audio files that you load into your virtual project will be ordered sequentially on one track. The value specified here will be set as standard pause.

Set Start Pause Time

Use this function to set the length of the pause in front of the first track. A regular value for the start pause would be about 2 seconds.

CD Arrange Mode

If this is activated, Samplitude Music Studio arranges recently added objects to insert a Red Book Standard-compatible pause between the objects.

- Open a new project.
- Activate "CD arrange" mode.
- Load wave files, audio tracks, or make a recording using a microphone.

You will see gaps between the individual objects in the project. These are the inserted pauses. The duration of inserted pauses may be specified in the "Set pause duration" dialog.

Get freeDB Title Info

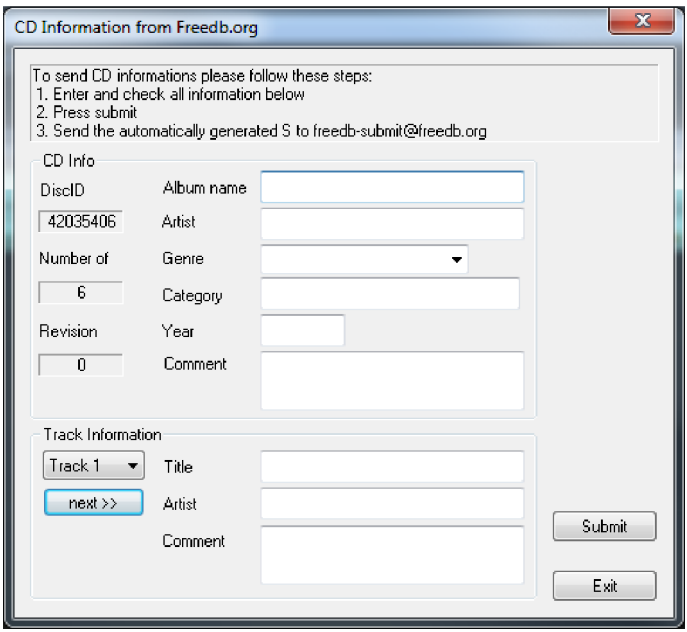
Use this command to start a search request where the freeDB database searches for and provides information on tracks from you project.

freeDB acquires information on CD track names and artists.

- In the CD import dialog, you can request information about the desired CD.
- In the CD burning dialog and in the CD/DVD menu, you can search based on the set track markers.
- An inverse search is also possible with "**Online CD search**" in the arranger. You can set track markers automatically for known albums.

freeDB Options

Submit CD to freeDB



Enter all of the CD's information into the dialog. Press the "Submit" button to transfer the data to freeDB.

freeDB User Data

The entries for username, local computer name, and email address are used for communication with the freeDB server.

freeDB Proxy Options

Enter server data like server, port number, server list, and timeout here.

Clear freeDB Cache

With this function you can delete the cached data from freeDB.

Show CDR Drive Information...

Choose this option to display information about the burner.

This includes the manufacturer, drive name, hardware revision, cache size, and the features supported by the drive mechanism:

- Supports disc-at-once
- Supports indices
- Supports second generation copies
- Supports catalog numbers
- Supports ISRC
- Supports CD text
- Supports CD RW

The "disc at once" feature is extremely important for Red Book-compatible audio CD production. CDs burned in this way are accepted as masters by CD manufacturers.

Show CDR Disc Information...

This dialog displays information about the blank CD inserted into the drive, including type, track count, session count, total disk space, remaining space, and status.

The most important value is the maximum length under "Total memory" in minutes and audio frames, which cannot be exceeded during production (e.g. 359995 audio frames or 79 minutes and 59 seconds and 70 MSF).

View Menu

This menu contains tools for changing the screen view of Samplitude Music Studio.

Mixer

Use this menu item to open the mixer.

Detailed information about the mixer is available in the chapter "Mixer".

Shortcut: M

Transport control

The transport control window contains the most important commands for playback, recording, and positioning.

"Start", "Stop", "Forward", and "Rewind" buttons: These allow positioning similar to that of any audio player.

Right clicking the "Playback" button opens the playback parameter window for the stereo master operation. This lets you determine the sample rate, playback device, and the scrubbing/varipitch options.

Record: Starts recording for all active tracks. This means that tracks with the red REC button enabled need to be configured with the proper recording devices prior to starting the recording. Right click on the REC button for each track to select the device.

Right clicking "Record" displays the record parameters window. This lets you make settings such as "Playback during recording", and also lets you record material directly from the record parameter window.

Time display: This displays the current playback position of the project. Double clicking on the window lets you numerically enter a new playback position. Clicking the green arrow lets you set various units of measurement.

L/R time display: This displays the length of a selected range and is editable by double clicking the display.

Marker 1-12: Clicking on one of the marker buttons saves the current playback position to the button. If it already contains a previously saved position (marker appears in light color), the program will place the playback position to the saved

position. A right click clears the button memory and allows you to store a new position to the button.

Marker: This button open the marker manager for more detailed marker editing.

Punch: This button switch Samplitude Music Studio into punch record mode. This means that the recording process can be started any time during playback. This is also called "On-the-fly recording". This can be repeated numerous times. Punch-in and out markers are set automatically. You can stop a punch in recording process with another click on the record button. However, this does not stop the playback of the project.

Punch in: This sets the punch in position.

Punch out: This sets the punch out position. If the both the punch in and punch out markers are set, the punch recording can be started with the "Playback" button. The program will play back the project until it reaches the punch in point.

Sync: This button opens the synchronization window.

Loop: The loop button activates loop mode, meaning that playback continues to loop through a previously selected range.

RCMON: This button activates Samplitude Music Studio's "Record monitoring" feature. All tracks that have their REC buttons activated are monitored with the peak meters. The inputs of the audio device(s) are directly routed to the outputs of the sound card, if the sound card offers this functionality (check with your sound card manufacturer). This offers the same functionality as with audio players.

Scrub >> <<: These buttons allow you to scrub through your project. During scrubbing the playback of the project continues with varying speed while the playback direction can be changed. This also offers a convenient way of finding audio sections such as clicks or mistakes in the audio material.

Jog & shuttle wheel: The transport control includes a jog & shuttle wheel which you can use to "scrub" over the files. The "Scrubbing" function behaves like the editing function of an audio player. The motor is switched off, the tape, however, remains at the sound head. With a digital system it is more difficult to realize scrubbing as there are no mechanical moving parts. Turning the tape reels manually moves the material slowly along the player. Using the scrubbing function in Samplitude Music Studio is similar to using a tape player, since playback follows the movement of the mouse. Quickly moving the mouse increases the playback speed, while slowly moving it decreases the speed accordingly.

Tempo: In the tempo section of the transport console you can change the playback speed and the beat of the whole arrangement. All objects in the VIP are adapted to the speed of your choice with timestretching.

"Tap tempo..." opens a dialog where you can "tap in" the beat by clicking on the "Tap" button, or by pressing the "T" key on your keyboard.

In addition, you can fade in the bar grid with the "SNAP“ button and switch on the metronome click with the "CLICK“ button.

Time display

Shows or hides the time display window

This lets you read the current position while externally synchronizing large sections. Fonts and colors of the display can be selected in the context menu (right click on the time display).

In the context menu of the time display the number of lines/fields that are to be displayed can be set between 1 and 5. For each line/field the size that is to be displayed can be selected from the menu.

Double clicking lets you edit the sizes (with the exception of the current mouse position and the current mixer value).

The most important options:

Position/Start of range: Displays the current position of the current play cursor, or of the beginning of the range. When moving the objects, you can see the starting position of the object here. Should you enter a negative number into the range when editing, the play cursor will be set to the end of the range.

Range length: "Object -> Object Length; negative number" saves the end of the range instead of the start of the range.

End of the range: "End of the object, negative number -> Start of the range".

Current mouse position: Not editable

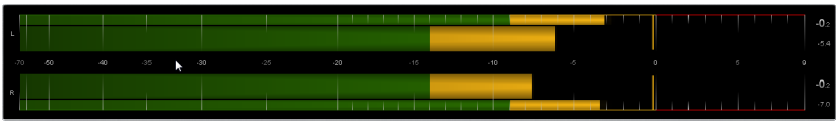
Current mixer value: Value of the mixer fader which was just changed, or the volume or pan fader in the VIP; not editable.

Visualization

The visualization screen displays the audio material graphically. You can integrate the visualization interface into the Docker or open it in its own window.

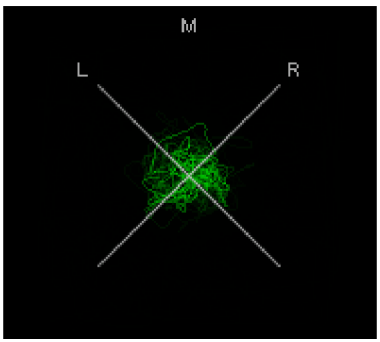
You can choose between the following display options via the context menu: peak meter, oscilloscope, phase correlator, spectroscope, and spectrogram.

Peak meter

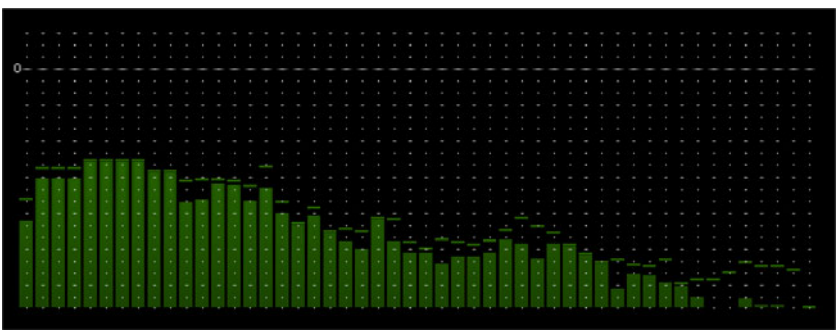


The peak meter provides an exact display of the volume level.

Phase correlation

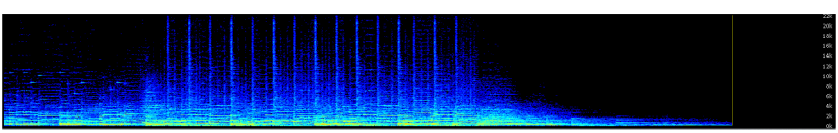


Spectroscope



In the Spectroscope the signal is divided up into individual frequency ranges. The level amplitude of each frequency band displays volume of the relevant frequency range. This is a way of telling whether certain frequency bands are being strained.

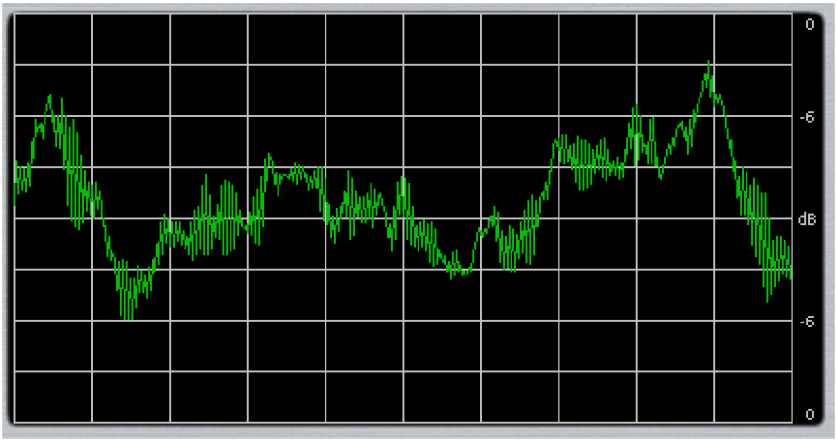
Spectrogram



In the Spectrogram the signal is displayed as frequency proportions in a time curve. The volume of frequencies is visualized by its brightness.

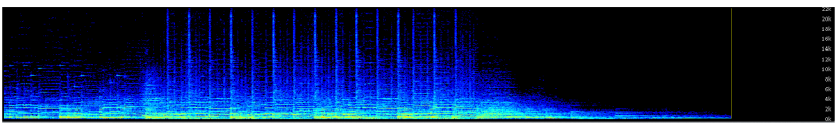
The spectrogram is designed to be able to immediately detect noise in your recordings. Audible distortion noises are mostly louder than the music, and are usually limited to a certain frequency spectrum. They are highlighted with colors in the spectrogram.

Oscilloscope:



The oscilloscope displays the signal amplitude over the time curve.

Spectrogram

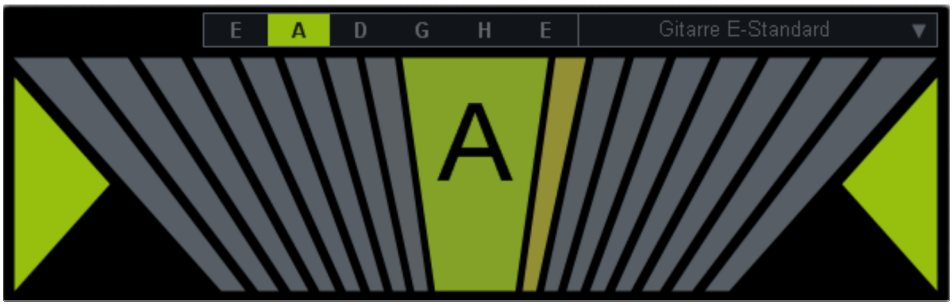


In the Spectrogram the signal is displayed as frequency proportions in a time curve. The volume of frequencies is visualized by its brightness.

The spectrogram is designed to be able to immediately detect noise in your recordings. Audible distortion noises are mostly louder than the music, and are usually limited to a certain frequency spectrum. They are highlighted with colors in the spectrogram.

Tuner

Tune guitars and other instruments with this option.



It makes sense to use the tuner only when the visualization is opened from the recording window, since it is the input signal that should be analyzed.

1. Select the track to which you would like to record your guitar.
2. Open the Recording options dialog.
3. Make sure that the "Monitor" option is activated. At the least, the Software FX Monitoring (view page 392) mode must be used for acoustic monitoring.
4. With the "Visual" button you can open recording visualization. As default, this window will open as a peakmeter to monitor the input signal.
5. Right-click the visualization window and select "Tuner".

In the middle you will see the note name of the pitch being played. A calibration mark shows the deviation of the played note from the right pitch, and red triangles to the right and left show whether the string should be tuned up or down. If the tuning is exact, the triangles turn green. By default, the tuner will try to recognize each note (display: "chromatic"). You can select the conventional tunings for guitars, basses and ukuleles from the list. Then, only the notes relevant in each corresponding tuning will be recognized.

Track Editor

This menu item opens the track editor on the left edge of the arrangement window. This enables access to all important track parameters for the selected track.

Detailed information about the track editor is provided in "Screen elements -> Track editor"

Shortcut: Ctrl + Alt + Shift + E

Keyboard

Use the keyboard (view page 171) to access an on-screen keyboard to play MAGIX synth sounds and record them directly.

Manager/Docker

You can open the Manager/Docker here. In addition to the Manager windows (view page 286) now Visualization, Time display, Transport console, Sound pool, Object Editor and MIDI Editor are grouped as a tab window by default in a "Docker".

Manager

Offers direct access to the various Samplitude Music Studio managers.

Shortcut:

File manager	Ctrl + Shift + B
Soundpool manager	Ctrl + Alt + Shift + P
Object manager	Ctrl + Shift + O
Track manager	Ctrl + Shift + S
Marker manager	Ctrl+Alt+Shift+M
Range manager	Ctrl+Alt+Shift+B
VSTi manager	Ctrl + Shift + V

Control bars

Main Toolbar

Use this command to hide or show the toolbar. A check behind the menu item indicates that the toolbar is visible.

Main Toolbar 2

Use this command to hide or show the second toolbar. A check behind the menu item indicates that the second toolbar is visible.

Statusbar

Use this command to hide or show the status bar. A check behind the menu item indicates that the status bar is visible.

Autoscroll

Switches Autoscroll on/off

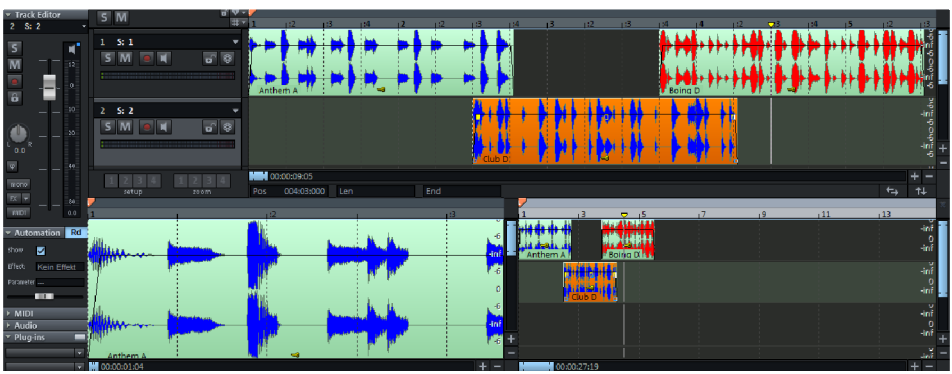
See "Playback -> Playback Options (view page 487, view page 385)".

Rebuild Graphic Data

The graphical display of a project is recalculated in this case. This is usually unnecessary, but does help with errors or inaccuracies in the display after offline editing.

Sections

These Menu items allow you to take advantage of Samplitude Music Studio's ability to simultaneously display **one two or three** different "views" of the same project.



If you select the option "**2 (sections)**", two view windows, each of which can be worked in independently, open **one under the other**. This way, for example, you can view the complete sample in one window, while magnifying a specific area in the other.

The "**3 (sections)**" mode can be especially helpful when searching for loop points in the wave window. In the **top large window the entire sample** can be viewed, in the **bottom left window area the beginning** can be viewed and **in the bottom right window area the end of the loop** is displayed. This view can also bee seen by using the shortcut "B". The corner values of the three windows can be independently adjusted.

You can determine the areas through window borders once and for all by selecting a start of a segment by clicking the clip bar at the corresponding position, and then selecting the end of the segment in a different clip with the Shift key held down.

When using the zoom function on a specific clip, it is necessary to first select it by using scroll bars to the right or to the bottom.

Shortcuts:

Show range:	Shift + B
Split range (shows 3 sections)	B

Hide Submix/AUX Busses

Use this command to remove the buses from view in the arranger window. This may improve the display in case you are working with numerous tricks.

Attention: This function keeps bus tracks hidden, even if a check is set in the track manager next to the "Arrangement" column.

Grid view

Grid

This command activates the coordinate grid for the project window.

Grid Lines

This provides a choice between various line layouts for the grid display. The display of the grid helps makes the positions in the arranger window more legible.

Units of Measurement

Specify the units of measurement for the grid view here.

The following units are available: samples, milliseconds, hours/mins/secs, SMPTE, SMPTE/milliseconds, CD-MSF, feet and frames 16 mm (40 fpf) and feet and frames 35 mm (16 fpf), noise reduction (meter).

The units of measurement selection will affect the start and length of the current range in the project window, the grid width and the details of the position of the playback marker (position line).

Snap active

This functions turns the grid on or off.

Snap/Grid

Here you can set the grid type. You can choose from:

- Objects
- Range
- Beats/Bars
- Bars (relative)
- Grid/Frames
- Frames (relative)

Detailed information on snap and grid settings can be found under "File > Project Properties > Snap and Grid Setup (view page 345)".

Snap and Grid Setup

Detailed information on snap and grid settings can be found under "File -> Project Properties -> Snap and Grid Setup (view page 345)".

Show 2nd Grid Line

This command displays a second grid.

Exchange Grids

This command exchanges the upper and lower grids.

VIP display

Mode 1

Mode 1 has been selected for displaying virtual projects

Mode 2

Mode 2 has been selected for displaying virtual projects

This mode also includes an enlarged display of volume and panorama points, and you can quickly switch between normal and enlarged display modes with "Tab".

Change mode

Switches the display of virtual projects between both modes.

Shortcut: Tab

Overview Mode

Detailed information about Overview Mode can be found in the chapter „Working in the Project Window“ > „Zoom“ > „Zooming with Overview Mode“.

Zoom Into Selected Objects

This command displays the selected object at a zoom level that optimally fills the section. This option is also available as a button.



Horizontal

This menu contains all the functions of the horizontal (red) position bar.

Vertical

This menu contains all the functions of the vertical (blue) position bar.

Tile

This function arranges all open windows one one top of the other.

Shortcut: Enter

Untile

This function arranges widows in the same way as they were prior to "tile vertically".

Shortcut: Shift + Enter

System Information

Use this function to open a new window with the system information.

Display the date/time, number of open files, the free memory on all connected hard drives, the configuration of Windows resources, and the amount of memory used by Samplitude Music Studio.

Help Menu

Help Menu

This command displays the overview page of the help file. You can jump to specific commands or read instructions on this page.

Help Index...

Choose this option to display a list of available help contents.

Context Help...

This command turns the mouse cursor into an arrow with a question mark. Click any menu item or button in one of the toolbars to receive more information.

Shortcut: Shift + F1

Manual

Use this command to open the Samplitude Music Studio manual (PDF document).

About Samplitude Music Studio...

This displays copyright information and the version number of Samplitude Music Studio. At the very bottom, you can see the serial number required for support purposes.

MAGIX auto-update

Automatically searches the Internet for updates to Samplitude Music Studio. An Internet connection must first be provided for this purpose.

Deactivate Program

This menu item deactivates Samplitude Music Studio with immediate effect. After deactivation, it is possible to immediately install and activate Samplitude Music Studio on another computer

Product registration

This option opens the MAGIX homepage for online registration where you can register as a MAGIX user.

Registration grants you access to the MAGIX support website where various program updates and help programs can be downloaded.

Download more instruments/Sounds/Soundpools

Use this menu item to access the MAGIX website Catooh, where you can download additional Vita Solo Instruments, Sound Pools, and individual sounds.

Restore original program settings

Resets Samplitude Music Studio to its default values.

Language:

Here you can select the language for the program interface. Samplitude Music Studio restarts in the updated language.

System options

The project-independent Samplitude Music Studio settings can be found here. These settings are also global.

"Quick Setup" (view page 497) displays a simplified dialog with the most important basic settings.

Shortcut: Y

System / Audio

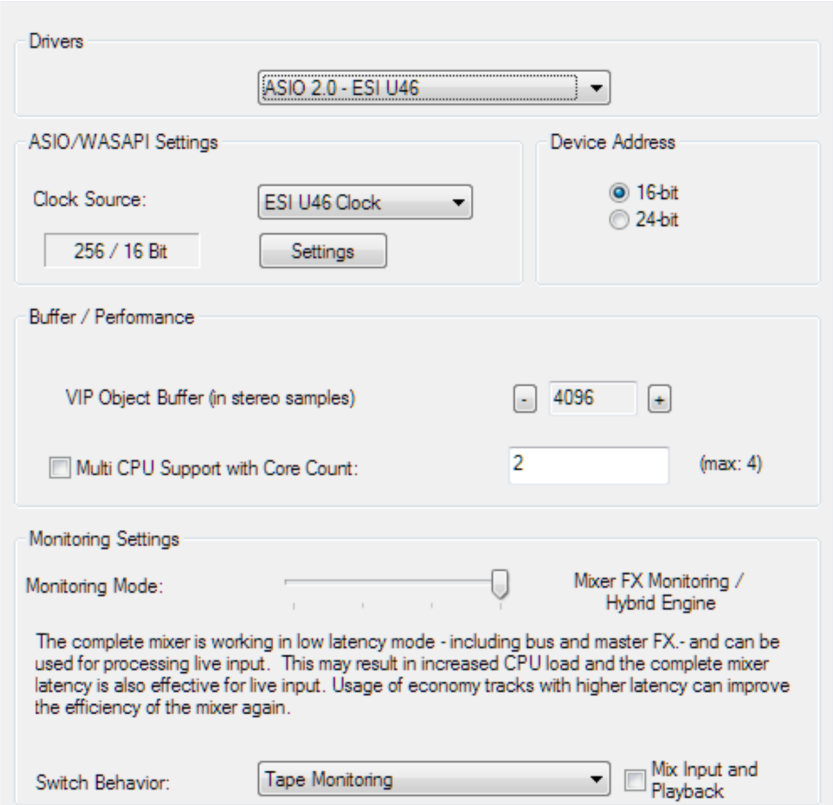
In the “System” menu, you have options to fine-tune Samplitude Music Studio.

In detail, these are:

- Audio playback settings (playback devices)
- Audio record settings (recording devices)
- Program options
- Paths/Skins
- View options
- Color setup (colors)
- Metronome settings (MIDI options)

Most of the dialogs can also be activated separately via the different menus and are explained at a the corresponding position. In the following, you can find the explanations on system settings directly via the system/audio dialog.

Audio settings



Driver:

You may select MME and multi-channel MME (WDM-compatible), WASAPI, or ASIO for the necessary communication between Samplitude Music Studio and your sound card. In order to take full advantage of the program, we recommend that you use WASAPI or ASIO.

MME is the standard Windows multimedia driver system with the best compatibility. It also supports 16-bit playback. If you are recording 24-bit audio material, you can use MME/WDM. This driver system is suitable for multitrack recordings of up to 64 tracks that don't place severe requirements on the monitoring processes. For performance critical recordings, this provides greater security compared to ASIO drivers but with many sound cards, multitrack recordings will not be synchronous.

ASIO: Use a sound card model fitted with ASIO drivers if possible. This offers a number of decisive advantages over the MME/WDM driver system:

- This results in lower latency (input/output delay). Resulting response times during realtime editing are clearly reduced. This makes it possible to use software monitoring for inputs and VST instruments.
- ASIO is intended for editing multitrack recordings featuring several sound cards that are all using the same ASIO drivers. The sound cards are synchronized by the ASIO driver.
- Advanced hardware monitoring options are also available by using ASIO direct monitoring.

"MAGIX Low Latency 2016" is included, a universal ASIO driver which can be applied by many sound cards which do not feature ASIO drivers.

WASAPI is a new Windows (native) driver model for low latency and can be used as an alternative to ASIO drivers. WASAPI is recommended for Windows Vista or later Windows versions when the sound card does not have its own ASIO driver and the MAGIX Low Latency driver isn't compatible.

Drivers: Choose the sound card driver that you would like to work with. The drivers for all ASIO devices installed on the system will be listed here. Clicking the "Control Panel" button opens the settings dialog for the sound card driver. In the display field beside "ASIO buffer", you'll see the buffer size and bit rate set for the driver.

16/24-bit wave/driver communication: If your sound card is able to play 24-bit audio, your project will be played at this higher resolution (internal 32-bit float calculation). This is applicable only to wave drivers.

Buffer settings: The VIP object buffer displays the buffer size for the internal processing of object effects and economy tracks in hybrid mode. In every other monitoring mode, it also determines the buffer size for editing track effects. With a smaller VIP object buffer size, the amount of playback delay also decreases (latency). However, the processor can still be overloaded which may result in dropouts during playback. Large buffer sizes actually increase stability, but they also increase the latency of the system. The field below displays the resulting latency in relation to the buffer settings.

Tip: The VIP object buffer size should normally be bigger than the ASIO buffer size and be set between 1024 and 8096 samples.

Monitoring settings

Monitoring is essentially the process of making the input signals audible, e.g. so musicians who are playing on the recording can hear what they are doing. The routing of monitoring signals is an important and complex application that has various requirements.

The dialog can be found in the system options (Shortcut: Y) under "Audio Setup > Monitoring Setup".

For each selected monitoring setting a matrix display also opens which shows which buffer sizes are used and what effect the currently selected engine mode has on the latencies.

Overview of monitoring and engine modes

No Audio Monitoring (peak meter only): Displays the input level, but cannot be heard. This monitoring option is useful if you are using an external mixer for audio monitoring.

Software Monitoring: Audio monitoring that takes into account the recording track levels and the playing of software instruments. This monitoring option is only available when using ASIO drivers. No effects are applied to the input signals which means that latency and CPU load remains the same even in complex projects.

Track FX Monitoring: Audio monitoring including the track effects of the recording track. This monitoring option is only available when using ASIO drivers. Effects applied directly to the recording track are included in the monitoring signal, but bus and master effects are not.

Mixer FX Monitoring: The audio monitoring applies for the entire mixer and also calculates playback tracks in the mixer with short latency. This way you can also mix data from the hard drive with the lowest possible playback delay. We recommend this mode for input signals as well as for live mixing with hardware controllers because access to all bus and master effects is guaranteed.

The following applies to all monitoring modes: The set track effects on the recording track are not included in the recording, i. e. the track actually recorded does not have the effects that have been applied to the track. Depending on the monitoring mode used during the recording process – and during playback of the recording, of course – you will hear the recorded signal with the effects applied to it. For example, it is not possible to record the vocal signal directly with reverb. However, you can save the recorded track afterwards along with all track effects using the "Track Bouncing (view page 339)" function.

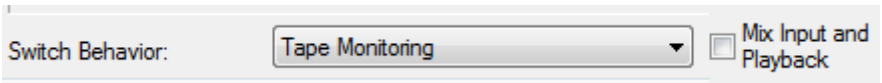
Tip: In most cases, we recommend using the "Mixer FX Monitoring". This monitoring mode enables audio monitoring throughout the entire mixer and also calculates playback tracks in the mixer with short latency. This also gives you access to all the bus and master effects.

If the CPU load of your system becomes too high when using "Mixer FX Monitoring", switch to a monitoring mode that is most suitable for your requirements and that your system can handle.

For example, if you want to do without effect monitoring of input signals, "Software Monitoring" might be the right mode for you.

If you want to include the monitoring of track effects of the input signals and to do without the bus and master effects in the monitoring path, we recommend the "Track FX Monitoring" mode.

Monitoring switch behavior



Tape Device Monitoring is the preset monitoring behavior and, thus also, the monitoring behavior familiar from earlier Samplitude Music Studio versions, that works like a tape device: In stop status, the input signal is played back; in play status, the track content is played back. During a recording, the input signal is played back, except for punch-in recordings; here, outside the punch marker, the track content is output and inside the punch marker, the input signal is output.

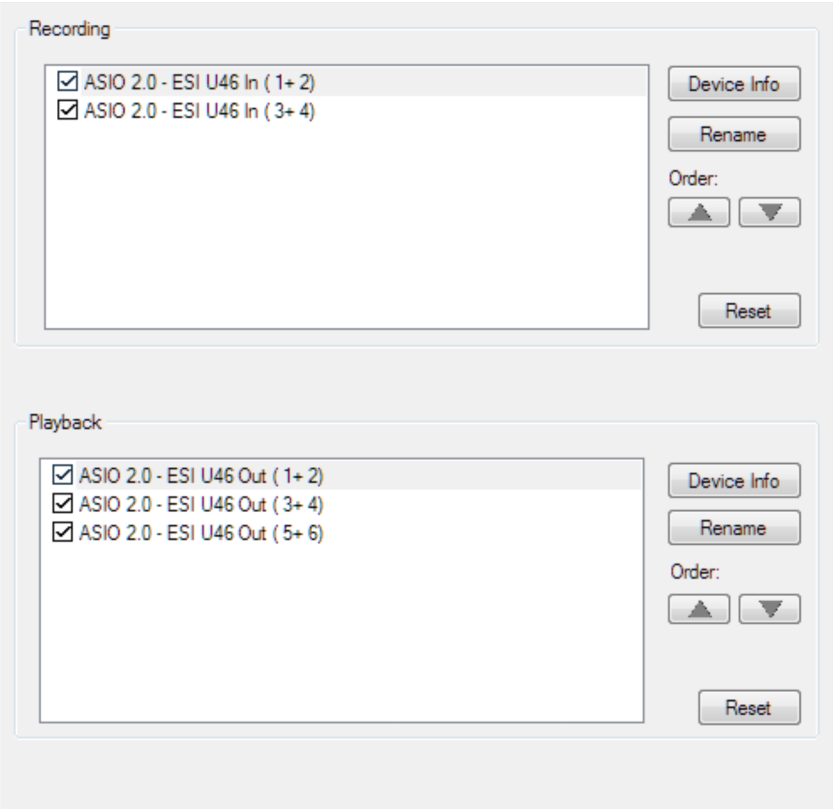
Manual Monitoring: For each track you can manually specify whether the monitoring is active for the track using the loudspeaker button in the track header, Track Editor or mixer. This switch behavior is only available when the ASIO driver system is used.

Mix Input and Playback: If you set the check here, the input signal can also be heard when playback is running if track monitoring is active.

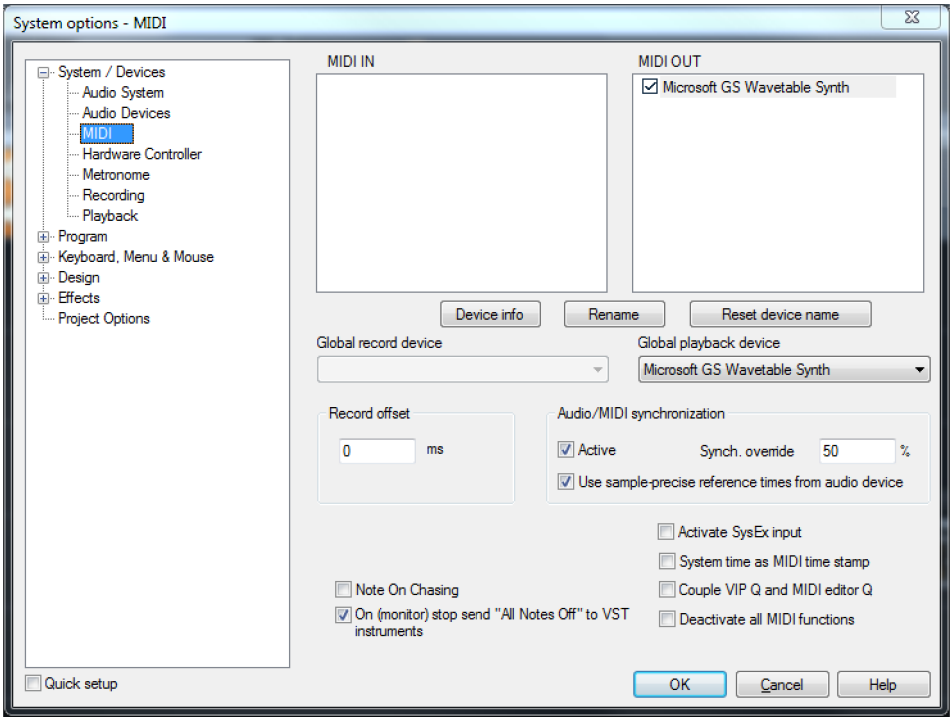
The monitoring settings and switch behavior can be set in "System Options > Audio System" and can also be accessed directly by right-clicking on the "**Mon**" button.

Record devices

The installed sound cards are listed in the large window at the top of the dialog. With "Device info" you can open the small dialog for information on the sound card activated in the adjacent window (supported sample rates, manufacturer, etc.).



MIDI



MIDI IN / MIDI OUT: Here you can define which devices should be available for Samplitude Music Studio and which should not. "Device Info" provides additional information about the corresponding device; with "Rename" you can give it a name of its own; "Reset device name" restores the original name again.

Global recording device: Select the device here that you want Samplitude Music Studio to use for recording MIDI tracks.

Global playback device: Select the device here that you want Samplitude Music Studio to use as standard for playing back MIDI tracks. Of course, you can select an individual device or one of the installed software instruments for each track.

Recording offset: Here you can enter the delay in milliseconds to be used when starting recording.

Audio/MIDI synchronization: With **sync. Reciprocation** On faster systems, this setting should be 100% in order to achieve the closest sync between the MIDI tracks and the audio tracks. On fast systems this setting should be set to 100% in order to get the closest synchronization possible between MIDI and audio. If your system experiences difficulties synchronizing the MIDI tracks with the audio tracks, select a lower sync reciprocation value. Normally you will also want to use **sample-exact**

reference times from your audio device (e. g. sound card) for audio/MIDI synchronization.

Activate SysEx input: Selecting this option enables Samplitude Music Studio to receive SysEx data from external devices.

System time as MIDI timestamp: If this option is activated, the MIDI device driver's time stamp will be ignored. This is helpful if drivers provide a timestamp that is not synchronized with the audio or is completely incorrect. This function recognizes invalid driver time stamps and then provides automatic fallback to the system time. This helps fix MIDI recording problems with MIDI devices.

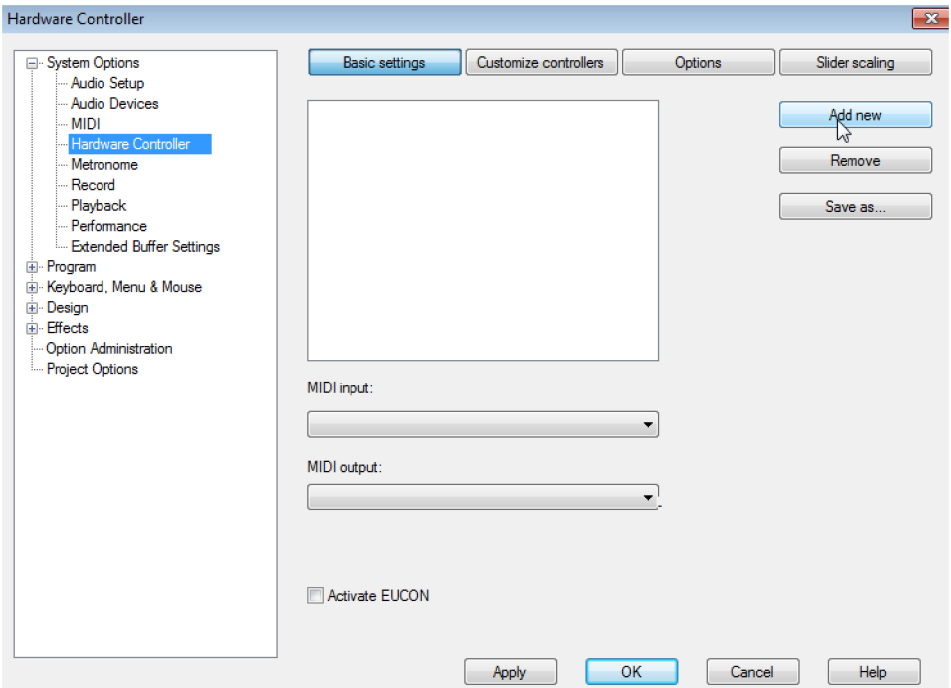
Link VIP-Q and MIDI Editor Q: This option links the grid or quantization settings between the VIP and MIDI editor, i.. e. changing the grid/quantization settings in the VIP will automatically be assumed for the grid/quantization settings in the MIDI editor and vice versa.

Deactivate all MIDI functions: This allows you to disable all MIDI functions completely.

Note On Chasing: "Note On Chasing" has the effect that held MIDI notes are also played back when they receive their "Note On" command before playback starts.

At a (monitor) stop, sending "All Notes Off" to VST instruments: To prevent missing note-off signals, normally an "All Notes Off" MIDI command is sent to all MIDI synthesizers in the event of a stop. In contrast, with VST instruments a special mechanism is used because the normal command is ignored by some VST instruments. You can completely shut off "All Notes Off for VSTis" in the MIDI system settings.

Hardware Controllers



Basic Settings

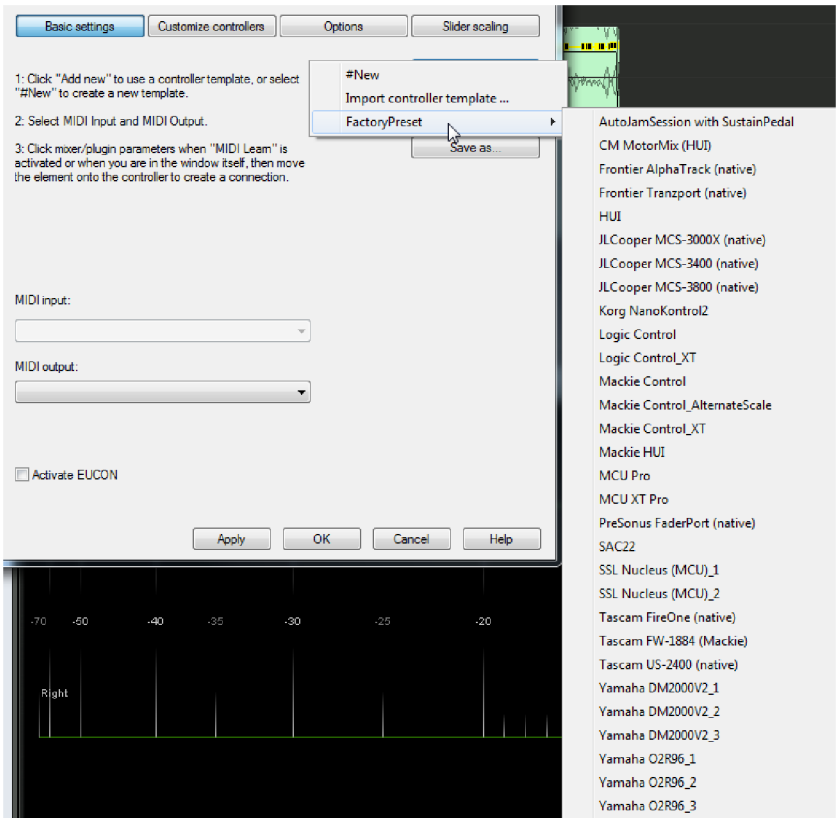
The following tasks are performed in the basic settings:

- Adding a hardware controller using a factory-preset (view page 468)
- Specifying MIDI ports for the hardware controller
- Determine the order and dependencies of the hardware controller:
  Hardware controllers can be operated independently or together as a unit.
- Adding a new hardware controller preset

Adding a Hardware Controller using a Controller Preset

Tip: Many hardware controllers have a Mackie emulation mode. In this mode, most functions that are available in the Mackie Control are supported. If you are using this type of Mackie control emulation, simply select the preset "Mackie Control".

1. Click the "**Add New**" button in the controller settings.
   This opens the preset menu:



2. In the **„Factory Preset“** list (view page 468) select your hardware controller or a compatible device.
   Result: The selected device appears in the list of hardware controllers.

> **Note:** when you load a "Factory Preset", Samplitude Music Studio saves this factory preset in a separate folder. Changes to this preset will then only be saved in this separate folder. This ensures that the factory presets are not changed and can be accessed again at any time.
>
> Factory presets that have been loaded once appear additionally in the first level of the "Add New" menu. It is possible that adjustments have already been made to these presets.

3. Select the **MIDI In** and **MIDI Out** ports that your controller is connected to.
4. Click on the "Apply" button to confirm the changes.
5. If you want to edit the controller preset, open the "Customize Controller" view and edit the control elements as necessary (view page 454).
6. If you are using several controllers, repeat this procedure until all of the controllers have been edited.

Adding a New Empty Hardware Controller Preset

1. Select "#New" to create a new template.
2. Select the **MIDI In** and **MIDI Out** ports that your controller is connected to.
3. Click on the "Apply" button to confirm the changes.
4. Select the option "Save As..." and give the file a clear name.
5. Switch to the „Customize Controller“ (view page 444) view and map the control elements for your controller.

Removing a Controller from the List

Prerequisite: The list of used hardware controllers contains at least one entry.

Note: When a hardware controller is removed, the preset configuration remains. If you load the corresponding preset later, all of the settings for the hardware controller will be restored.

1. Simply click on the hardware controller that you want to remove.
2. Now click on the "Remove" button.
   Result: The selected hardware controller is removed from the list and is no longer used by Samplitude Music Studio.

Customizing Controllers

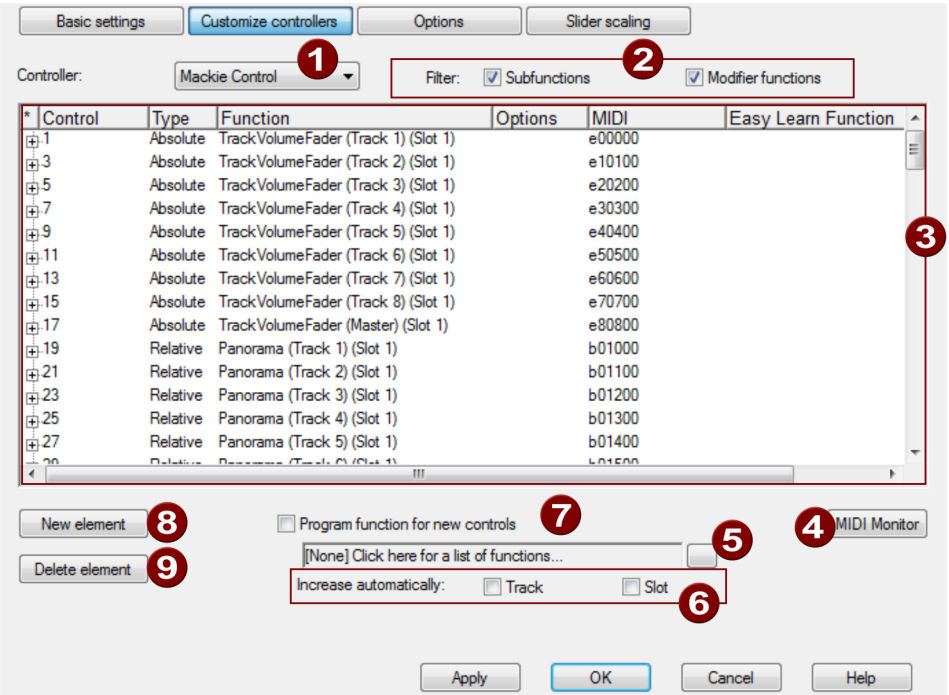
In the "Customize Controller" view you can make the following adjustments:

- Adjust already learned control elements
- Learn new control elements
- Apply or remove Easy Learn functions
- Remove already learned control elements

Note: when you load a "Factory Preset", Samplitude Music Studio saves this factory preset in a separate folder. Changes to this preset will then only be saved in this separate folder. This ensures that the factory presets are not changed and can be accessed again at any time.

Factory presets that have been loaded once appear additionally in the first level of the "Add New" menu. It is possible that adjustments have already been made to these presets.

Controller Customization - Setup and Functioning



1 Controller
This is where you select the hardware controller that will be edited. When the "Customize Controller" view is opened, the controller that was last set in this view will be selected by default. Clicking on the dropdown menu opens a list of all currently available controllers.

2 Filters
Here you can specify whether sub-functions and modifier functions (view page 449) will also be displayed. Both of these options are activated by default.

Sub-functions: These are functions that belong to the control element but are accessed with a separate MIDI command.

- Push Function for Encoders
- Touch Function for Touch-Sensitive Faders

Modifier functions: Additional assignments to control elements. The modifier functions can be accessed by simultaneously pressing the assigned modification button and the corresponding control element key.

3 List of Mapped Control Elements: This list contains all of the control elements that have already been mapped.
The list is made up of several columns where the entries can be sorted by clicking on the column headers:

*: If the control element has sub-functions or modifier functions, they will be displayed in this column.

Note: If the list is sorted according to this column (*), the assigned or new control element will be displayed at top of the list when a MIDI command is received.

Element: Automatically numbered list of the control elements. Sub-functions and modifier functions are displayed here in color and with a corresponding short description:

Sub-functions: Touch/Push - Displayed in green

Modifier functions: Shift / Control / Option (also in combination) – Displayed in red.

Type: Displays the control element type (view page 447) that is assigned to an entry.

Function: Displays the function that is assigned to the control element.
Right-clicking opens the "Edit Function" dialog. The program functions that should be assigned to control element are set in this dialog.

Options: Displays whether various options for this control element are active.
Right-clicking opens the context menu where the available options can be selected.

MIDI: If the function is already assigned to a control element, the MIDI message that opens the assigned function is displayed here.
Right-clicking opens the "Select MIDI Data" dialog.

Easy Learn Function: If a control element is assigned an additional function with Easy Learn, the function will be displayed here.
Right-clicking opens the context menu where the function can be permanently assigned or deleted.

4 **MIDI Monitor** (view page 450)
This button opens the MIDI-input monitor.

When the Shift key is pressed during opening, the HWC MIDI-output monitor is also opened.

5 **Dropdown Menu Function**
The program functions that should automatically be assigned to the next newly added control element are set in this dialog. The "Program Function for New Elements" checkbox must be activated for this.

6 **Raise Automatically (Track/Slot)**
The track or slot assignment of new control elements to be mapped is automatically raised when the previous control element is mapped.

This option is suitable for mapping control elements with which the same function should be controlled on different tracks/slots.

7 **Program Function for New Elements**
When this checkbox is activated, the next new added element will be assigned to the set underlying function.

8 **New Element**
This button sets a new entry in the list. The entry appears at the very bottom of the list.

9 **Delete Element**
This removes the selected control element from the list.

Types of Control Element

Value Input

- **Absolute:** Control elements with absolute values.
  This type should be selected when using a fader or knob.
- **Relative:** Control elements with relative values.
  This type should be selected when using an endless encoder, the jog/shuttle or a similar control element.

Note: Control elements for the values are already assigned tomodifier functions (view page 449).

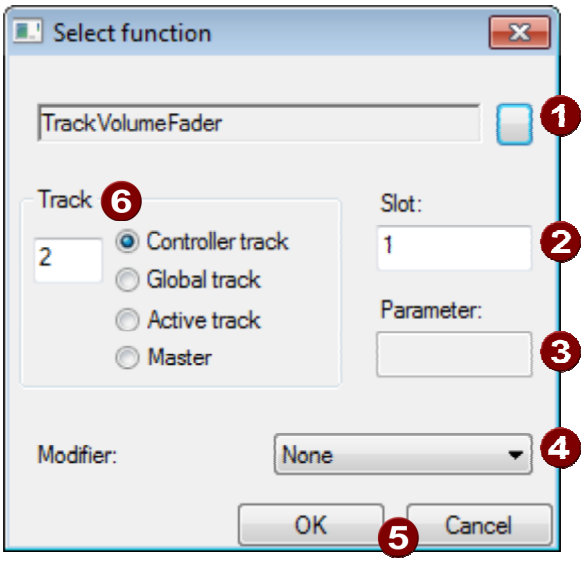
Keys

- **Button:** Simple keys
  Select this type of key when the keys on the hardware controller send a Note On command when pressed and a Note Off command when released.
- **Push Button:** Keys without a MIDI-command when released
  Select this type of key when the keys on the hardware controller ONLY send a Note On command when pressed.
- **State Button:** Key with a rest function
  Select this type of key when the keys on the hardware controller send a Note On command when pressed and a Note Off command when pressed a second time.

Other

- **LED:** Display function on the hardware controller
  LEDs or status lights are often integrated into other control elements or assigned to them. For this reason the "LED" status is most often changed using the same MIDI command that sends the corresponding superordinate control element to Samplitude.
  If a status display is not assigned to any control element, or is changed with a different MIDI command, please refer to the hardware controller manual to find out the correct MIDI command for the LED.

Select Dialog Function



1 **Function selection:** This is where the function assigned to the control element is displayed.

The function that should be assigned to the control element is selected in the dropdown menu.

2 For certain functions there are several slots per track, e.g. for AUX sends, the equalizer (one slot per EQ band respectively) and the insert effects.

Slot: Determines the number of the slot that the assigned control element affects. For functions that are only present once per track, this parameter does not cause any change.

3 **Parameter:** Additional dimensions for the selection of specific track parameters. If an effect has several parameters, the actual parameters are numerically ordered in this field.

For example, the following scheme would be used for the track equalizer:

- **Slot:** Selection of frequency band (= 4 Slots)
- **Parameter:** Selection of parameter in the respective frequency band (Gain/Frequency/Q)

4 **Modifier:** The control element is only active when the set modifier key or the set combination is pressed.

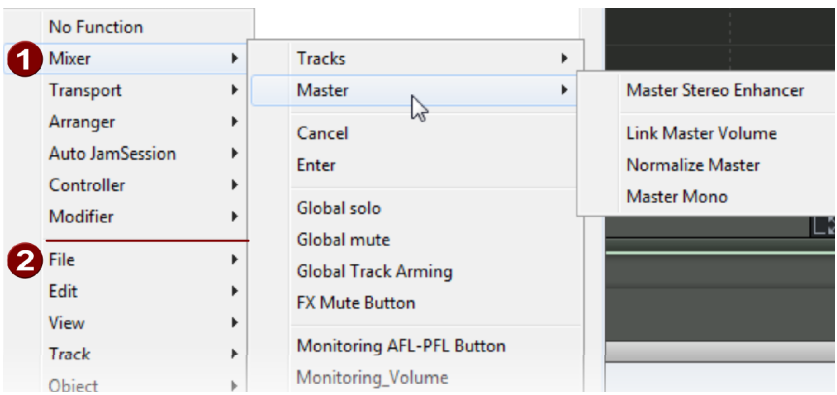
The function opened by the modifier is called the modifier function (view page 449).

5 **OK:** The dialog is closed and the changes are applied.

Close: The dialog is closed without applying the changes.

6 **Track:** Track-based functions are assigned to the track through this parameter.
- **Controller Track:** The track allocation of the assigned function is controlled by the setting „Synchronize with“ (view page 459) in the „Options“.
- **Global Track:** The assigned function always affects the entered track.
- **Active Track:** The assigned function always affects the active track.
- **Master:** The assigned function always affects the master track.

Function Selection



1 The upper area contains the functions that are typically controlled with hardware controllers.

2 The lower area displays the complete Samplitude Music Studio menu structure. You can use this to assign each menu command to a controller key.

Note: Please note that when working with menu commands, the key LEDs of the controllers remain inactive.

Modifier Functions

Modifier functions are multiple allocations of control elements that are only active while the modifier key is being pressed. These hardware controller modifier keys first have to be mapped (view page 457) in order to function. Any key on the hardware controller can be used as a modifier key.

The following modifier keys are available.

- Shift (alternatively locked)
- Option
- Control

Note: „Shift Lock“ has the same effect as „Shift“ but the corresponding key remains "snapped" when the key is released. Pressing the "Shift" key again turns the lock off. "Shift Lock" is particularly useful when combined with other modifier keys or when the status of the Shift key is displayed by the hardware controller.

As soon as one or more modifier keys is pressed, the respective additional allocation of the correspondingly mapped control element becomes active. After releasing the modifier key, the standard function becomes active again.

Combinations of Modifier Keys

The modifier keys can also be used in combination which increases the scope of remotely controlled commands even further.

The following combinations are available:

- Shift (Lock) + Option
- Option + Control
- Shift (Lock) + Control
- Shift (Lock) + Option + Control

Preset Modifier Functions

For Control Elements for Value Entry (view page 447) there are preset modifier functions:

- Shift (Lock) + FaderTouch (without moving the fader): The allocated parameter is reset to the default value (e.g. track volume: 0.0 dB).
- Shift (Lock) + Moving endless knob: A finer value gradation during a change to the value.

MIDI Monitor

The MIDI monitor shows either MIDI input data or MIDI ouput data.

- MIDI Input Monitor: Shows all MIDI data being sent to Samplitude Music Studio from the hardware controller.
  This dialog is modal, i. e. no other dialogs can be used when the MIDI monitor is open.
- HWC MIDI output monitor shows all MIDI data being sent from Samplitude Music Studio to the selected the hardware controller.
  This dialog is not modal. This means that Samplitude Music Studio is fully operational while the MIDI monitor is open.

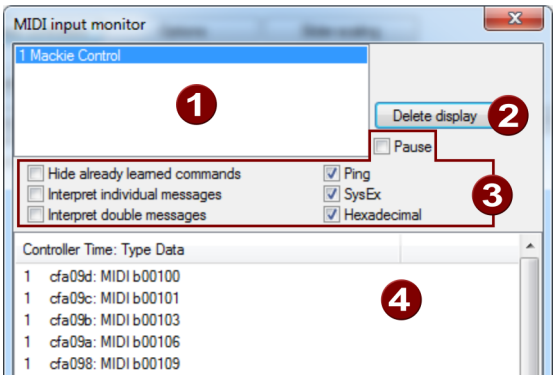
The MIDI data that is displayed depends on the settings.

Open

- **MIDI Input Monitor:** Activate the „MIDI Monitor“ button.

- **HWC MIDI Output Monitor:** Activate the „MIDI Monitor“ button while holding down the Shift key.

Setup and Functioning



1 **Selection of Hardware Controller for MIDI Monitoring:** Clicking on the entries activates or deactivates the hardware controller for MIDI monitoring.

2 **Delete Display:** This deletes the values in the display field (4).

3 Options

- **Hide already learned commands:** MIDI commands that have already been mapped in Samplitude Music Studio won't be shown in the list.
- **Interpret individual messages:** The MIDI commands are interpreted as 7 bit values.
- **Interpret double messages:** 2 MIDI commands are interpreted as 14 bit values.
- **Ping:** If this option is activated, the display of the MIDI Ping command entered under "Options" (view page 458) is disabled.
- **SysX:** If this option is activated, SysEx data is displayed.
- **Hexadecimal:** The MIDI commands are displayed in hexadecimal format. If this option is deactivated, the MIDI commands are displayed in decimal format.
- **Pause:** If this option is activated, no new data is displayed.

4 **Display range for MIDI data:** The MIDI data that is sent and received from the hardware controller is displayed here.

New MIDI data is displayed at the top of the list.

Controller Learning with Easy Learn (Plug-in and Mixer Elements)

The respective active mode can be adjusted for individual settings. The **mixer system menu** features the option "**Hardware Controller Easy Learn**" for this. Right-click on the title bar in the mixer or click on the icon to open this function.

Note: For assignment using Easy learn, only control elements that have been learned in the hardware controller dialog can be used.
Assignment using Easy Learn changes the active mode until the option "Restore Modes" is selected in the „Options“ (view page 458) menu.

1. Click on the command „**Hardware Controller Easy Learn**“.
2. Activate a mixer element with the mouse.
3. Now move the desired control element on the controller.
   Result: The controller control element now controls the newly assigned mixer element.

The **plug-in** menus also include the option "**Hardware Controller Easy Learn**". The parameters of a plug-in can also be mapped to a controller in the same way.



The changes remain available until

- the option „**Restore Modes**“ is selected in the hardware controller dialog or
- a change is made to the hardware controller dialog settings.

Here are the instructions for mapping a hardware controller:

1. Select the ports you used to connect the controller under MIDI input and MIDI output.
2. If there is already a template for your controller in the "Factory Presets", you can select this and your controller will be instantly ready for use.
   In this case you can skip the following steps.
3. Create a new controller entry by clicking on „Basic settings“ then „Add New" and selecting the option "#New". If a prompt for activation of the MIDI SysEx input then appears, answer this with "Yes".
4. If you haven't yet set up any connection between your controller and the PC, do that now. Most controllers are either connected by USB or MIDI.
5. In the "Options" tab, select "Generic MIDI" as the protocol and enter the number of control elements on your controller as the number of tracks (e. g. if your controller has 8 faders, enter "8").

Note: If you are not sure, leave this value set to "0". You can also leave the other values in their default settings.

6. Now switch to the "Customize Controllers" tab.
7. Here you can first assign all of the control elements that you want to use. The following process is the same for every control element:
   - Open the mixer or plug-in you want to control and move the desired parameters with the mouse.
   - Now move the desired control element on the hardware controller. After 1 or 2 seconds it will appear in the Element List. The assigned parameter now appears in the "Easy Learn function" column of the control element.
   - Then check that the type has been correctly set and correct the setting if necessary (e. g. non-motorized faders and knobs should be set to the "Absolute" type).

Notes and tips:

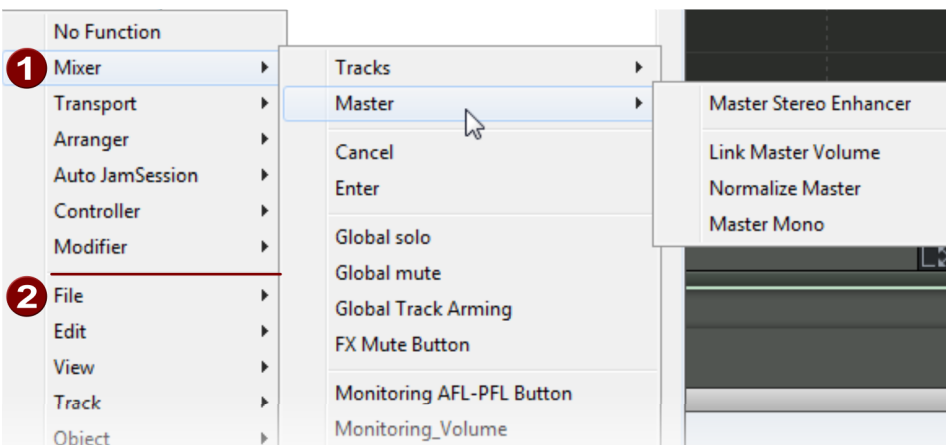
- As soon as you have opened the hardware controller settings, you are automatically in the Easy Learn Mode, i.e. every mouse movement of a mixer or plug-in parameter causes the assignment of this mixer or plug-in parameter to the last touched control element of your hardware controller.
- When you are finished assigning the controls be sure to shut "Hardware Controller Easy Learn" off to avoid making any unwanted changes to the settings.
- If it is not possible to assign a control element, first check in the "MIDI Monitor" ("Customize Controllers" tab) whether MIDI data is being received at all when moving the element. If this is not the case, your controller is either wrongly configured (wrong MIDI connection or incorrect internal mode of the controller) or the relevant control element is not sending data (other elements work). If the latter is the case, unfortunately you cannot use the element.
- In addition to the normally assigned "function", every control element can also have the "Easy Learn Function".

- The normal function is permanently assigned to the element whereas the "Easy-Learn Function" is a temporary function that has priority over the normal function if present.
- - You can also apply this after mapping an "Easy Learn Function". To do this, click with the right mouse button on the relevant element in the "Easy Learn Function" column. The "Easy Learn Function" is now transferred to the normal function.

Adjusting the assignment of a control element

Assigning a new function

1. Right-click on the desired entry in the "Function" column.
   The "Select Function" dialog will open.



2. Open the dropdown menu and select the desired function.
3. Click "OK" to close the dialog.
4. Click on the "Apply" button to confirm the changes.
5. Test the assignment by moving the control element on the hardware controller.

Mapping control elements

Mapping mixer or plug-in control elements

All of the control elements on the mixer or plug-ins that should be controlled by the hardware controller can be mapped using the Easy Learn function.

Requirement: The „Hardware Controller Setup“ dialog is opened in the "Adjust controller" view.

To do this, proceed as follows:

1. Select the mixer element that will be assigned to the control element.

2. Now move the control element on the hardware controller.
   Result: A new entry will be added to the list of control elements. The MIDI command that will be sent from the hardware controller is displayed in the "MIDI" column.

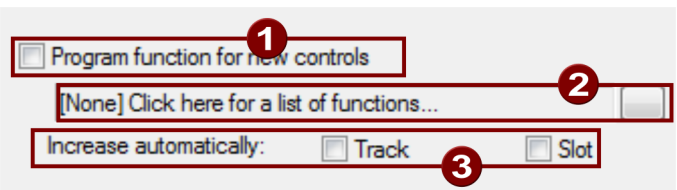
   Note: If the control element on the hardware controller is touch-sensitive, a fader touch message will be sent when it is touched and when it is released. In this case 2 new elements are added.

3. Repeat this procedure for all of the control elements that should be mapped.
4. Select all of the entries in the list.
5. Move the mouse pointer over the entries in the "Easy Learn Function" column.
6. Right-click to open the context menu and select the option "Apply Easy Learn Function".
   The entries will be assigned automatically.
7. Click on the **"Apply"** button to confirm the changes.
8. When additional fader touch messages were added (button): Assign subfunction (view page 457).

Adding the same control element to multiple tracks/slots

Hardware controllers capable of simultaneously controlling multiple tracks/slots can be mapped quickly and easily.

To do this, proceed as follows:



1. Activate the option „Hardware Controller Easy Learn“ in the Mixer's menu.
2. Activate the option **„Program Functions for New Controls“** 1.
3. Activate the option **„Increase Automatically: Track/Slot“** 3.
4. Assign the desired function:
   1. Click on the field for the function selection 2.
      The **"Select Function"** dialog will open.
   2. Open the dropdown menu and select the desired function.
   3. If necessary, activate the desired modifier key in the dialog.
      The mapped function is then only activated when the set modifier key is also pressed.
      The modifier key must also be mapped (view page 457).
   4. Click **„OK“** to close the dialog.

Note: Hardware controllers with touch-sensitive faders send a message whenever they are moved and released (FaderTouch). In this case 2 entries are automatically added, but the entry for the fader touch message is not assigned.

5. Move all of control elements of this type on the hardware controller.
   When the control elements are moved, a new entry is added and the track/slot number is increased by 1.
6. If additional fader touch entries are generated, assign these as subfunctions (view page 457).
7. Deactivate the option „Hardware Controller Easy Learn“ in the Mixer's menu.
8. Click on the **"Apply"** button to confirm the changes.

Mapping individual control elements

Control elements can be mapped individually, e.g. for special program functions. The modifier keys are also mapped individually.

To do this, proceed as follows:

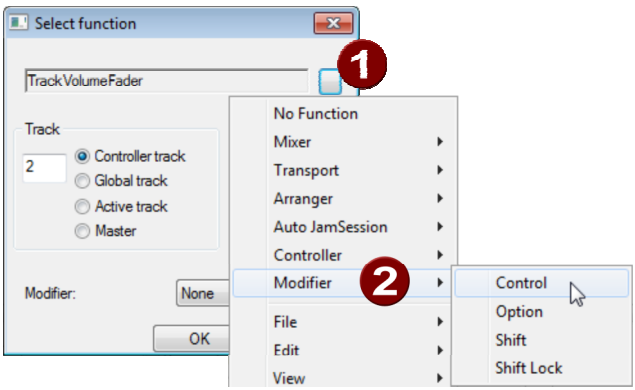
1. Manipulate the desired control element on the hardware controller.
   A new entry will be added to the list of control elements. The MIDI command that will be sent from the hardware controller is displayed in the "MIDI" column.

   Note: Hardware controllers with touch-sensitive faders send a message whenever they are moved and released (FaderTouch). In this case 2 new elements are added.

2. Assign the desired function:
   1. Right-click on the list entry in the "Function" column.
      The "Select Function" dialog will open.
   2. Open the dropdown menu and select the desired function.
   3. If necessary, activate the desired modifier key in the dialog.
      The mapped function is then only activated when the set modifier key is also pressed.
      The modifier key must also be mapped (view page 457).
   4. Click "OK" to close the dialog.
3. Repeat this process for all of the control elements that should be mapped.

Mapping modifier keys

Mapping modifier keys is exactly the same as mapping individual control elements (view page 456) of a hardware controller.

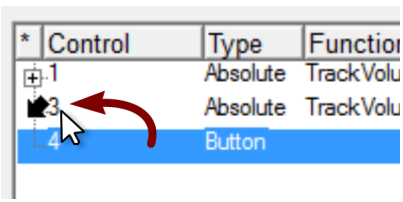


The modifier keys can be found in the "Select Function" dialog in the function selection menu 1 under "Modifier" 2.

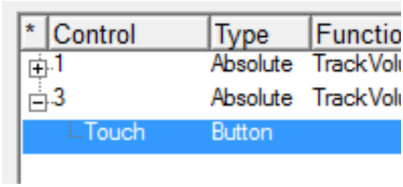
Assigning subfunctions

Tip: Assigning elements can be simplified if they are displayed in the order in which they were detected.
Select the "Elements" column to sort the detected control elements in this order.

1. Manipulate the control element on the hardware controller without moving it. The corresponding entry will be selected in the list.



2. Now drag & drop the entry onto the corresponding entry for the movement, e. g. „TrackVolumeFader (Global Track 1) (Slot 1)“.
   A popup menu will open.
3. Here you can specify the subfunction:
   - When dealing with a touch-sensitive control element such as a touch-sensitive fader:
     Select the entry **„Insert as touch element“**,
   - When dealing with a control element with additional key function such as an encoder that can be additionally pressed:
     Select the entry **„Insert as push element“**,



Assigned touch function of a touch-sensitive fader

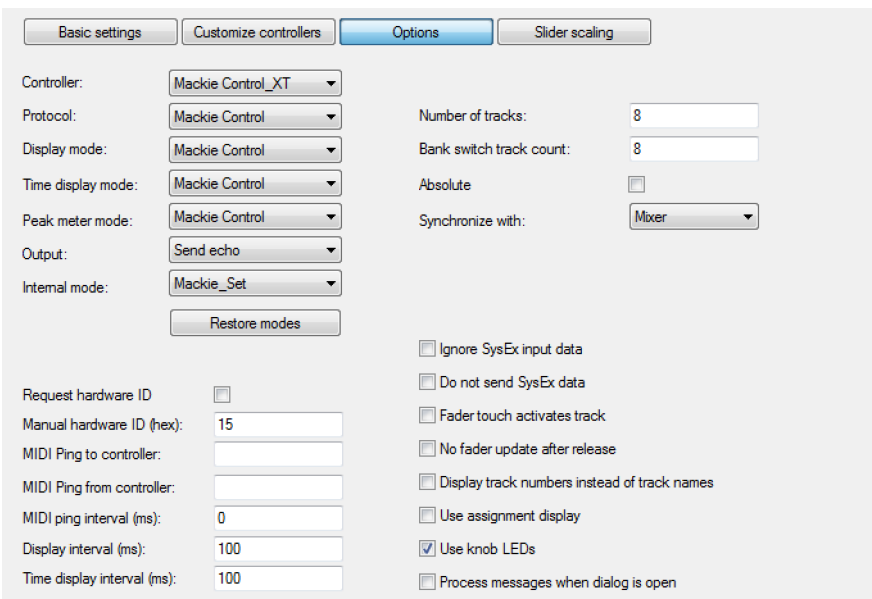
Correcting incorrectly recognized control elements

In rare cases some control elements might be improperly recognized during mapping, e.g. as "relative" instead of "absolute". This can be caused by various factors, e.g. large value jumps when moving the fader.

You can correct these incorrectly recognized control elements as follows:

1. Select the incorrectly recognized control elements:
   - with <Shift> for multiple control elements positioned one after the other
   - with <Ctrl> for multiple control elements
2. Position the mouse pointer over one of the entries in the "Type" column.
3. Right-click to open the context menu.
4. Select the appropriate type for the control element (view page 447).
5. Click on the "Apply" button to confirm the changes.

Options



Received MIDI messages are interpreted differently depending the the type of controller being used. In the "Options" view you can adjust the settings for the controller behavior to fit your personal workflow.

General Options

Controller

The hardware controller whose options will be edited is selected here. The list contains all hardware controllers that have been set in the "Basic Settings" view.

Protocol

The protocol determines how Samplitude Music Studio communicates with the hardware controller. This determines the structure as well as the number and the order of the MIDI messages that make up a command.
The following protocols are available:

- Generic MIDI
- Mackie Control
- HUI
- JLCooper
- Tascam 2400
- FaderPort

Samplitude Music Studio options

Number of tracks

Number of tracks: Specifies the number of tracks in a bank available to the controller. This is usually eight tracks. Mackie Control and HUI protocols can only communicate with eight channels per bank. However, some controllers have a native mode which lets you learn several channels (64 max.). For single track controllers, the value is "1".

Number of tracks for bank switch

A project in Samplitude Music Studio can include more tracks than are available to the controller. In this case the controller can only display a section of the available tracks. To change this section you can perform a channel switch or bank switch. A channel switch changes the section by one track while a bank switch changes the section by several tracks. You can set different step sizes for each bank depending on the number of tracks on your controller and your preferred working method.

Synchronize with

The following options deal with the **synchronization between the controller area, mixer area, and the active track**. The controller area corresponds to the section of available tracks in the project that can be operated with the controller. The mixer area is the section of available tracks in the project that can be controlled with the Samplitude Music Studio mixer.

Synchronize with Active Track: If the active track is changed, the controller area will be adjusted so that the active track is within the controller area.

Synchronize with Mixer: If a change is made to the controller area, the beginning of the mixer area will be adjusted according to the beginning of the controller area.

Note: Make sure that the synchronization of the view in Samplitude Music Studio with the hardware controller is dependent on the control element settings (Track) (view page 448).

Fader touch activates track

This option activates the track that belongs to the fader in the application when a touch-sensitive fader is affected.

Use assignment display

Some controllers have an additional display field for showing the current operational mode (track, EQ, AUX, etc.). If a controller does not have this kind of display, you can deactivate this option to prevent the control commands from incorrectly influencing other controller elements.

Process messages when dialog is open

Normally, when hardware controller dialogs are open, MIDI messages are no longer processed so that unwanted changes are avoided. When a controller is being customized or programmed it is sometimes necessary to send back messages to the controller. In this case, you can activate incoming messages while the dialog is open. Make sure to deactivate this feature when you are finished customizing the controller.

Options for controlling the hardware controller

Display mode

Many hardware controllers have LCD displays which differ in size and the number of lines and which need to be controlled differently. For hardware controllers without a display you can simply set the display control to "Off".
The following display modes are available:

- Off
- JLCooper
- Mackie Control
- HUI

Display interval (ms)

Display control occurs in certain time intervals and not continuously. This is meant to limit the amount of display information. A short interval accelerates the display on the controller but increases the amount of MIDI data that must be transferred.

Show track numbers instead of track names

If this option is active, track numbers will be shown instead of track names in the controller display.

Time display mode

Some hardware controllers have a special display for the current time position (Locator). The time display mode can be set for the following types of display:

- Off
- JLCooper
- Mackie Control
- HUI

Time display interval (ms)

Locator display control also takes place in time intervals. If the time position changes within an interval, only the last current value will be sent to the controller. If you shorten the interval, the locator display will react faster and more directly.

Peak Meter Mode

Some hardware controllers have a special peak meter display. The peak meter mode sets the controls for this display.
The following peak meter modes are available:

- Off
- Mackie Control
- HUI
- Tascam 2400

Output

- **Deactivate:** Hardware controller data is received and processed, Samplitude Music Studio doesn't send any data back to the controller.
- **Normal Send:** The same as „Deactivate“, but changes in Samplitude Music Studio are sent to the hardware controller.
- **Echo Send:** The same as "Normal Send" except that the received hardware controller data is immediately sent back and end at the controller, e.g. data for status LEDs.
- **Echo Send (without fader touch):** The same as "Echo Send", but no fader values are sent while the faders are being moved. The fader value is only sent back to the hardware controller when the fader is released.

Note: Some controllers (e. g. „Logic Control“) have problems receiving echo messages (termination). In this case select the setting "Normal Send".

Do not send SysEx data

Samplitude Music Studio sends different messages via SysEx. Exactly what is sent depends on the selected display mode, locater mode etc.

If SysEx messages start to cause problems, you can prevent these kinds of messages from being sent to the controller.

No fader update after release (Motorized Fader)

When you move touch-sensitive faders, the fader messages to the controller are normally ignored by the controller. After release the hardware controller expects a position message as termination.

If this message is not sent, the fader will slide back to the position it was in before it was moved. Some controllers do not need this new position message. When they receive the new position they first jump to the old position and then to the new one.

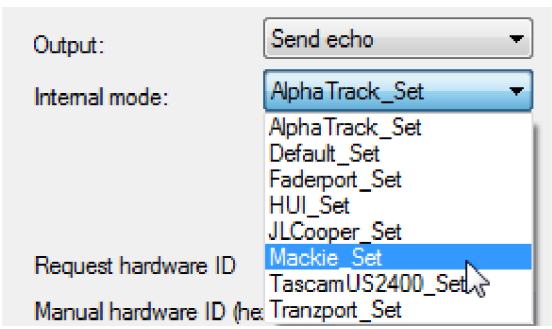
If the fader update after release of the fader should not be sent, you can deactivate this sending of the new position here.

Control LED knobs

Some controllers have LED displays that are assigned to the knobs. These can be used to visually display the current parameters of the knob. If you are using a controller with no knob LEDs, you can deactivate this option.

Options for the interpretation of hardware controller demands

Hardware Controller - Internal Mode ("Options" tab)



Note: The parameter **„Internal Mode“** is only available for hardware controllers that have been added to the "Basic Settings" view on the first level and therefore act as the "Main Controllers".

The "Internal Mode" determines how Samplitude Music Studio reacts to incoming remote commands from hardware controllers and enables adaptation to conceptually different hardware controllers.

Depending on the mode, different information is displayed on the controller and Samplitude Music Studio interprets the controller messages correspondingly. The effect is that a particular physical control element controls different parameters in Samplitude Music Studio, depending on the internal operating mode.

These data structures can be manipulated using the function **„Hardware Controller Easy Learn“ in the mixer menu and the menus of the VST plug-ins** (view page 452). In this case, the active operating mode can be changed so that it is able to function differently than its preset. The changed data structures are saved accordingly and are immediately available the next time the program is launched. This ensures that you are able to continue working with the most recent settings.

Note: If you are using a hardware controller that is not listed in the hardware control setup, select one from the list that is most similar in concept and design.

The following internal modes (Mapping Modes) are available:

Frontier AlphaTrack_Set

Track

Press first time: Panorama mode

- Panorama control
- Navigate to markers
- Move selected track

Press second time: Active control mode

- Changes the value of the selected element in the mixer with the fader.

AUX

- Select other track
- Select other slot
- Change AUX send of the selected track/selected slot

EQ

Controlling the input volume, frequency, and quality bands of the selected EQs. The individual bands are selected with "Mixer track up/down".

Plug-in

- Select track
- Select plug-in slot in the track with "Mixer track up/down" key

Now you can control 3 parameters of the corresponding plug-ins with the vpots. The display page is toggled with the keys "Mixer track up/down".

Default Set

Presonus FaderPort_Set

Active control

The currently active mixer element (recognizable by red highlighting) is controlled by the first fader.

Mackie HUI_Set

Track

Track mode

Active control

The currently active mixer element (recognizable by red highlighting) is controlled by the first fader.

EQ (Phat Channel EQ mode)

Controls the EQ for the selected track via the knob controllers.

AUX (Phat Channel AUX mode)

Controls all AUX sends in the selected channel.

AUX [slots] (1 - 8) (Track AUX mode)

Controls AUX sends for the different tracks in the selected slot.

JLCooper_Set (MCS)

Track

Press first time: Track mode

Press second time: Active control mode

- Each activated mixer element (recognizable by the red marking) is controlled by the first fader

AUX

Controls all AUX sends in the selected channel.

EQ

Controls the EQ of the selected track via the knobs.

Mackie Multitrack

Track

Press first time: Track mode

Press second time: Active control mode

- Each activated mixer element (recognizable by the red marking) is controlled by the first fader

PAN

- Pan mode (like track mode, except for the display)

EQ

Press first time: EQ Phat Channel Bandwise mode

- Gain, frequency, and quality accessible via the knobs
- Use the bank switch keys to access the other bands

Note: The bank switch functions have to be learned, which is usually the case

Press second time: EQ Phat Channel Typewise mode

- Gain, frequency, and quality accessible via the knobs (differently grouped than in Bandwise mode)
- Using the bank switch keys, each of the other EQ functions can be accessed

AUX

Press first time: AUX track mode

- AUX 1 to 6 of the active track using the knobs

Press second time: AUX slot mode

- Set AUX for each track
- Select number of AUX tracks to be controlled using the Bank Switch keys

Plug-in

- The VST plug-in slots are listed for the active track (flip through via bank switch keys)
- Selection of the VST plug-in to be adjusted by pressing the corresponding knob
- Thereafter the parameters for the selected plug-ins are shown
- Changing the parameter using the knob

- Page through the parameters

Frontier Tranzport_Set

Functions: For transport only

Request hardware ID

Activate or deactivate the automatic hardware ID request. Deactivate this function if you aren't using the "Mackie Control" display mode. This helps to avoid incorrect interpretation of the request message.

Manual Hardware ID

For display in "Mackie Control" display mode, an additional parameter is necessary: The hardware ID. This can be automatically requested with new firmware versions or manually entered

MIDI Ping to controller

Most controllers expect a periodic incoming MIDI message (ping) to ensure that there is communication with the application. Different messages can also change the operating modes of a controller. Here you can enter the message that should be sent to the controller.

MIDI Ping from controller

In response to ping messages, controllers usually send a ping message back. To ensure that these are not falsely mapped as MIDI commands you can enter these explicitly so that they are ignored by the application.

MIDI Ping interval (ms)

Here you can specify the time period between the two ping messages in milliseconds.

Ignore SysEx input data

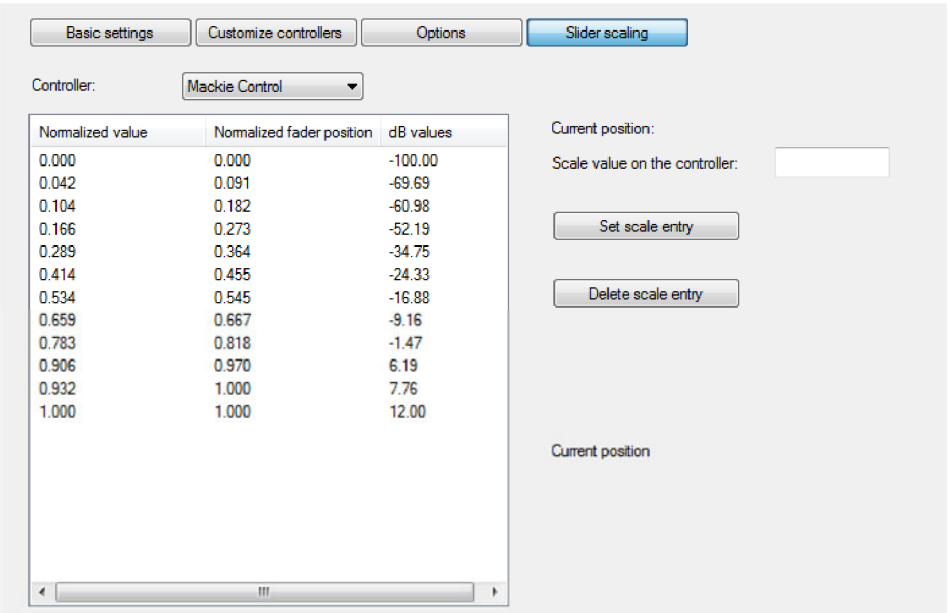
SysEx data from the hardware controller will not be processed by the application.

Fader Scaling

Fader scaling offers you the option of calibrating the scale on the hardware controller to the volume fader values in Samplitude Music Studio.

Control with a hardware controller can take place in a range from +12 dB to -100dB. Normally at +12 dB the fader position is at the very top and at -100 dB at the very bottom.

Note: Calibration of the fader scale only makes sense when the fader scale on the controller actually includes numerical values.



Add scale values

1. In the „**Controller**“ section select the hardware controller whose printed scale should be calibrated in Samplitude Music Studio.
2. Delete all previous entries. Click on the entry in the list and then press "**Delete scale entry**".
3. Enter the value "6" into the "**Scale entries on controller**" and move the fader all the way up (to the scale value +6dB). Next, click "**Set scale entry**" to set the new entry.
4. Move the fader all the way to the bottom and enter the lowest scale value (at least „-100“) in the field **„Scale entry on controller**“. Click "**Set scale entry**" again.
5. Enter further scale positions in the same way (e. g. -12, -24, -48...).

Test the mapped scale

1. Click "OK" to close the dialog.
2. Compare the entered fader position of the hardware controller with the fader position in the program mixer.

Changing entered scale values

1. Select the incorrectly mapped value
2. Click on the button "Delete scale entry"
3. Add the correct scale value.

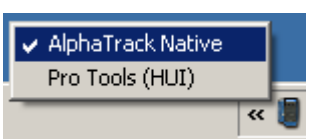
Hardware Controller Presets

The following is a list of the most important presets for hardware controllers including their integration and configuration.

Frontier AlphaTrack



1. The "AlphaTrack" is supported in Native Mode. For this reason you should set the device to „**AlphaTrack Native**“ by right-clicking on the "AlphaTrack" button in the taskbar.



2. In Samplitude/Sequoia go to **„System Settings/Hardware Controller“**, click on the "New" button and select "AlphaTrack" from the list.
3. Now set the right side of the MIDI port to "**AlphaTrack**".
4. Close the dialog. Your controller is now ready to use.

Controller configuration

Control element	Function	Shift-Label	SHIFT function
Foot switch	Recording		
FADER	Track volume		
ANY SOLO (LED)	Indicates that at least one track in the arrangement is switched to SOLO		
AUTO WRITE (LED)			
AUTO READ (LED)			
REC	Record track		Monitor track
SOLO	Track solo		Global solo
MUTE	Mute track		Global mute
SHIFT	Shift		
PAN	Press first time: Pan mode Second pressing: Active Control Mode (see table 2)		
SEND	AUX mode (see table 2)		
EQ	EQ mode (see table 2)		
Plug-in	Plug-in Mode (see table 2)		
AUTO	Track automation		Copy automation mode to all tracks
F1	Touch automation	F5	Read automation
F2	Latch automation	F6	Automation off
F3	Overwrite automation	F7	Restore
F4	Trim automation	F8	Undo
< TRACK	Previous track	IN	Punch Start Marker

Control element	Function	Shift-Label	SHIFT function
TRACK >	Next track	OUT	Punch End Marker
LOOP	Loop Mode	PUNCH	Punch Marker Mode
FLIP	Mixer	WINDOW	Delete punch marker
<<	Fast rewind	RTZ	Playback marker to project start
>>	Fast forward	END	Playback marker to project end
STOP	Stop	Esc	Cancel
PLAY	Playback	Enter	Enter
RECORD	Recording	MODE	
TOUCHPAD	Positioning		

Special modes

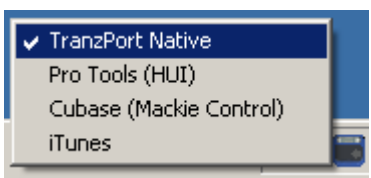
Mode	Control element	Turn	Press
Pan mode	KNOB 1	Track selection	
	KNOB 2	To the marker	Set marker
	KNOB 3	Pan	Reset pan
ACTIVE CONTROL MODE	FADER (controls the active element in the mixer, track editor, or plug-in that must be selected with the mouse beforehand)		
	KNOB 1	Pan	
	KNOB 2	Pan	
	KNOB 3	Pan	
AUX mode	KNOB 1	Track selection	
	KNOB 2	AUX level	
	KNOB 3	AUX selection	
EQ mode	KNOB 1	Intensity	
	KNOB 2	Frequency	
	KNOB 3	Quality	

Mode	Control element	Turn	Press
	< TRACK	Previous EQ band	
	TRACK >	Next EQ band	
Plug-in Mode Plug-in slot selection	KNOB 1	Track selection	
	KNOB 2		
	KNOB 3	Slot selection	
	< TRACK	Select plug-in	
	TRACK >	Select plug-in	
Plug-in parameter	KNOB 1	Change parameters	
	KNOB 2	Change parameters	
	KNOB 3	Change parameters	
	< TRACK	Previous parameters	
	TRACK >	Next parameters	

Frontier TranzPort



1. „TranzPort“ is supported in „Native Mode“. For this reason you should set the device to „**TranzPort Native**“ by right-clicking on the "TranzPort" button in the taskbar.



2. In Samplitude/Sequoia go to "System Settings/Hardware Controller, click the „**Add New**“ button and select „**Frontier_TranzPort (Native)“** from the list.
3. Now,set the right side of the MIDI port to **TranzPort**.
4. Close the dialog. Your controller is now ready to use.

Controller configuration

Control element	Function	SHIFT function
< TRACK	Previous track	
> TRACK	Next track	
REC	Record track	Monitor track
MUTE	Mute track	Global mute
SOLO	Track solo	Global solo

Control element	Function	SHIFT function
ANY SOLO (LED)	Indicates that at least one track in the arrangement is switched to SOLO	
UNDO	Undo	Restore
IN	Punch Start Marker	
OUT	Punch End Marker	
PUNCH	Punch Marker Mode	Delete punch marker
LOOP	Loop Mode	
SHIFT	Shift	
PREV MARKER	Previous marker	Metronome
ADD MARKER	Insert marker	
NEXT MARKR	Next marker	Scrub mode
<<	Fast rewind	Playback marker to project start
>>	Fast forward	Playback marker to project end
STOP	Stop	Cancel
PLAY	Playback	Enter
RECORD	Recording	
DATA WHEEL	Positioning	Track volume
DATA WHEEL + STOP	Selected range	
Foot switch	Recording	

Logic Control

1. In Samplitude Music Studio go to „System Settings/Hardware Controller“, (view page 434) click on the **"Add New"** button and select **"Logic Control"** from the list.
2. Now set up the MIDI ports with the respective inputs and outputs of your MIDI interface.
3. Close the dialog. Your controller is now ready to use.

TRACKS

Control element	Function	Modifier	Modifier function
KNOB 1~8	Pan; Eq; Aux (see **special modes**)		
REC/RDY 1~8	Activate track	SHIFT	Monitor track
SOLO 1~8	Track solo		
MUTE 1~8	Mute track		
SELECT 1~8	Select track		
FADER 1~8 (with fadertouch)	Track volume		
MASTER FADER	Master volume		

ASSIGNMENT

Control element	Function
1	Press first time: Track mode Press second time: Active Control mode (see special modes)
2	Press first time: AUX mode Press second time: AUX mode (phat channel) (see special modes)
PAN/SURROUND	Pan mode (see special modes)
Plug-in	Plug-in Mode (see special modes)
EQ	EQ mode (see special modes)
INSTRUMENT	

FADER BANKS

Control element	Function
< BANK	Mixer track 8 to the left
BANK >	Mixer track 8 to the right

Control element	Function
< CHANNEL	Mixer track 1 to the left
CHANNEL >	Mixer track 1 to the right
FLIP	Flip mode: Exchange functions of knobs and faders
GLOBAL VIEW	Mixer

DISPLAY

Control element	Function
NAME/VALUE	
SMTP/BEATS	Timecode switch

FUNCTION BUTTONS

Control element	Function	Modifier	Modifier function
F1-F8	Set / jump to marker 1-8	SHIFT CNTRL	Move markers 1-8 Delete markers 1-8

GLOBAL VIEW

Control element	Function
MIDI TRACKS	
INPUTS	
AUDIO TRACKS	
AUDIO INSTRUMENT	
AUX	
BUSSES	Select previous object.
OUTPUTS	Select next object
USER	Crossfade Editor

MODIFIERS

Control element	Function
SHIFT	Control
OPTION	Option
CONTROL	
# / ALT	Shift

AUTOMATION

Control element	Function	Modifier	Modifier function
READ/OFF	Read automation	SHIFT	Automation off
WRITE	Overwrite automation		
TRIM	Trim automation		
TOUCH	Touch automation		
LATCH	Latch automation		
GROUP	Copy automation mode to all tracks		

UTILITIES

Control element	Function	Modifier	Modifier function
SAVE	Save		
UNDO	Undo	SHIFT	Repeat
CANCEL	Cancel		
Enter	Enter		

Special modes

Mode	Control element	Turn	Press
Track mode	KNOB	Pan	Reset
ACTIVE CONTROL MODE	FADER (controls the active element in the mixer, track editor, or plug-in that must be selected with the mouse beforehand)		
Pan mode	KNOB	Pan	Reset
EQ mode	KNOB 1	Level EQ band 1	
	KNOB 2	Level EQ band 2	
	KNOB 3	Level EQ band 3	
	KNOB 4	Level EQ band 4	
	KNOB 5	Frequency EQ band 1	
	KNOB 6	Frequency EQ band 2	

Mode	Control element	Turn	Press
	KNOB 7	Frequency EQ band 3	
	KNOB 8	Frequency EQ band 4	
AUX mode AUX 1~8 selectable using BANK	KNOB 1~8	AUX level	
AUX mode (phat channel) depending on selected track	KNOB 1	AUX 1 level	
	KNOB 2	AUX 2 level	
	KNOB 3	AUX 3 level	
	KNOB 4	AUX 4 level	
	KNOB 5	AUX 5 level	
	KNOB 6	AUX 6 level	
	KNOB 7		
	KNOB 8		
Plug-in Mode Plug-in parameter	KNOB 1~8		Select plug-in
	KNOB 1~8	Change parameters	
	< BANK	Previous parameters	
	BANK >	Next parameters	
Marker mode	REWIND		Previous marker
	FAST FWD		Next marker
Object mode	REWIND		Previous Object
	FAST FWD		Next object

Logic Control XT

1. In Samplitude/Sequoia go to „System Settings/Hardware Controller“, click on the "**Add New**" button and select "**Logic Control XT**" from the list.
2. Position Logic Control XT under Logic Control



If you have set up **Logic Control XT** to the left of **Logic Control**, the entries in the list will look like this:



3. Now set up the MIDI ports with the respective inputs and outputs of your MIDI interface on the right side.
4. Close the dialog. Your controller is now ready to use.

The functions correspond with the Logic Control.

Note

The number of tracks to be jumped when a bank switch is pressed can be changed in the hardware controller setup options. These settings are made in **"Logic Control"**.

Mackie Control

1. In Samplitude/Sequoia go to „System Settings/Hardware Controller“, click on the "**Add New**" button and select "**Mackie Control**" from the list.
2. Now set up the MIDI ports with the respective inputs and outputs of your MIDI interface on the right side.
3. Close the dialog. Your controller is now ready to use.

Note

- All entries are based on MCU Firmware 2.1.2.

TRACKS

Control element	Function	Modifier	Modifier function
KNOB 1~8	Pan; Eq; Aux (see **special modes**)		
REC/RDY 1~8	Activate track	SHIFT	Monitor track
SOLO 1~8	Track solo		
MUTE 1~8	Mute track		
SELECT 1~8	Select track		
FADER 1~8 (with fadertouch)	Track volume		
MASTER FADER	Master volume		

ASSIGNMENT

Control element	Function
1	Press first time: Track mode Press second time: Active Control mode (see special modes)

Control element	Function
2	Press first time: AUX mode Press second time: AUX mode (phat channel) (see special modes)
PAN	Pan mode (see special modes)
Plug-ins	Plug-in Mode (see special modes)
EQ	EQ mode (see special modes)
DYN	

FADER BANKS

Control element	Function
< BANK	Mixer track 8 to the left
BANK >	Mixer track 8 to the right
< CHANNEL	Mixer track 1 to the left
CHANNEL >	Mixer track 1 to the right
FLIP	Flip mode: Exchange functions of knobs and faders
EDIT	Mixer

DISPLAY

Control element	Function
NAME/VALUE	
SMTP/BEATS	Timecode switch

FUNCTION BUTTONS

Control element	Function	Modifier	Modifier function
F1-F8	Set / jump to marker 1-8	SHIFT CNTRL	Move markers 1-8 Delete markers 1-8
F9-F13			
F14	Select previous object.		
F15	Select next object		
F16	Crossfade Editor		

MODIFIERS

Control element	Function
CNTRL	Control
OPT	Option
SNAPSHOT	
SHIFT	Shift

AUTOMATION

Control element	Function	Modifier	Modifier function
READ/OFF	Read automation	SHIFT	Automation off
WRITE	Overwrite automation	SHIFT	Copy automation mode to all tracks
UNDO	Undo	SHIFT	Repeat
SAVE	Latch automation		
TOUCH	Touch automation		
REDO	Trim automation		

UTILITIES

Control element	Function
FDR GRP	Cancel
CLR SOLO	Enter
MRKR	
MIXR	Save

TRANSPORT

Control element	Function	Modifier	Modifier function
< FRM	Marker mode (see table 2)		
FRM >	Object mode (see table 2)		
END	Loop mode		
PI	Punch Marker Mode		

Control element	Function	Modifier	Modifier function
PO	Synchronization		
LOOP	Metronome		
HOME	Activate LCD meter by holding "F1", "F2", "F3", or "F4"		
REWIND	Fast rewind	SHIFT	Playback marker to project start
FAST FWD	Fast forward	SHIFT	Playback marker to project end
STOP	Stop		
PLAY	Playback		
RECORD	Recording		
Cursor left	One section left	ZOOM	Horizontal project zoom (-)
Cursor right	One section right	ZOOM	Horizontal project zoom (+)
Cursor up	Next highest track	ZOOM	Vertical project zoom (+)
Cursor down	Next lowest track	ZOOM	Vertical project zoom (-)
ZOOM	Zoom mode		
SCRUB	Scrub mode		
Shuttle wheel	Positioning	SCRUB	Scrubbing

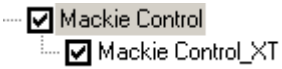
Special modes

Mode	Control element	Turn	Press
Track mode	KNOB	Pan	Reset
ACTIVE CONTROL MODE	FADER (controls the active element in the mixer, track editor, or plug-in that must be selected with the mouse beforehand)		
Pan mode	KNOB	Pan	Reset

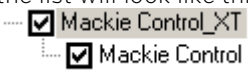
Mode	Control element	Turn	Press
EQ mode	KNOB 1	Level EQ band 1	
	KNOB 2	Level EQ band 2	
	KNOB 3	Level EQ band 3	
	KNOB 4	Level EQ band 4	
	KNOB 5	Frequency EQ band 1	
	KNOB 6	Frequency EQ band 2	
	KNOB 7	Frequency EQ band 3	
	KNOB 8	Frequency EQ band 4	
AUX mode AUX 1~8 selectable using BANK	KNOB 1~8	AUX level	
AUX mode (phat channel) depending on selected track	KNOB 1	AUX 1 level	
	KNOB 2	AUX 2 level	
	KNOB 3	AUX 3 level	
	KNOB 4	AUX 4 level	
	KNOB 5	AUX 5 level	
	KNOB 6	AUX 6 level	
	KNOB 7		
	KNOB 8		
Plug-in Mode Plug-in parameter	KNOB 1~8		Select plug-in
	KNOB 1~8	Change parameters	
	< BANK	Previous parameters	
	BANK >	Next parameters	
Marker mode	REWIND		Previous marker
	FAST FWD		Next marker
Object mode	REWIND		Previous Object
	FAST FWD		Next object

Mackie Control XT

1. In Samplitude/Sequoia go to „System Settings/Hardware Controller“, click on the "**Add New**" button and select "**Mackie Control XT**" from the list.
2. Position **Mackie Control XT** under **Mackie Control**.



If you have set up **Mackie Control XT** to the left of **Mackie Control**, the entries in the list will look like this:



3. Now set up the MIDI ports with the respective inputs and outputs of your MIDI interface on the right side.
4. Close the dialog. Your controller is now ready to use.

The functions correspond with the Mackie Control.

Note

The number of tracks to be jumped when a bank switch is pressed can be changed in the hardware controller setup options. These settings are available in **Mackie Control**.

PreSonus FaderPort

1. In Samplitude/Sequoia go to "System Settings/Hardware Controller, click the „**Add New**“ button and select „**PreSonus FaderPort (Native)“** from the list.
2. Now set the MIDI ports on the right side to USB audio device.
3. Close the dialog. Your controller is now ready to use.



Notes

- The foot switch is functional starting with the hardware controller firmware 1.2.
- To map control elements for the "FaderPort", enter the response values to the controller for learning so that the button LEDs also function. To do this copy and paste the value from the last column of the assignment table (view page 484) of the corresponding control element into the field „Send MIDI Data“.

Controller configuration

Control element (SHIFT)	Function	SHIFT function	MIDI Command	Return value for LED
FADER	Track volume			
PAN	Track pan			
MUTE	Mute track	Global mute	A01200	A01501
SOLO	Track solo	Global solo	A01100	A01601
REC	Record track	Monitor track (ASIO only)	A01000	A01701
<	Previous Track/Bank		A01300	A01401
BANK	"<" and ">" switch bank		A01400	A01301
>	Next Track/Bank		A01500	A01201
OUTPUT	ACTIVE CONTROL MODE (see special modes (view page 485))		A01600	A01101
READ	Read automation		A00A00	A00D01
WRITE	Overwrite automation	Latch automation	A00900	A00E01
TOUCH	Touch automation	Trim automation	A00800	A00F01

Control element (SHIFT)	Function	SHIFT function	MIDI Command	Return value for LED
OFF	Automation off	Copy automation mode to all tracks	A01700	A01001
MIX	Mixer		A00B00	A00C01
PROJ	Focus on arranger		A00C00	A00B01
TRNS	Transport console		A00D00	A00A01
UNDO (REDO)	Undo	Restore	A00E00	A00901
SHIFT	Shift		A00200	A00501
PUNCH (PREV)	Punch Marker Mode	Previous marker	A00100	A00601
USER (NEXT)	Metronome	Next marker	A00000	A00701
LOOP (MARK)	Loop Mode	Insert marker	A00f00	A00801
REWIND (START)	Fast rewind	Playback marker to project start	A00300	A00401
FAST FORWARD (END)	Fast forward	Playback marker to project end	A00400	A00301
STOP	Stop		A00500	A00201
PLAY	Playback		A00600	A00101
RECORD	Recording		A00700	A00001
FOOT SWITCH	Recording		A07e00	

Special modes

Mode	Control element
ACTIVE CONTROL MODE	FADER (controls the active element in the mixer, track editor, or plug-in that needs to be selected with the mouse beforehand)

Metronome options

Please also read the section "Options -> Program settings -> Metronome options".

Recording settings

Format: The higher the bit depth, the more disk space will be needed, but the recording quality will also increase. Higher bit depths are only sensible when the sound card records in this format.

Note: Many sound cards are advertised as 24-bit, but in some cases this refers only to playback.

Save each take in a new file: This option results in each take being saved to a new file. Loop recordings will be processed as one take and saved to one file.

Record offset (samples): Here you can enter an offset in sample words, which is created between sound card playback and recording start of the "Record-while-playing" mode. This allows you to balance the delay between record and play start of some cards. Typical values are between 20 and 1000 samples. Find this value by playing a project with a distinctive beginning in a multi-track VIP and recording it at the same time. You can then measure the offset precisely using the zoom functions.

Update object during recording: The object will be displayed in the VIP already during recording, and it can be observed how it grows in length.

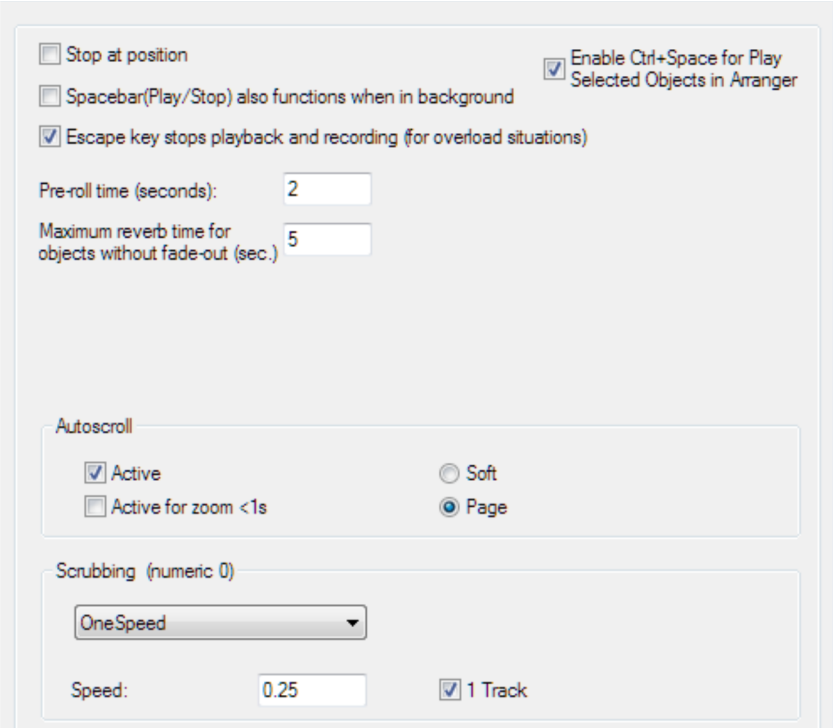
Scroll recording position: Depending on playback settings, you can scroll during recording, too. This means that the visible range of the arrangement follows the current object end.

Show confirmation window after recording (OK/delete): After stopping recording, a dialog appears with the question whether the recording should be saved.

Set playback cursor at the end of recording - the next recording will start at this position: If this option is activated, the cursor will be set at the end of the recording, and playback or recording will start at this position.

Recording button ends playback following standard recording: When the recording is stopped, playback will also be paused.

Playback settings



Shortcut: P

Check the **"Stop at current position"** option to keep the play cursor at the current position when stopping playback. If this option is not active, the play cursor will jump to the original position or back to the start of the range when playback is stopped.

The **"Test space bar (play, stop) in the background as well"** option also allows the space bar to be used for "Play" and "Stop" in Samplitude, even while using a different software application in the foreground.

The keyboard combination **"Ctrl + space bar for playback of selected objects**" can also be used.

The **pre-roll time** is a necessary parameter for editing in Samplitude. Pre-roll time is used to define the time section in seconds which is to be played before the start of the selected range.

The **maximum reverberation time for objects without fade-out** can be set up to 60 seconds here.

Note: Please note that long reverberation times can lead to performance problems.

The option **"Pre-run harmony display (beats)"** ensures that the chords detected by the Harmony Agent are displayed in advance in the set number of quarter note beats.

Autoscroll

Use **Autoscroll** to activate a feature which is especially useful when working with long HD Wave Projects: The graphical display always changes when the playback marker (position line) leaves the visible section. This way you can always keep an eye on things, whereby it has proven most sensible to display the current project in two sections (Setup > 2 sections), one displaying the entire project and one in a useful zoom depth with Autoscrolling.

You can choose between page and soft scrolling. But be careful: Scrolling requires a certain CPU power (depending on the processor, graphics adaptor and resolution), so that the computer may be overloaded in critical situations which may result in playback dropouts. You should then deactivate autoscroll mode.

Scrubbing

If you press the Insert key (Ins or 0 on the number pad), Samplitude Music Studio will be in "Scrubbing Mode". This means that the playback speed can be controlled directly with the mouse. The further the mouse goes to the right, the faster Samplitude Music Studio plays.

In comparison to many HD recording systems, this even works in a virtual multitrack project.

The Scrubbing Mode is great in finding passages in unsorted material, in tracking crackling, etc. in material – the older generation of sound engineers are, no doubt, very familiar with this method from analog tape editing.

There are 2 scrubbing modes available (in the playback parameter window - Key P):

Relative: The relative distance between the playback marker (position bar) and the mouse position can be used to control the speed. The playback marker follows the movement of the mouse.

Absolute: You can use the absolute position of the mouse in the window to control the speed:

- **Left border** = double speed backwards,
- **Mids** = no movement,
- **Right border** = double speed forward.

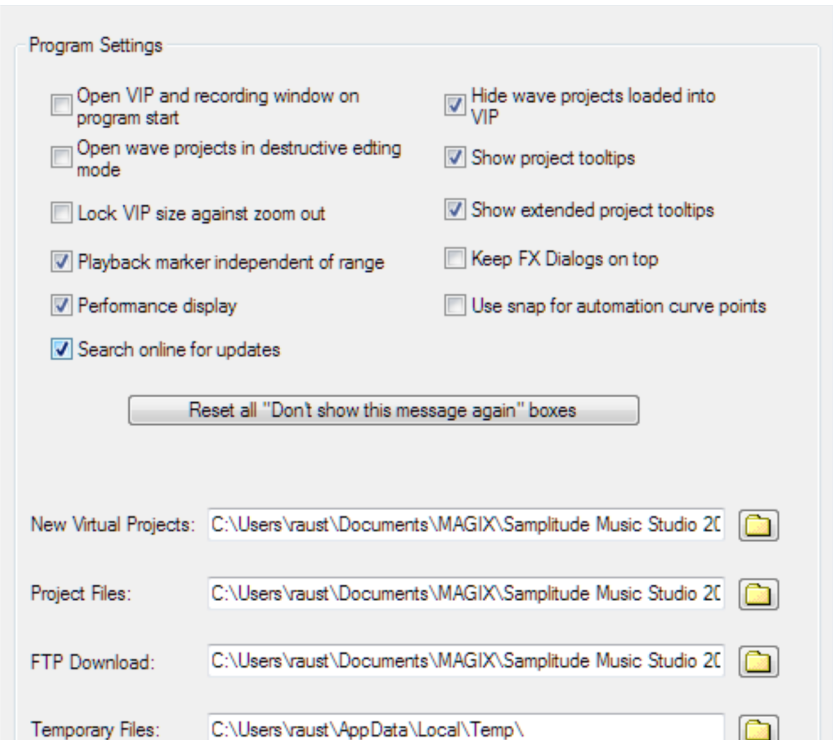
Tip for scrubbing: For small buffer sizes (4000, 2000 samples) scrolling is "softer". Test if your computer functions at this buffer size without drop-outs. Combining with the Soft Scroll Mode guarantees that working on your computer is easy and fast.

Global playback device

Here you can define the driver of the sound card which is to be used for playback if playback is to occur via a card. This is particularly important if you have a sound card with several outputs or if you have several cascadable sound cards in your computer.

Program

General:



Open VIP and record window on program start: If this option is active, Samplitude Music Studio will automatically open an empty virtual project (VIP) and the "Recording parameters" dialog when the program is started.

Open wave projects in destructive editing mode: If this option is activated, waves projects are opened in destructive editing mode (view page 71).

Lock VIP size against zoom out: If you zoom the virtual project out beyond the section size, this option will automatically stop it from being extended.

Playback marker independent of range: This option allows the playback marker to be set independently in "Loop" mode and playback to be started outside of the selected loop range.

Performance display: This option activates the DSP performance display in the lower left corner. Your PC is overloaded if the displayed rate is 100% or higher. If this is the case, try one of the following steps:

- Reduce the number of realtime effects in the mixer or in the object editor.
- Reduce the number of tracks by muting tracks that are not needed.
- Increase the VIP buffer size (Shortcut: Y) to 16000 or 32000 samples.

Note the comments displayed in the status bar if an overload occurs during real-time monitoring of complex effects.

Search for online updates: When this option is activated, Samplitude Music Studio will automatically search for updates each time it is started.

Hide wave projects loaded into virtual projects: Hides windows in wave projects that are loaded directly into the VIP.

Show project tooltips: If this option is active, additional information is displayed when the mouse pointer hovers over an interactive element.

Show extended project tooltips: If this option is activated, the extended tooltips are displayed if the mouse pointer is held over an interactive element.

Keep FX dialogs on top: This option keeps all effect dialog windows "on top" of all other windows.

Use snap for automation curve points: Select this option to set automation curve points while moving set values on the grid.

Reset global "Do not show this message again": Pressing this button reactivates all tips dialogs which you have deactivated over time.

Folders

New virtual projects: All new virtual projects as well as recorded and imported wave projects will be saved under this path.

Project files: All other wave files which are to be saved on the hard drive and cannot be allocated to a specific project are saved through the specified path.

FTP Download: All files downloaded via the integrated FTP client will be saved through the specified path.

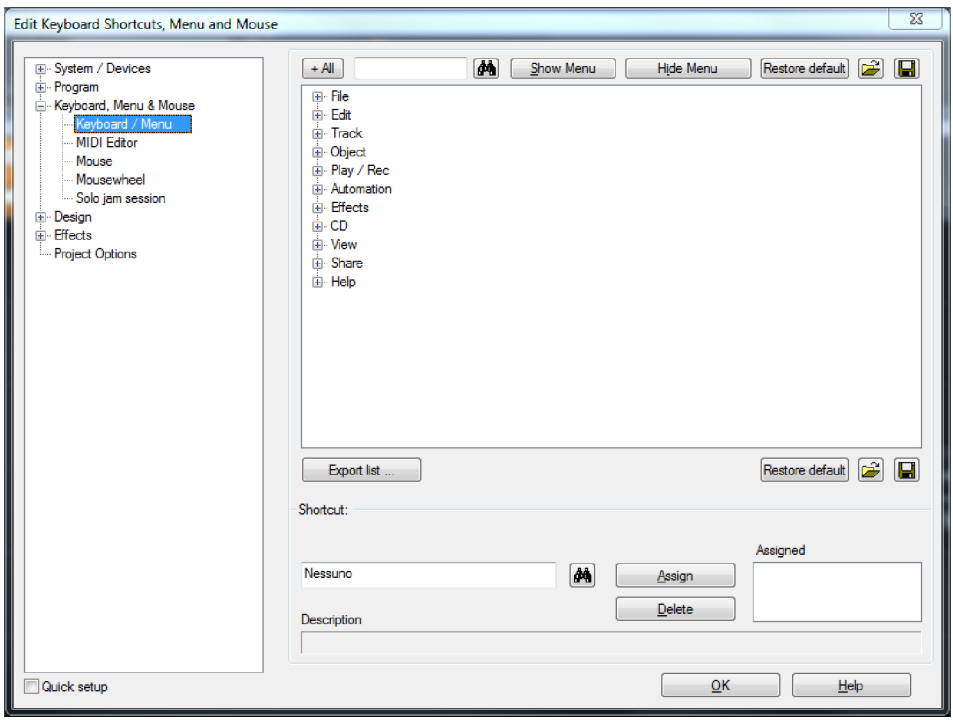
Temporary Files: This preset path is directed to the standard temporary files folder. Please ensure that this folder is on a hard drive or partition with sufficient free storage space.

Undo definitions

The depth of undo can be specified when working with VIPs. A value of "20" means that the last 20 changes can be undone.

Keyboard, menu & mouse

In this dialog you can freely specify keyboard shortcuts for all menu functions in the main menu and for the Solo JamSession. This makes it possible to set the commands you use most often to special key combinations so they can be opened quickly.



The keyboard shortcut settings are saved to the MusStu.ini file in the Windows directory when you exit Samplitude Music Studio. It is also possible to export sets of keyboard shortcuts or menu definitions in files.

Note: Users of previous Samplitude Music Studio versions can thus load the old menu structure; we have included a "Menu" file for this purpose.

The key function of the dialog is the display of the entire menu tree of Samplitude Music Studio.

Here, you can select for which menu item you want to create a new shortcut or whether the menu item should appear in the main menu of Samplitude Music Studio.

Note: Shortcuts in brackets (<>) cannot be changed.

Shortcut list

Export list: You can use this to export the shortcut as a list in a text file in different formats. A window will open in the shortcut editor which displays a complete list of the current shortcuts. The "Copy" button can be used to copy this list to the Windows clipboard to be edited and printed using a text editor.

Reset: Activates all preset shortcuts again.

Load/Save: Previously saved shortcuts are loaded and activated or the current shortcuts are saved under a file name.

Shortcut

To add a new shortcut, click on the desired menu item and then on the input box at the bottom. Then click on the shortcut key.

You can also use combinations of any key with "Shift", "Alt", or "Ctrl". Please do not use the space bar, "Esc", or "Insert" key ("0" on the number block), since the functions of these keys are permanently set in Samplitude Music Studio and cannot be changed.

Assign shortcut: This button can be used to activate the key sequence on the left as a shortcut. A warning will be displayed if this command has already have been assigned. However, you can also check in advance whether the key combination has already been assigned. To do this, click "Search" (binoculars) once the key sequence has been entered. An assigned menu command will then be displayed in the top list.

Delete: Deletes the selected shortcut.

Assigned: Shows all the shortcuts assigned to menu points. You can assign menu commands to multiple shortcuts.

Mouse

You can define several special options for keyboard and mouse to achieve compatibility with older versions. These are:

- **Disable range zoom for double mouse clicks**

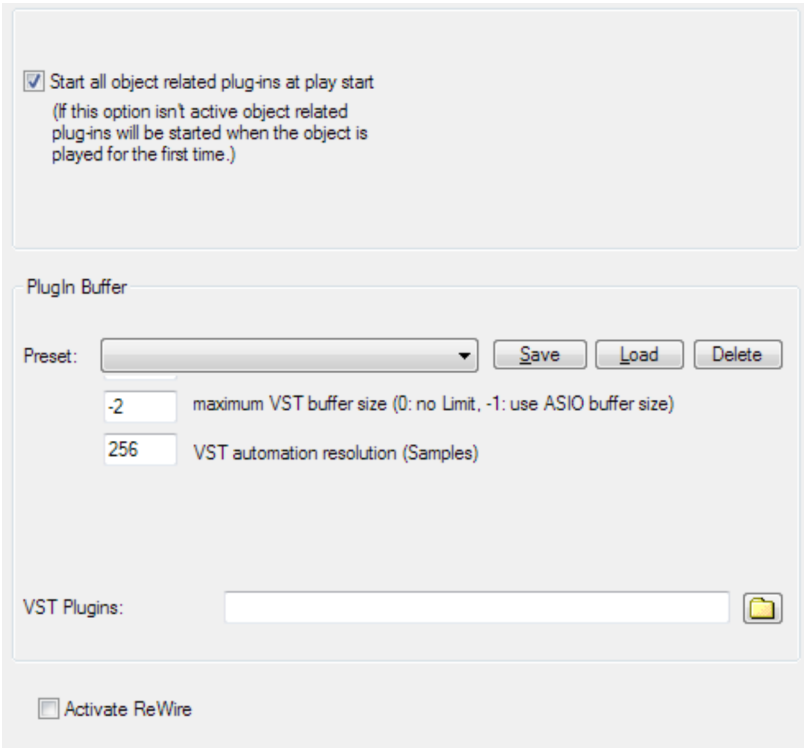
- **Zoom lasso allows vertical zoom without "Shift" key**
- **Disable zoom for vertical mouse movement in timeline**
- **Downward compatible use of "Shift - click" on mute/solo/record** (instead of "Alt + Shift" - click). This lets you change the keyboard shortcut for "exclusive switching" of solo, mute and record. By clicking the "Solo/Mute/Record" button for the selected key combination "Shift + Alt" / "Shift", you can switch the individual channels temporarily to "Exclusive" mode.
- **Treat knobs like faders:** If this option is active, knobs can be pulled up and down like faders by dragging with the mouse.
- **2nd click required to move objects:** This option requires a second click for moving objects. The first click selects objects and prevents unintentional moving.
- **Move delay:** When an object is selected by clicking on it, you might unintentionally move the object. If "Move threshold" is activated, Sequoia will wait the set time before it performs the shift.

"Mouse wheel" allows you to re-define the function of the mouse wheel for zooming and scrolling in the virtual project. You can define which modifier ("Alt", "Ctrl", "Shift") controls which function in combination with the mouse wheel.

Effects

VST/ReWire

"**Start all object-based plug-ins during playback**": Some plug-ins cause delays when switched on; in this case, these plug-ins should be switched on before starting playback, since otherwise errors may occur when the corresponding objects are played.



Plug-in Buffer

The default presets usually cover most applications when working with plug-ins. Try out various presets if you are experiencing problems with plug-ins or DSP cards. Specify the buffer size sent to the plug-in for XD and VST plug-ins directly.

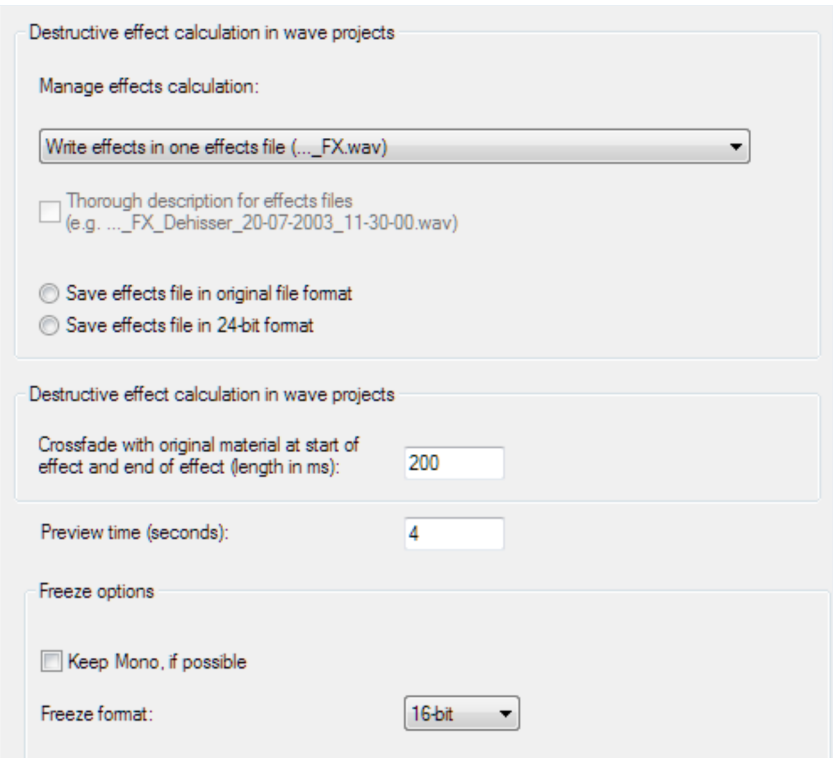
VST Plug-in Path: This sets the path for VST plug-in effects and VST instruments. The selected folder can be scanned for VSTs. Not only are all the plug-ins imported, but they are also checked for usability within Samplitude Music Studio. This scan is only necessary once, since available VST plug-ins are saved during this process. If more than one VST plug-in folder is present, then other folders may also be specified for scanning. Samplitude Music Studio automatically finds newly installed plug-ins in the specified folders only. The corresponding data is saved in the file "VSTplug-ins.ini".

Activate ReWire: If this option is activated, rewire-compatible client applications can be integrated into Samplitude Music Studio as synthesizers.

Additional information about ReWire can be found in the chapter "Software instruments/VST plug-ins/ReWire -> ReWire client applications".

Destructive effect calculation

The behavior during the effect calculation for VIP objects can be defined here.



The dropdown menu of the dialog provides selection between three styles of saving when executing offline effects. Saving is required in order to be able to undo offline effects.

- **Append effect to original file:** The object with the calculated effect is added to the original file. However, this has some disadvantages: When working in an integer wave file, the effect is also saved at this resolution, which is not always desirable when working with 32-bit resolution. The length of the WAV file is also changed, which may cause problems when working with looped objects or in various VIPs.
- **Write effect to an effects file (._FX.wav):** The result of the effect calculation is written to a separate file with the extension "_FX.wav" so that the original audio

file remains untouched. This also makes it possible to execute the effect calculation in the 32-bit float format, to save it and thereby keep the full quality of the effect. The file is not overwritten with every new effect calculation, but rather the new effect is simply added to the effect file.

- **Generate a new effects file for each effect:** All offline effects are saved in separate files with sequential numbers. Alternatively, these files can be given detailed names featuring effect descriptions and the date.

The effects file can also be saved in the format of the output file or in the 24-bit format.

Destructive effects calculation in wave projects

When opening a offline effect in audio files, the result of the effect calculation is always added to the opened audio files. The options of the offline effect calculation on VIP objects described above are not taken into account.

If an effect is applied to a specific range in the audio file, a crossfade may be inserted between the effect and the original at the beginning and end of this range. Enter the **length of the crossfade in milliseconds**.

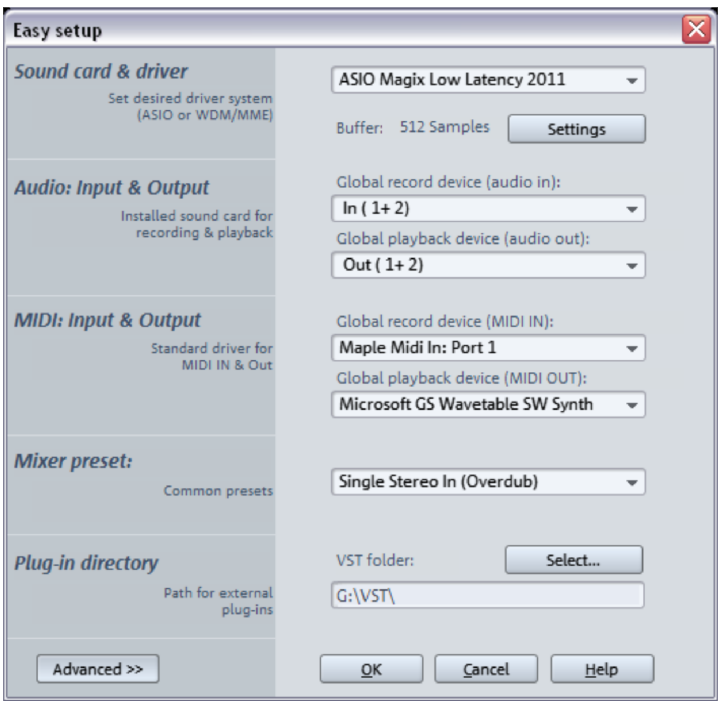
Moreover, you can calculate a number of **additional samples before object start and after object end**.

Preview time (seconds): The preview time is the duration calculated for listening to effects in the preview function.

The freeze options refer to the "Track Freeze" option in the Track (view page 366) menu.

Quick setup

The Quick setup dialog reduces the extensive settings options of Samplitude Music Studio to the basics.



Sound card & driver: Select the driver system or the sound card to be used. Entries which start with "Asio" are ASIO drivers which enable shorter latencies, e.g. to play VST plug-ins live etc.

Note: If your sound card offers ASIO drivers, then it's best to use them. Only use "ASIO MAGIX Low Latency" drivers if you are having problems.

Audio: Input & Output: Select the input and output channels for your sound card, which should be preset for recording or playback.

MIDI: Input & Output: Select the MIDI input and output devices which should be preset for recording or playback.

Mixer preset: These are the most conventional presets for different applications concerning track number, AUX and submix buses.

Plug-in folder: Enter the path to the installed VST plug-ins.

Advanced: This switches to the Settings dialog with all available options (view page 434).

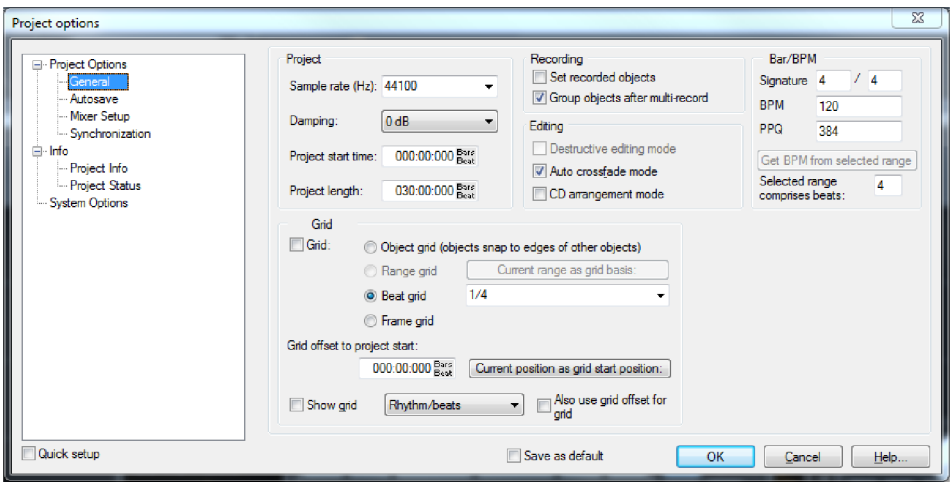
Project options

Here you will find all settings that are specific to Wave projects (.HDP) and virtual projects (.VIP).

Project Options - General

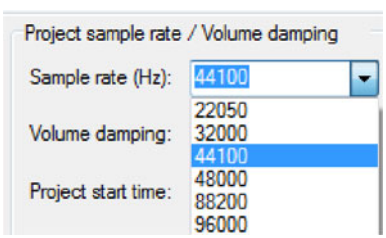
Shortcut: I

Here you can see the most important information about the current project at a glance. This includes Bar/BPM, Recording, Editing, and Snap/Grid settings.

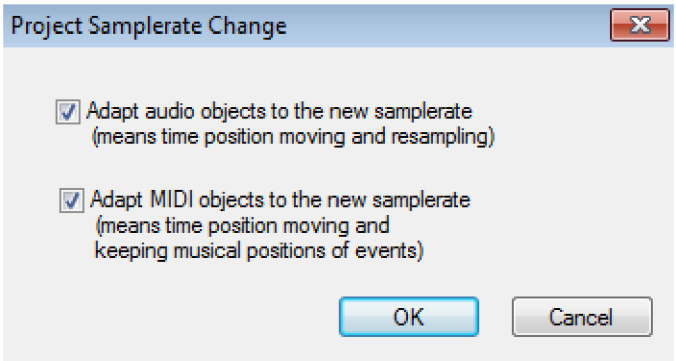


Project Options - General

Sample rate (Hz): This indicates the project's sample rate. You can also change the sample rate for the project



and adjust audio and MIDI objects to the modified sample rate.



Damping: Here you can set level decreases in 6-dB stages. Volume reduction can be necessary when working on multitrack virtual projects if you are working with 16-bit internal precision.

0 dB editing is definitely possible when working with 32-bit float internal accuracy because this prevents internal clipping. Simply set the master level to 0 dB using the master mixer faders.

Project start time: Specify the project's starting time here.

Project length: The project length is displayed here in bars and beats.

General project options – recording/editing

Here you'll find various presets for recording and editing:

Lock recorded objects: Protects against unintentional moving of recorded objects.

Group objects after multirecord: Objects that belong together will be grouped in a multitrack recording.

Destructive editing mode (only for audio files): Detailed information about destructive offline audio editing can be found in the chapter "Basic Terms > Audio Editing in Samplitude Music Studio" (view page 71).

Auto Crossfade Mode: Use this function to activate a mode which adds a crossfade to all newly recorded objects, objects created from cuts or audio files that you imported to your project. Every object can be assigned a standard fade-in which can be edited in the "Object editor fade" menu under "Get/set global crossfade". If two objects overlap in this mode, a realtime crossfade will occur at the intersection.

CD Arrangement Mode: If this menu item is activated, Samplitude Music Studio arranges newly added objects to insert a "Red Book Standard" pause between the objects. "Red Book" is a standard for audio CDs that sets the technical specifications for all CD and CD ROM formats.

Project options - Bar/BPM

Bar/BPM/PPQ: Enter the time signature (counter/signature), the tempo in beats per minute (BPM), and the timer resolution in peaks per quarter (PPQ/clicks per quarter note) here.

Get BPM from selected range: If you enter the number of beats into the field beside "**Selected range has beats**:", Samplitude Music Studio will calculate the BPM based on the selected range when the button is pressed.

General Project Options – Snap / Grid

Snap to: Switches the global snap on/off.

Objects: This option activates the object snap. This lets objects snap exactly to the edges of other objects.

Range: Activates the range snap and enables the **current range to be used as the basis for snapping**.

Beats/Bars: Activates a grid with bars as the basis for snapping.

Beats (relative): Also this option activates a grid which uses beat intervals as its basis. For example, here you can move a selected object while maintaining its relative distance to the closest marker according to the set bar grid.

Grid/Frames: This option activates a frame-based grid.

Frames (relative): This option also activates a frame-based grid where the object maintains its relative distance to the closest grid marker when moved.

Snap offset to project start: Sets the snap offset relative to the beginning of the project. "**Use current position for offset**" specifies the current position of the playback marker as the grid's zero position.

Show grid: If a check is placed here, the grid will be displayed for the project according to the snap unit set in the selection box beside it.

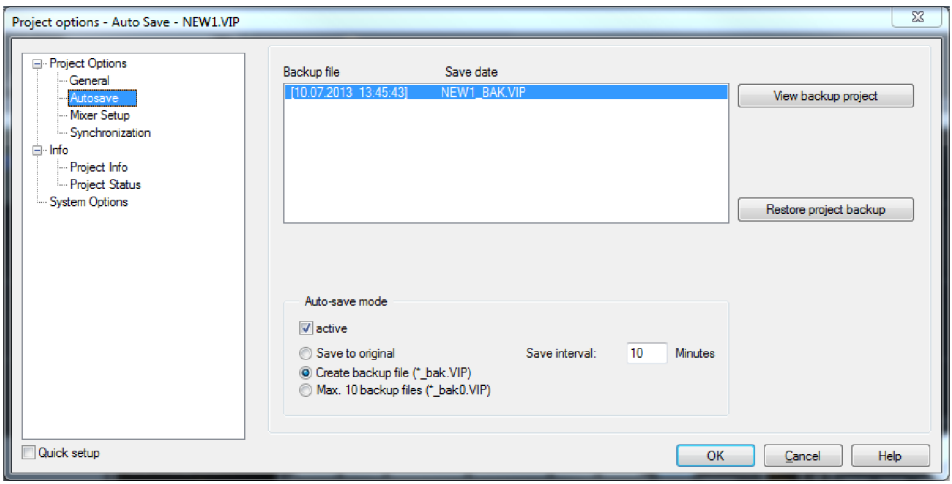
Use snap offset also for grid: The snap offset is used as a reference size for the grid.

General Project Options - Standard pitch for tuner

This field indicates a standard pitch of A at 440 Hz. You can change this setting if you want to use an alternative tuning for the Samplitude Music Studio internal tuner (view page 426).

Automatic saving

The **Autosave** dialog is available via the project options.



Here you can adjust the settings for creating backup projects. The **View backup project** button opens the selected backup project in the arranger.

The **Restore backup status** button restores the project to the status of the backup. If the current project was changed beforehand and not yet saved, you can save the latest status with the addition of _OLD.vip.

The "Autosave" can be activated by clicking this checkbox. Select between the following options:

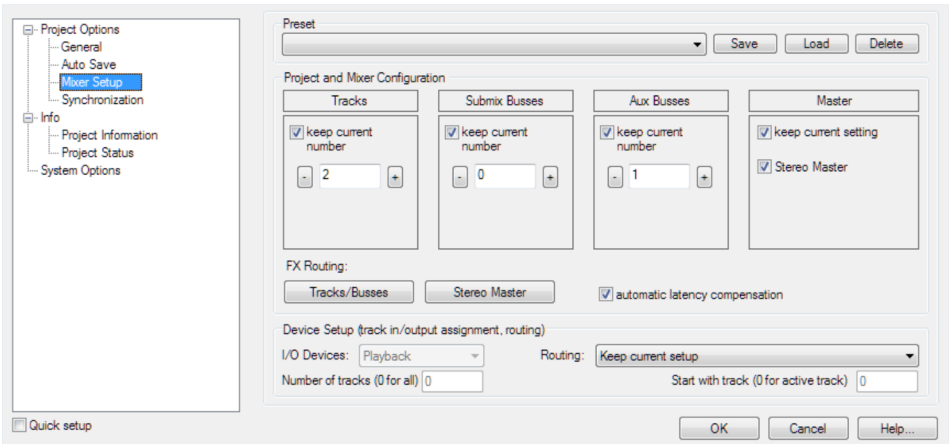
Save to original: Overwrites the original file with the current status at specific intervals. If the **Save in sub-folder** option is selected, the previous status, i. e. the last but one status, will also be updated in the **Backup** sub-folder.

Add backup file (*bak.VIP): Adds a backup file and updates this at specific intervals. If the **Save in sub-folder** option is selected, the backup file will be updated in the **Backup** sub-folder each time it is saved.

Max. 10 backup files (*bak0.VIP to *bak9.VIP): Specify save intervals for up to 10 backup files and number them. If the **Save in sub-folder** option is selected, the backup files will be updated in the **Backup** sub-folder each time they are saved. After 10 backup steps, the last backup file is given the extension *bak9.VIP: in contrast, the oldest backup file is deleted whereas the others move down in the numbering.

Mixer setup

Opens the mixer setup dialog where you adjust the general settings for the mixer routing design.



See Mixer Setup (view page 346)

Synchronization

Opens the synchronisation dialog (view page 319). Here you can specify whether Samplitude Music Studio should operate as master or slave, which protocol to use, and which interface should be used to send or receive synchronization data.

If you still have questions

Tips for Program Help

When the program is open, you can access the Help feature by pressing F1 on your keyboard. The program Help contains tips on how to use the program and lots of additional information. Many important terms are indicated in the text in italics. Simply click on these terms for a more detailed explanation of what they mean.

Context Help: Press the "F1" key on your keyboard at any point in the open program and Help will open with the matching help topic.

Search function: This feature can be used to look for specific words in the Help section. Enter either the individual word or use logical operators (e. g. OR, AND, NEAR) to refine your search if you have several search words.

- **OR** (between two words): all topics which contain both words or one of the words will be listed.
- **AND** (between two words): only those topics will be listed which contain both words.
- **NEAR** (between two words): only those topics will be listed which contain both words. A maximum of 6 additional words are allowed between two search words.
- **NOT** (before a word): topics which contain this word will **not** be listed.

Print: The print function can be used to print out specific Help topics or entire topic sections. The print button is located at the very top of the toolbar in the Help window.

Minimum System Requirements:

- Operating system: Microsoft Windows Vista | 7 | 8 | 8.1 | 10

Minimum configuration

- Processor: 1.5 GHz or higher
- RAM: 2 GB (4 GB for 64-bit version)
- Hard drive space: 4.3 GB free
- Graphics card: Min. resolution 1280 x 768
- Sound card: Onboard
- Drive: DVD
- Internet connection required for activating and validating the program.

Software can also be used offline.

Optional:

- Burn CDs with a CD±R(W) recorder
- MP3 export with Windows Media Player 10 or higher

Note: Artist rights and ancillary publisher copyrights must be respected. Only non-copy-protected Audio CDs can be imported.

Uninstalling the program

If you would like to uninstall Samplitude Music Studio, go to the Control Panel and select "Software" or "Programs and Features".

Serial number

A serial number is included with each product. This serial number is required for software activation. Please store this number in a safe place.

What does a serial number do?

With a serial number your program license is clearly assigned to you and only you. This allows you to use the free customer service via email.

Serial numbers also help protect against software piracy. This makes it possible for us to offer our customers the most value for their money.

Where is the serial number located?

The serial number is on the insert card in the program box.

If you have purchased the download version, you will receive a confirmation email containing the serial number that you can use to activate the program. This will be sent immediately following purchase to the email address you provided.

When is the serial number needed?

The serial number is required when you start the program the first time, as well as for program registration.

More about MAGIX

MAGIX Online World

MAGIX Online World from MAGIX offers you a range of new services for your photos, videos, and music that are accessible directly from the "Share" menu in Samplitude Music Studio.

MAGIX Online Album

MAGIX Online Album is your personal multimedia album on the Internet. If you want to present slideshows or videos online, then MAGIX Online Album is the perfect service.

MAGIX Website Maker

MAGIX Website Maker helps you create a personal Internet showcase with a professional design in just a few mouse clicks – without prior knowledge, including your own chosen domain and email address. Publish slideshows and videos and accessorize your site with music and various effects – anything from a simple business card to a fireworks display of effects, professional or private – show your best side!

Catooh – the Online Content Library

If your project is missing pictures, videos, DVD menus, sounds, or samples, then you should have a look at the huge selection available at Catooh. There you'll be able to buy media in excellent quality for low prices: DVD menus, Slideshow Maker styles, decorative elements, 3D power effects, 3D transition series, MAGIX Soundpools, songs, ringtones... Perfectly suited to all MAGIX photo, video, and music projects.

magix.info

Do you have questions, need help, or are looking for expert tips and tutorial videos on using your MAGIX product? At magix.info you will find answers and solutions as well as workshops and a comprehensive user forum for software and multimedia queries.

You can access magix.info online at www.magix.info

Soundpool DVD Collection

Samplitude Music Studio includes thousands of sound and video building blocks. Other media can be ordered later. MAGIX Sound Essentials includes professionally produced loops and samples in impressive quality – the ideal enhancement for the most varying of music styles, including:

- Ambient
- Big Beat
- Easy listening
- Dance / Electro
- Disco / House
- Soundtrack
- Hip hop
- Rock/Pop
- Techno / trance
- Special effects

In the upper menu bar under "Tasks" > "Discover more", you can order the MAGIX Sound Essentials directly.

Tip: At www.magix.com you'll always find the latest soundpool offers.

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