

Synfire User Manual

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Chapter 1. Concepts

Introduction to the terms and fundamentals of Synfire

Synfire uses powerful AI techniques and sophisticated knowledge-based algorithms to understand and process music at a high level of abstraction. Learn about the general structure of Synfire and the concepts of music theory it is based on in this chapter.

Music Prototyping

What it's all about

Conventional software like DAWs and notation programs are primarily tools for recording and production. The music you are arranging is static from the start. Only through painstaking detail work can you change harmony, style, expression and narrative structure, for example, to break new ground and experiment with alternative ideas, approaches and genres. Often, the frustration that comes with this confinement leads to a dead end and a piece is never completed.

Music Prototyping allows you to try out all kinds of things on a higher musical level without having to commit to a static result at an early stage. Music is dynamically compiled from reusable components that you can freely edit and replace at any time. Even with extensive compositions, you can still make far-reaching changes after the fact to obtain fresh new ideas.

- Build music from elements that can be generated, sketched, collected and combined in ever new ways.
- Listen to results immediately and assess them more objectively.
- Get inspiration from many happy accidents and surprises.
- Master all the instrumental parts that breathe life into your music.
- Discover musical styles beyond your routine and habits.
- Escape writer's block.

Music Prototyping can also break up your routine in an exciting new way and give rise to fresh ideas and new motivation.

Rendering Music From Models

The rendering of **Music Prototyping** works somewhat like Computer Generated Imagery (CGI), where individual pictures (frames) are generated from 3D models, textures and light sources. Likewise, Synfire renders MIDI output from models by mapping [Figure \(on page 2\)](#) against [Harmony \(on page 304\)](#) and many other dynamic parameters. Altering any of these parameters leads to different music output.

Any Style

Some popular music apps are custom-tailored to a specific style of music and put an emphasis on entertainment value and instant gratification. They are fun to use, but the music pretty much sounds all the same.

Synfire is not hard-wired to a specific style and workflow. It is an extremely deep and powerful tool. We could have flattened the learning curve by baking in a lot of assumptions about workflow and style, but we didn't want to do that

at the expense of artistic freedom. Take your time to make yourself familiar with this powerful tool. It will get second nature sooner than you might think.

Your Decisions

Synfire can inspire you with a permanent stream of new ideas. The ultimate creative decisions however are yours to make: Which style to choose, which of the many emerging elements to keep or discard, which path to take from first draft to finished score. And most importantly, to learn and understand the intricacies of your particular genre.

Parameters

The components music is rendered from

Parameters are somewhat like automation lanes in a DAW, although their various shapes and functions go far beyond that. Each parameter has a distinctive look and takes on a specific role in the process of rendering music output.

Figure ([on page 2](#)) and **Harmony** ([on page 304](#)) are the most visible and influential parameters, but there are many more. Some add subtle variation and expression. Others radically transform your music into something else. Find an extensive list of all parameters in the [Encyclopedia of Parameters \(on page 295\)](#).



Note:

Parameters are filled with **Vector** data that you can view and edit. To keep things simple, we don't formally distinguish between a parameter and the data it is filled with and rather use the term **Parameter** ([on page 2](#)) for both.

Loops

Unless looping has been turned off with **Parameter > Repeat**, the parameters of a **Phrase** repeat independently of each other for the duration of the **Container** ([on page 21](#)) they are in. Thus their influence may evolve separately over time. For instance, a short **Figure** may be accompanied by a long and evolving **Velocity** parameter.

Containers themselves can't loop, but by resizing them, the phrases inside will loop for that duration.

Related information

[Rendering \(on page 18\)](#)

[Encyclopedia of Parameters \(on page 295\)](#)

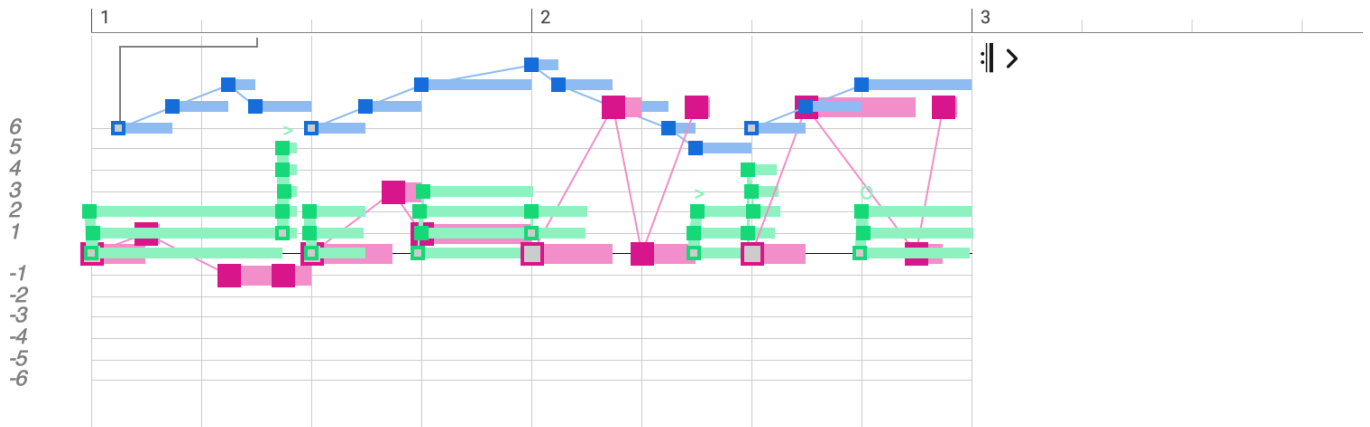
Figure

The parameter that provides musical expressions

[Video Tutorial](#)

Synfire introduces a format for writing music that is neither MIDI nor audio, nor traditional notation. It roughly resembles what improvising musicians might have in their head: Fragments and melodic movements, broken down

into small connected units. It can be placed anywhere to produce different music depending on its surrounding. In fact, it's primary purpose is to be reused this way all the time.



[Video Tutorial](#)

The [Figure \(on page 298\)](#) parameter carries a [parametric format of musical expression \(on page 2\)](#) that is independent of pitch and harmony. It contains **Symbols** grouped into **Segments**, the latter of which are responsible for preserving melodic movement and expression, regardless which harmony a Figure is rendered against.



Important:

The most important thing about **Figure** is that it's not a substitute for notation or piano rolls. It's an **algorithm**.

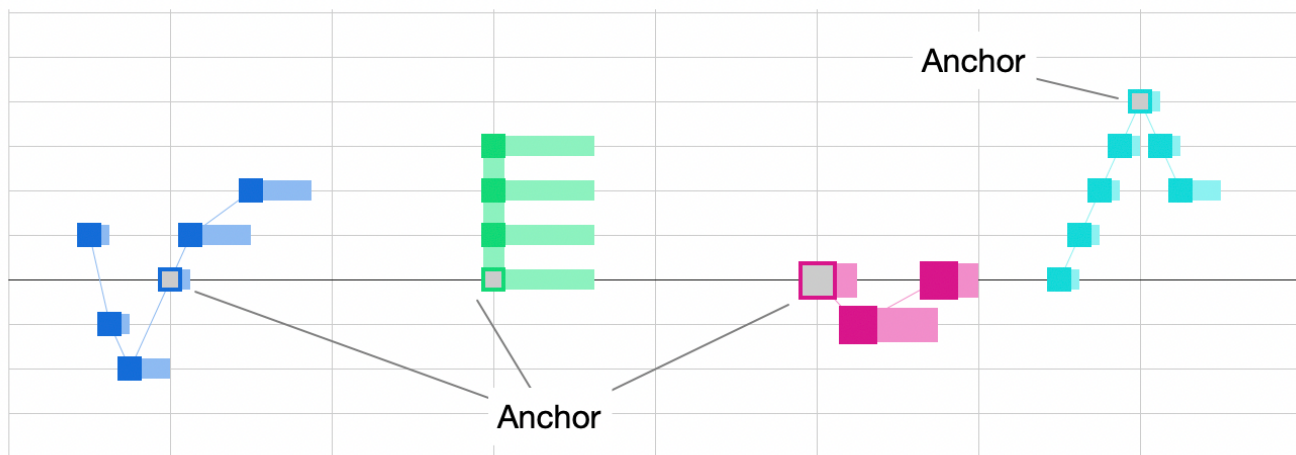


Note:

The term **Figure** stands for a technical data structure here. Not to be confused with the musical notion of a melodic shape.

Segments

One or more **Symbols** are grouped to form a **Segment**. Segments denote musically meaningful units that are supposed to preserve their relative shape. Symbols in a segment may be stacked vertically (chord), placed in a row (melody), or any combination of the two.



Segments are selected, edited and transformed as a cohesive unit, making them a convenient device for building melodies and musical expressions of arbitrary complexity.

Anchor

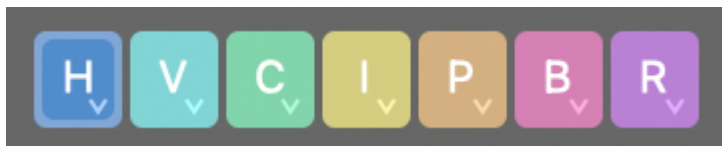
Every segment has one **Anchor** that denotes a point of emphasis that marks the melodically most important symbol of a segment. The anchor is rendered first and then other symbols are rendered relative to it. It also determines the position of the segment on the timeline.



Tip:

If you want a segment to end on a particularly important target note, make that last symbol the anchor. Likewise, if you care most about any other note in between, make it the anchor.

Symbol Types



Symbols are notated on a staff with horizontal lines that, for most symbol types, correspond to the steps of a scale. The bold middle line is a reference that depends on the type of symbol.

H

Horizontal: Best for long running melodies relative to the current key. The zero line denotes the root of the **Reference Scale** ([on page 11](#)) of the **Global Key**.

V

Vertical: Best for ornaments, licks or improvised melodies. The root of this scale changes with every chord. The zero line denotes the root of the **Vertical Scale** ([on page 8](#)).

C

Chord / Arpeggio: Best for chords, horn stabs, arpeggios and finger picking patterns. The zero line denotes the lowest note of the current chord in its current inversion and voicing. Each line represents a note in the chord.

I

Interval: The anchor describes an interval of the chord. All other symbols are mapped relative to the anchor. Use this type to start a segment on a desired chord interval and let it continue from there.

For example, 3 maps to the third, 5 to the fifth, and 7 to the seventh (since the grid starts at zero, it is one off). Negative values go in the opposite direction. Since -3 is a third below root, it is no longer actually a third. We recommend you write positive anchors to avoid confusion.

P

Pitch: Absolute pitch. For drums, percussion and other sounds that need not follow harmony. The zero line denotes C4.

B

Bass: The zero line denotes the bass of the current **Harmonic Context** ([on page 12](#)). Each line is a step on the **Vertical Scale**.

R

Relative: The Anchor is mapped like a **Chord** symbol, while additional symbols are rendered like **Vertical** symbols relative to the anchor. Use this type to start a segment on a desired chord note and let it continue from there.

Gray

Exclusively used by the [Take \(on page 317\)](#) parameter. Absolute pitch.

The best way to make yourself familiar with the different symbol types is to draw a segment in a short **Figure** and let it repeat over and over while a chord progression moves on.

**Note:**

Segments may contain only one type of symbol. Types cannot be mixed within the same segment.

**Note:**

The **Vertical** type is available with the Express and Pro editions. The **Relative** and **Interval** types are available with the Pro edition only.

Related information

[Figure Recognition \(on page 6\)](#)

Figure Recognition

Separating musical expression from harmony

Recorded or imported static MIDI notes need to be translated to dynamic **Phrases** ([on page 17](#)) in order to be useful for **Music Prototyping** ([on page 1](#)). To accomplish this, musical expression is separated from harmony and the resulting phrase is annotated with hints, so a subsequent reversal of this process can be as accurate as possible. Every step in this process is ambiguous because the required information is nowhere to be found and needs to be guessed from context.

1. Estimate keys, chords and scales underlying a MIDI take.
2. Estimate the exact positions of chord changes.
3. Remove inaccuracies without sacrificing expression.
4. Identify separate voices.
5. Guess a useful grouping of melodic fragments, chords, bass lines.
6. Add hints where a phrase might encounter difficulties when it is rendered against different harmony.
7. Clean up and optimize the result.

For the average recorded take, there are millions, sometimes billions of possible solutions to figure recognition. Only a few hundred are musically plausible. These need to be assessed and sorted out. To accomplish this, Synfire draws on an extensive knowledge base supported by artificial intelligence algorithms.

Limitations

Due to the ambiguity and guessing that is involved, figure recognition can't possibly be accurately reversible. That is, a **Figure** ([on page 298](#)) rendered against its own estimated **Harmony** ([on page 304](#)) will most likely produce MIDI notes that are slightly different from the original.

This is no fault of the algorithm, but a general limitation when music is approached with mathematics. Music is not an exact science, but an artifact of human culture. There is only so much a software can do to formally represent and process all aspects of music.

Figure recognition is still good enough to be useful more than 80% of the time. It is a fantastic tool for collecting reusable phrases from recorded performances. After all, **Music Prototyping** ([on page 1](#)) is about making new original music, not faithfully recreating existing compositions.

Figure Recording

Figure ([on page 298](#)) can be recorded by capturing incoming MIDI messages into the **Take** ([on page 317](#)) parameter and then running **Figure Recognition** ([on page 6](#)) on it.

Related information

[Recording](#) ([on page 264](#))

[Recording Parameters](#) ([on page 265](#))

[Setting Up MIDI Input](#) ([on page 236](#))

Harmony Concept

About scales, chords, keys and everything that constitutes harmony

In order for a [Figure \(on page 298\)](#) to produce MIDI output, it requires at least a context of [Harmony \(on page 304\)](#) to provide a frame of reference for its relative symbols and segments. The following sections introduce the basic concepts underlying the [Harmony \(on page 304\)](#) parameter of Synfire.

Fundamentals

About notes, chords, horizontal, vertical and modal scales

Notes

The term **Pitch** refers to the frequency of a tone. Music theory is mainly organized around **Pitch Class** though, which implies a pitch and all its possible octave transpositions. That is, if we talk of **Bb** or **D#** what is really meant is a pitch class rather than a frequency. Some ideas of music theory can't be explained without distinguishing these notions.

In order to keep it simple, we use the term **Note** synonymously for both **Pitch** and **Pitch Class** depending on context.

1. **Note** means pitch class, when we talk about chords, scales and harmony in general.
2. **Note** means pitch (frequency) with a duration, when we talk about pitch ranges, instruments and sounds.



Note:

For display and parsing, specific [naming conventions \(on page 330\)](#) apply.

Chords

When multiple notes happen to sound at the same time, we have a **Chord**. When these notes are sorted by pitch class, starting from the chord's **Root** pitch, we get the **Interval Structure** that lends the chord its name. The sound of a chord can be varied by **Inversion** (ordering of intervals) and **Voicing** (overall octave range).

Chords consist of a basic **Triad** of three notes plus optional **Extensions**. These are intervals added to make it more complex, rich and ambiguous. For example the basic triad **Am** can be extended as **Am6**, **Am7**, **Am9**, **Am11** or **Am(6,9,#7)** and many more.



Note:

For display and parsing, specific [naming conventions \(on page 331\)](#) apply.

Scales

A **Scale** is a series of **Notes** starting from a **Root** note upwards. Most scales in Western music repeat every octave. The timbre and character of a scale is determined by its **Interval Structure**, the distances between its notes measured in halftones.

Examples for scales widely used in Western music are Major, Natural Minor, Melodic Minor, Harmonic Minor. There are scales with seven steps (septa-tonic scales), or five (pentatonic), or any other number. A scale with twelve tones in half-tone intervals is called the **Chromatic Scale**. It is equivalent to all keys on a piano keyboard.

Synfire distinguishes between **Vertical Scales** and **Horizontal Scales**, which are physically the same thing, but take on separate roles and are thus traditionally labeled differently. That is, the same physical scale often has a different name depending on its role.

E.natural-minor (horizontal) = E.aeolian (vertical)

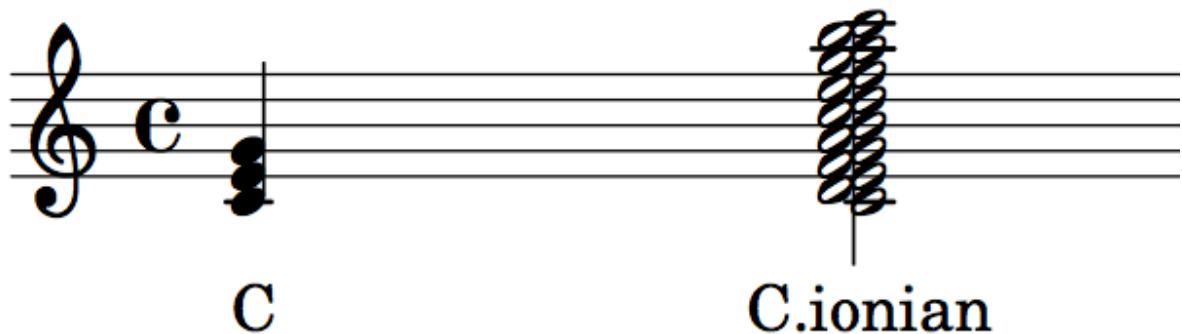


Note:

For display and parsing, specific [naming conventions \(on page 333\)](#) apply.

Vertical Scale

The **Vertical Scale** provides notes for melodic ornaments and improvisation. For each chord, a vertical scale can be picked according to preference and style. It is named vertical because its notes are stacked vertically above the current chord. Both, the chord and the vertical scale, start at the same root. It is important to remember that the vertical scale changes with every chord.

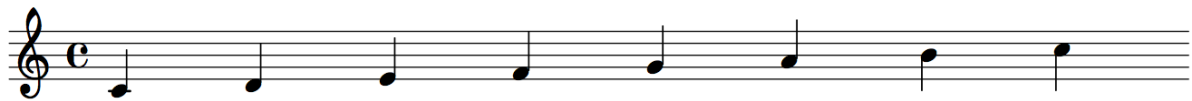


The vertical scale determines which notes are allowed for building melodies over a chord. Some may be outside the **Horizontal Scale**, if only the duration of the chord. Vertical scales are particularly important for improvisation. A musician may play up and down the scale and be assured that it fits the chord, although that alone doesn't make a good melody, of course.

Countless vertical scales exist, originating from various eras, cultures, and music genres. A selection of the most commonly used scales is included with the **Catalog** ([on page 16](#)) of Synfire, to which you can add more scales as needed.

Horizontal Scale

While the vertical scale is tied to a chord and therefore constantly in motion, the **Horizontal Scale** is meant to continue unchanged for a longer period of time. It is strongly tied to a **Key**, denoting its steps I, II, III, IV, V, VI, VII (German: "Tonleiter"). Melodies built on the horizontal scale move across multiple chords more evenly, even though the vertical scales over each chord may temporarily extend or reduce the set of allowed notes.



A horizontal scale starts with the root note of the **Key**. It belongs to the **Scale Set** ([on page 11](#)) of the key. Traditionally, only a few scales are used as horizontal scales. These are the well-known major and minor scales and their variants.

Mode (Modal Scale)

Some scales are used both as vertical scales for improvisation and melody construction (with jazz, in particular) as well as horizontal scales. These so-called "church modes" were introduced with modal music early in music history and are still widely used.

Figure 1. Scale A.Phyrgian-Dominant = Mode 5 of D Harmonic-Minor.



Modes are basically rotations of major or minor scales and are therefore physically equivalent with them although *not* identical.

Major:		Minor:	
Major	Natural minor	Melodic minor	Harmonic minor
1. Ionian	1. Aeolian	1. Melodic	1. Harmonic
2. Dorian	2. Locrian	2. Dorian b2	2. Locrian 6
3. Phrygian	3. Ionian	3. Lydian augm.	3. Ionian augmented
4. Lydian	4. Dorian	4. Lydian b7	4. Dorian #4
5. Mixolydian	5. Phrygian	5. Aeolian major	5. Phrygian dominant
6. Aeolian	6. Lydian	6. Locrian #2	6. Lydian #2
7. Mixolydian	7. Locrian	7. Super locrian	7. Altered dominant bb7

The modes listed here are only a small selection of the built-in catalog. In addition, there are the corresponding modes of *melodic major*, *harmonic major*, *hungarian major*, and *hungarian minor*.

Modes that arise from arbitrary horizontal scales are computed by Synfire only as needed and are automatically assigned a suitable name.

Related reference

[Syntax](#) ([on page 329](#))

Related information[Scale Sets \(on page 11\)](#)

Keys

About traditional keys, tonal center and key changes

Key is a fundamental concept of tonal music, which developed during a certain era and still predominates in Western music to this day.

Figure 2. Chords strictly built from the steps of the horizontal C Major scale



Many musicians think of key as being a scale, but keys do not have such a strict boundary. Key is a rather broad term for the harmony a piece of music is moving in. Modern music uses a lot of secondary dominants and other loosely related [chords \(on page 7\)](#) that are built from notes well outside the scale that lends a key its name. Still, a listener recognizes the key by characteristic chord changes (cadences) and melodies.

Key Changes (Modulation)

A change of key is also known as **Modulation**. Synfire is comparatively skilled in the recognition of keys. However, due to the ambiguity mentioned above, it is a matter of judgment where exactly a key change is taking place. Concerning key changes, the decision is always with you, the composer.

There are widely differing notions of modulation and whether it requires preparation and affirmation. You should not get distracted by such debates. In modern music, you may jump from one key to another in an instant, provided it makes sense to an unsuspecting listener. And that is a matter of experimentation and testing.

With some jazz styles key changes are so frequent, a "key" printed on a score is merely a means to keep it all meaningful and readable.

**Note:**

Every **Harmonic Context** [\(on page 12\)](#) in a progression has a key assigned. If the key of a context is different from the previous, you have a key change. It's as simple as that.

**Tip:**

As a general rule of thumb, if you change key, don't do so in the middle of something, but rather between clearly cut sections. Also you shouldn't change too many things at once, so there is something a listener can hold onto while your continents are drifting. You get the idea.

**Tip:**

After your progression moved from one key to another, you should emphasize a few chords that are unique in the target key.

Tonal Center

The **Tonal Center** is what *you* assume is the root of the Major/Minor key you currently work in, regardless of the Scale Set you might use to browse interesting chords. It determines the coloring and spelling of chords and scales and somewhat influences the scale selection preference for progressions.

The tonal center lends a functional meaning to all chords. The term was coined in classical music theory, but can be a useful tool for exploring key changes in any musical genre.

Related information

[Circle Of Fifth \(on page 186\)](#)

Scale Sets

Multiple scales bundled together

The notion of **Scale Set** ([on page 11](#)) was introduced by Cognitone specifically for **Music Prototyping** in order to support a computational model for the theory of harmony.

A **Scale Set** ([on page 11](#)) bundles one or more scales, all of them starting from a common root note. Synfire resembles traditional Major/Minor keys with predefined Scale Sets, the basis for the so-called **Standard Palettes** that you can navigate in the **Circle Of Fifths** ([on page 186](#)).

Major Scale Set

`major + harmonic major + melodic major`

Minor Scale Set

`natural minor + melodic minor + harmonic minor`

Reference Scale

The first scale in a Scale Set is called **Reference Scale**. It is the one most frequently used for building chords and melodies. It influences the order of additional scales and the spelling of notes. For example, whether a note is written Eb or D# depends on the reference scale.

Additional Scales

The additional scales are thought of being variations of the reference scale, enriching the harmonic material with additional notes. You can make every additional scale become the reference scale, using the **Palette Editor** ([on page 111](#)).

**Note:**

Synfire automatically creates additional Scale Sets as needed, using its knowledge of relationships between scales, chords, and keys.

**Note:**

Every **Palette** is based on a Scale Set.

Related information

[Scale Set Syntax \(on page 334\)](#)

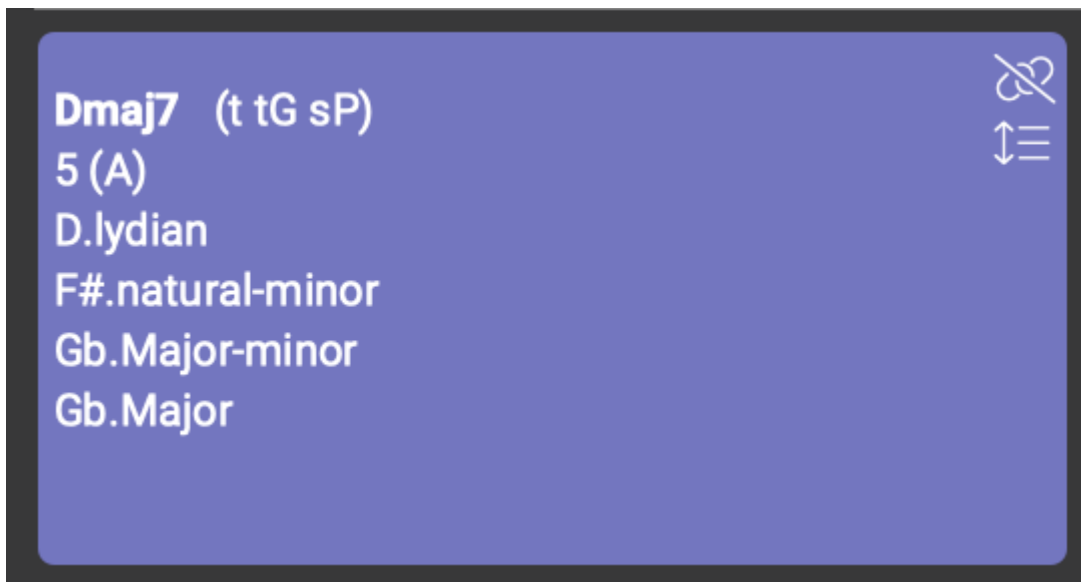
[Editing Palettes \(on page 111\)](#)

[Fundamentals \(on page 7\)](#)

Harmonic Context

Information on key, chord, scales and bass that governs every moment in time

Every box in a [Harmony \(on page 304\)](#) parameter represents a **Harmonic Context**. It provides the necessary harmony information and rules all instruments must follow to render MIDI output. In most cases you just provide a **Chord** and Synfire figures out the rest. You can then alter its properties at any time.

**Key**

[Key \(on page 10\)](#) signature as it appears on printed notation.

Relation

The key we would have to assume if the vertical scale and chord were required to be included in the [reference scale \(on page 11\)](#) (which they not necessarily are). It provides a hint how much the vertical scale deviates from the reference scale.

Horizontal Scale

The **Horizontal Scale** ([on page 8](#)) that defines the steps I, II, III, IV, V, VI, VII of the key.

Vertical Scale

The **Vertical Scale** ([on page 8](#)) for building melodies and ornaments over the chord.

Chord

The **Chord** ([on page 7](#)) selected for this context. Options like a preferred **inversion** and **voicing** can be set, although [Interpretation \(on page 305\)](#) settings per instrument decide whether to follow these default preferences.

Bass

Desired bass interval, which does not necessarily have to be contained in the chord. The bass is also independent of the chord inversion, i.e. it is not necessarily the lowest note of the chord.

Harmonic Functions

Possible role(s) the chord may take in a progression according to the [Theory of Harmonic Functions \(on page 324\)](#).

Numeral

Roman numeral of the chord within the key.

Extensions

List of [chord extensions \(on page 7\)](#) possible under the current scales.

Annotations

The way a chord name is displayed tells you something about it.

Italic Font

The harmonic context is for one of the multiple layers of a polytonal progression.

Exclamation Mark (!)

Indicates one or more of the following mismatches:

1. The horizontal or vertical scale violate current **Scale Selection Preferences** ([on page 195](#)). For example, when the vertical scale is not a subset of the horizontal scale.
2. Chord notes or bass are not included with the vertical scale.

This is not a problem, but may lead to dissonances that are not approved by the scale selection preferences. You can remedy this by selecting different scales, changing the scale selection preferences, or by re-estimating the whole progression, or parts of it.

Question Mark (?)

The harmonic context is incomplete or broken. This should happen rarely if at all. You can remedy this by setting different scales or by re-estimating the progression, or parts of it.

Related information

- [Harmony Settings \(on page 70\)](#)
- [Editing Harmony \(Progressions\) \(on page 254\)](#)
- [Scale Selection Preferences \(on page 195\)](#)

Progressions

The succession of harmonic contexts over time

[Video Tutorial](#)

A **Progression** ([on page 14](#)) consists of one or more **Harmonic Contexts** ([on page 12](#)) lined up sequentially on a timeline. It is what gets assigned to the **Harmony** ([on page 304](#)) parameter. Among musicians it is often called "chord changes", "chord progression", or simply "chords".

1	2	3	4	5
Ebm s 1 (Eb) Eb.dorian Bb.Minor Bb.Minor	Gbmaj7(9) tG, sP (t tP dG SSS) 1 (Gb) Gb.lydian Bb.Minor Bb.Minor	Ab(add9) dP, SS 1 (Ab) Ab.mixolydian Bb.Minor Bb.Minor	Bmaj7(9) N, sG (s tG sP) 1 (B) B.lydian Bb.Minor Bb.Minor	Bb9 (T d) 7 (Ab) Bb.mixolydian Bb.Minor Bb.Minor
6	7	8	9	10
Ebsus4 4 (Ab) Eb.dorian Bb.Minor Bb.Minor	Eb S 1 (Eb) Eb.lydian-b7 Bb.Minor Bb.Minor	Bbm t 1 (Bb) Bb.melodic Bb.Minor Bb.Minor	Gbm(maj7) tg, sp 1 (Gb) Gb.lydian+2 Bb.Minor Bb.Minor	Ab7 (dP SS) 7 (Gb) Ab.mixolydian Bb.Minor Bb.Minor

A progression sets the rules for all instruments. Still, each instrument produces quite different MIDI output depending on its **Playing Ranges**, the **Figure** ([on page 2](#)) parameter, the **Interpretation** ([on page 305](#)) parameter and many more parameters. Thus, although you can configure details like bass, chord inversion and voicing for the **Harmony** parameter, this information can't be turned into MIDI output without a particular **Instrument** that interprets it.



Note:

A progression cannot have gaps or be empty. It must provide a Harmonic Context for every point on the timeline, regardless whether an instrument is actually playing there or not.



Note:

While some DAWs feature a "chord track", these often coerce MIDI notes into a rigid grid, which only works for simple MIDI sequences and a limited range of musical styles. Unlike Synfire, a DAW is not able to recognize and re-compose phrases in a musically meaningful way in order to follow an arbitrary chord progression. Dealing with harmony in an intelligent way is a major strength of Synfire.

Use

Depending on who you ask, the significance of chord progressions is often overestimated. After working with Synfire for a while, you will notice how replacing **Harmony** affects the mood and listener experience of a composition or song. Sometimes it's subtle. Sometimes it's very noticeable, but it rarely makes or breaks a song. Instrumentation, rhythm and arrangement also contribute their part. It's all of them together that make the music and neither can be judged in isolation.

This is why **Music Prototyping** is so priceless. It helps you judge your work from a comfortable distance, all components open to change at any time.

https://en.wikipedia.org/wiki/Chord_progression

Related information

[Harmony \(on page 304\)](#)

[Progression App \(on page 155\)](#)

[Progression Page \(on page 108\)](#)

[Editing Harmony \(Progressions\) \(on page 254\)](#)

[Controlling Inversion, Voicing and Octave \(on page 257\)](#)

Harmonization

Estimating keys, scales and chords from MIDI input

The process of estimating keys, scales and chords from static MIDI input is called **Harmonization**. It uses a [Take \(on page 317\)](#) parameter for input and creates a [Harmony \(on page 304\)](#) parameter as output.

Harmonization is an important part of **Figure Recognition (on page 6)**, which separates musical expressions from harmony in order to create a reusable **Phrase** that can be rendered with different harmony.

The **Harmonizer (on page 109)** now is a tool for you to control the conversion from **Take** to **Harmony** manually and step by step.

Related information

[Harmonizing a Phrase \(on page 258\)](#)

[Harmonizer Page \(on page 109\)](#)

Polytonality

Superimposition of multiple chords

Synfire supports the superimposition (layering) of multiple chords over each other. Although [Harmony \(on page 304\)](#) is a **Global Parameter**, it may consist of up to four layers, each of which can be assigned to a different instrument using the [Layer \(on page 306\)](#) parameter.

Layers are created and configured with the **Progression Editor (on page 255)**.

**Note:**

This feature is available with the **Pro** edition.

Related information

[Harmony \(on page 304\)](#)

[Layer \(on page 306\)](#)

Catalog

Database of interval structures: The foundation of Synfire's knowledge

The **Catalog of Keys, Scales And Chords** (short: **Catalog** [\(on page 16\)](#)) defines the names, interval structures and other meta-data of all chords and scales known to Synfire. It is at the heart of the AI knowledge base and thus has significant influence not only on the choice of chords and scales, but also on dynamic scale selection and palette layouts.

You can customize the catalog to your style and preference. You are even free to develop your own system of harmony, if you like. For example, based on the twelve-tone system.

Open the **Catalog App** anywhere from the menu (**Edit > Catalog of Chords And Scales**).

Types of interval structure defined in the Catalog:

1. **Chords** [\(on page 7\)](#)
2. **Vertical Scales** [\(on page 8\)](#)
3. **Horizontal Scales** [\(on page 8\)](#)
4. **Scale Sets** [\(on page 11\)](#)

Some scales may take on both a vertical and a horizontal role. Traditionally, different names are used for practically equal scales according to their role, for example the **natural-minor** horizontal scale is referred to as **aeolian** when used as a vertical scale.

**Note:**

This feature is available with the **Express** and **Pro** editions.

File Attachments

When an arrangement, palette or library is saved to disk, all the Catalog items it uses are saved as an attachment together with the file. When a file is opened, any items not currently in the user's Catalog will be added temporarily so the file can work. Consequently, otherwise familiar chords may show up with different names in palettes and progressions, if your current Catalog happens to include an exotic harmony system.

**Note:**

Your current Catalog always supersedes any items loaded from file attachments. That is, only if an interval structure is not currently known in your Catalog, it will be added temporarily to make the file work.

Related reference

[Syntax \(on page 329\)](#)

Related information

[Catalog App \(on page 156\)](#)

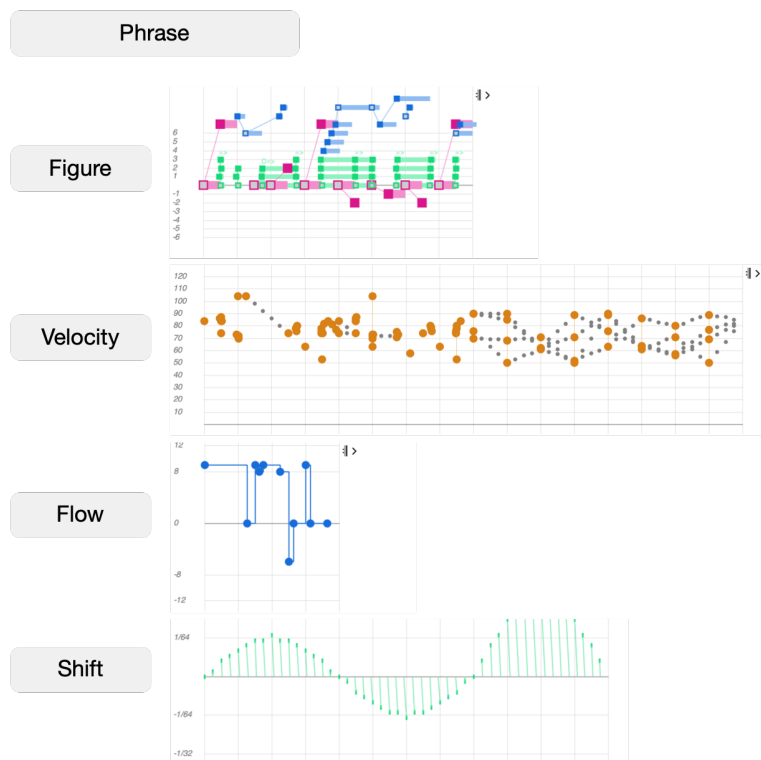
Phrases

A phrase is a bunch of parameters bundled together.

A **Phrase** is a bundle of one or more **Parameters** ([on page 2](#)) that create (or alter) a musical expression. It is useful as a coherent unit that can be moved, copied, edited and collected in libraries. **Phrases** are the building blocks that make [Music Prototyping \(on page 1\)](#) possible.

Phrases produce different output depending on the context in which they are used. Most phrases can be used in any [Arrangement \(on page 19\)](#) with any [Harmony \(on page 304\)](#) parameter to produce musically meaningful (and often surprising) results.

Figure 3. Example Phrase



The most visible parameter [Figure \(on page 2\)](#) uses symbols that are relative to the [Harmony \(on page 304\)](#) parameter. Always keep in mind that without a harmonic context a figure can't produce audible pitches. Since almost every parameter influences MIDI output in some way, there is no way to tell in advance which MIDI notes a phrase will ultimately produce before all of an arrangement's [Containers \(on page 21\)](#) and parameters have been considered. That's why Synfire renders all of an arrangement from scratch every time you changed something.

**Important:**

Phrases may hold only a single parameter, like [Velocity \(on page 321\)](#) or [Pause \(on page 310\)](#). Keep in mind that if you move a phrase around, it will replace any already existing phrase including all its parameters. So, if you want to copy or move a single parameter to another place, be sure to drag it off of a **Parameter Outlet** [\(on page 45\)](#) instead of grabbing the entire phrase.

**Note:**

Phrase should not to be confused with the more general meaning of the term "phrase" in music theory.

Parameters & Clips

When a phrase is put in a [Container \(on page 21\)](#) we get a **Clip** [\(on page 105\)](#). Looped parameters repeat only until the end of the container they are wrapped in. The phrase is literally "clipped" to the size of the container. By resizing a clip, you can determine how long a phrase is supposed to play.

When you build an arrangement it is common to put multiple phrases in the same container together (e.g. "Verse", "Chorus", "Reprise", "String Section", etc). Each phrase appears as a separate clip on the **Tracks** page.

Related information

[Tracks \(on page 20\)](#)

[Clips \(on page 105\)](#)

Rendering

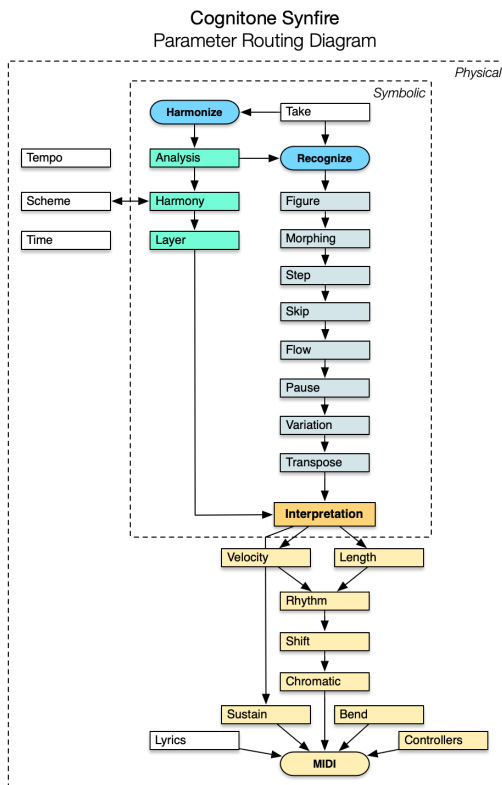
Mapping the entirety of all parameters to MIDI output

Since almost everything in **Music Prototyping** [\(on page 1\)](#) is parametric and dynamic, Synfire can produce MIDI output only after all parameters in all containers have been considered. This process is called **Rendering**, during which multiple conflicts can arise that need to be solved.

In order to stay within the **Playing Ranges** of the **Instrument** while retaining melodic movements and following a voice leading strategy, it is often required to break down notes and melodies into smaller units that still sound similar to the original. You can influence this process by configuring the [Interpretation \(on page 305\)](#) parameter.

Parameter Routing

Parameters influence each other in a particular way, which is illustrated in the diagram below. There are **symbolic** parameters that control music composition at a higher level and **physical** parameters that mostly manipulate MIDI output at a later stage of the rendering process.



The logic behind parameters is more complex than the diagram might suggest, but the overall sequence of computation lined out here may help you understand what happens when you edit a particular parameter's data.

Limitations

Every time you changed something and press Play, the entire track of the instrument is rendered anew from scratch. This can be time consuming and therefore doesn't lend itself well to the real-time interactivity you may be used to from a DAW.



Important:

Altering an already running playback does not immediately influence output. It needs to be restarted to reflect any changes you made.

Arrangements

About tracks, containers and everything that goes with an arrangement

An **Arrangement** includes everything needed to edit a song, composition, score or soundtrack, or whatever you are composing with Synfire.

- One or more **Instruments** ([on page 33](#)).
- An **Arrangement Rack** ([on page 24](#)) providing **Sounds** ([on page 37](#)) for these instruments.
- An **Embedded Library** ([on page 24](#)) serving as a creative clipboard for phrases and parameters.
- Lots of **Phrases** ([on page 17](#)) for the instruments, arranged in a hierarchy of **Containers** ([on page 21](#)) along the timeline.

Projects

What constitutes a **Project** may vary. With most popular music styles, you probably have a single arrangement that includes all of a song, dance or ambient track. If you are composing for film, you may have multiple arrangements, each underscoring a particular scene and all of them based on one **Global Rack** with orchestral sounds. A project may also include **Libraries** with phrases you collected and optimized for a specific task.

You should keep all files associated with a project in one folder. Synfire doesn't enforce this, so it is up to you to keep your things together.

Related information

[Arrange App \(on page 91\)](#)

Tracks

All clips for an instrument, spanning the entire arrangement

With Synfire, the narrative **Structure** of your composition is the primary focus. Flat **Tracks** for each individual instrument (as in a DAW) are created automatically. They are the sequence of clips that results from the placement of **Phrases** ([on page 17](#)) in **containers** ([on page 21](#)).

Since containers can be nested and phrases may contain any number of parameters, it is not immediately obvious on the **Structure** page what's ultimately landing on a track. This final output becomes evident on the [Tracks \(on page 100\)](#) page.

Structure vs. Tracks

In the **Structure** view, you can focus on building tension and the overall musical experience, while the detailed work on each individual track is automatically handled for you in the background. This view makes it particularly easy to move musically related parts, make changes to the course of the song, add new ideas, and try out alternatives. In the unstructured tracks view, this can be very tedious (which is why we often avoid doing this in a DAW).

The powerful structure perspective takes some getting used to. Of course, you can still place the **Tracks** in the foreground, as in a DAW, and build your piece from left to right for each instrument individually. However, the resulting structure is flat and unordered and is less suitable for moving parts and adding new ideas.

Even after the fact, you can still add some structure to your flat tracks by using [Clip > Collect In Container](#) to group related clips, such as "Verse," "Chorus," "Middle Part" etc.

Important Tips



Tip:

Keep phrases short! Never use a single phrase as if it were a long track spanning the song. Don't scroll back and forth in a huge [Figure \(on page 298\)](#). Put multiple short phrases in movable **Containers** instead.



Tip:

Rule of thumb: When you want something to start in the middle of something, insert a container at that position. Don't insert blank space at the beginning of a phrase only to make it start at a later time, unless you really want all loops to include this long pause at every turn.

Related information

[Instrument List \(on page 98\)](#)

[Clips \(on page 105\)](#)

[Drag & Drop Export \(on page 274\)](#)

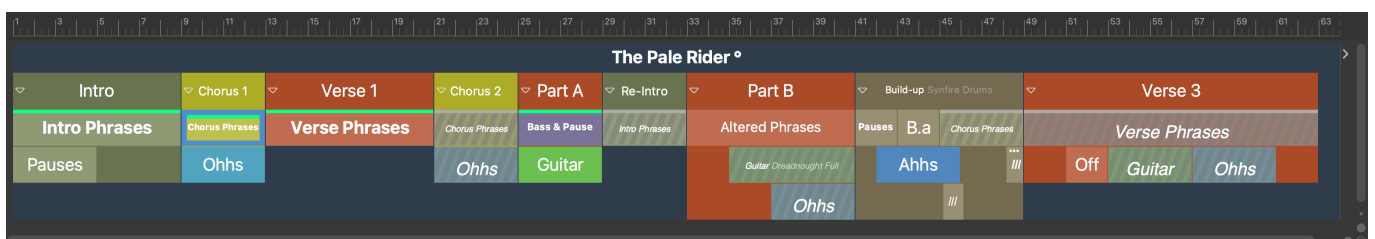
Containers

Place phrases anywhere on the timeline

[Video Tutorial](#)

Containers include **Phrases** for one or more **Instruments**, including **Global Parameters** like [Harmony \(on page 304\)](#), [Tempo \(on page 318\)](#) or [Signature \(on page 312\)](#) that affect all instruments alike. Containers can be placed anywhere on the timeline and nested to build a tree structure.

- Containers help you keep phrases short and easier to edit.
- Since every container marks some place of importance, it's a convenient locator for playback and navigation.
- Enable a non-destructive lets-see-what-happens workflow. By placing a container inside another, you can temporarily introduce a change that lasts only for the duration of the container. Move the container to apply the change elsewhere. Remove or inactivate it to undo the change.
- Help you develop a narrative of your score. Move containers with phrases around, while the overall [Harmony \(on page 304\)](#) remains unchanged. Move containers with [Harmony \(on page 304\)](#) around, while phrases stay put.



Structure

The **Root Container** at the top lasts for the duration of the arrangement.

Child containers may represent sections like `Intro`, `Verse`, `Chorus`, or parts `A`, `B`, `C` or any other sectioning that suits your style.



Tip:

A container always introduces a *temporary* change. Parameters not overridden in a container simply continue to play. When placing a container, always ask yourself: What is it that I want to change for the duration of this container?



Important:

Rule of thumb: When you want something to start in the middle of a container, insert a child container at that position. Don't insert blank space at the beginning of a **Figure** only to make it start at a later time, unless you really want all loops to include this long pause at every turn.

Inheritance

Parameters in a child container temporarily override the same parameter of a parent container. Only parameters for the same instrument override each other. Other parameters continue unaffected. In short: Inheritance works at the parameter level.

For **Figure** ([on page 298](#)) and parameters that transform it, the effect is obvious. For other parameters it can be more subtle. For example, you may override **Velocity** ([on page 321](#)) or **Shift** ([on page 313](#)) to alter the dynamics or timing of a phrase.

The inheritance of parameters is made visible through the **Parameter Trace** ([on page 96](#)).

Priority

During the time span of a container, the parameters contained in it temporarily override any parameters that are already in effect. Where containers overlap, the container that starts later overrides the one that started earlier. Where containers start exactly at the same time, the one below overrides the one above.

With the **Up** and **Down** arrow keys, you can change the **priority** of a container that starts at the same time with other containers. This will change their vertical order.

Alias

An **Alias** is a read-only shadow of a container that can be placed anywhere in order to repeat the phrases of its original without copying them. All changes applied to an original will also update its aliases. Some properties of an alias may be set independently from its original.

- **Length:** An alias may have a different length, playing its contents for a longer or shorter period of time.
- **Inactivation:** An alias may have its own active versus inactive status.

- **Inactivation of Phrases:** Individual phrases in an alias may be turned active or inactive as needed. **Pause** however is a parameter and those can only be altered in the original.
- **Priority:** An alias may have a different priority. That is, whether it overrides running parameters or not depends on its vertical place in the structure.

**Tip:**

If you need to replace phrases in an alias, put them in another container placed below it (**Container > New Parallel Container**). Use the arrow keys to change its priority until it appears below the alias. The phrases in it override those of the alias. You may want to group both containers to keep them bound together.

Loops

Unless looping has been turned off with **Parameter > Repeat**, the parameters of a **Phrase** repeat independently of each other for the duration of the **Container** ([on page 21](#)) they are in. Thus their influence may evolve separately over time. For instance, a short **Figure** may be accompanied by a long and evolving **Velocity** parameter.

Containers themselves can't loop, but by resizing them, the phrases inside will loop for that duration.

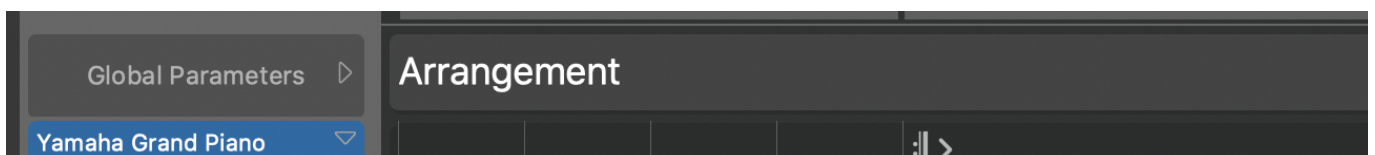
Related information

[Parameter Trace \(on page 96\)](#)

Global Parameters

The special track that affects all instruments alike

The topmost track on the Track Sheet bears the name of the **Container** ([on page 21](#)). It looks like a title placed below the **Harmony Lane** ([on page 97](#)). Any [parameters \(on page 2\)](#) you assign here affect all instruments for the duration of the container.



Global parameter types like [Harmony \(on page 304\)](#), [Signature \(on page 312\)](#) or [Tempo \(on page 318\)](#) always go here, no matter whether you drop them on a **Container** ([on page 21](#)), a **Parameter View** ([on page 147](#)) or a **Track** (instrument name).

Still, you may also put other non-global parameter types here, like [Step \(on page 315\)](#), [Length](#), [Velocity \(on page 321\)](#), [Volume \(on page 323\)](#) and many more, sometimes to dramatic effect.

Related information

[Instrument List \(on page 98\)](#)

[Parameter View \(on page 147\)](#)

[Parameters \(on page 2\)](#)

Embedded Library

The clipboard for phrases and parameters

Every arrangement owns an **Embedded Library** that serves as a clipboard of sorts for extracting, generating, collecting and reusing **Phrases** and **Parameters**. It is saved as a part of the arrangement. You can move phrases to and from other libraries (drag & drop), or save the embedded library as a standalone library file if you want to keep it for other purposes.

It basically works like a regular **Library** ([on page 28](#)).

Visit the **Library** ([on page 125](#)) page to browse the embedded library. There you are also able to generate new phrases using **Factories**.

Using the **Library** menu, you can open up to three other libraries at a time to show up on the **Phrase Library Sidebar** ([on page 49](#)).

Related information

[Libraries \(on page 28\)](#)

[Library Page \(on page 125\)](#)

[Library App \(on page 152\)](#)

[Sidebar: Phrase Library \(on page 49\)](#)

[Adding New Phrases \(on page 50\)](#)

Arrangement Rack

Providing sounds for the arrangement

On the **Sounds** ([on page 131](#)) page you find the **Arrangement Rack** (also known as Private Rack). It is owned by and opened together with the arrangement. Its **Rack Modules** ([on page 38](#)) provide sounds for the arrangement's instruments.

Otherwise it behaves like any **Rack** ([on page 37](#)).



Tip:

If you started an arrangement based on sounds hosted by the **Global Rack** ([on page 39](#)), once your project is finished and ready to be archived, you should copy the global rack modules, so they are permanently archived with the arrangement. Do so from the pop-up menu on the **Parameter Inspector** ([on page 54](#)).

Related information

[Racks \(on page 37\)](#)

[Rack Module \(on page 133\)](#)

[Sounds Page \(on page 131\)](#)

Snippets

Small containers for live performance and improvisation

Snippets are containers placed on a grid that is designed for live performance and improvisation. The grid's rows each present a **Snippet Group** ([on page 122](#)).

Snippets can be **started** and **stopped** individually, although only one snippet per group can play at a time. This makes each group a set of alternative musical expressions (any parameters actually), ready for you to be scheduled live and in real-time.



A snippet grid can be created automatically from an arrangement, by collecting existing phrases from containers. A live performance can be retroactively converted into an arrangement.



Tip:

Although a snippet can contain phrases for any number of instruments, you may want to arrange your first grid such that every group is for one particular **Instrument**, while the first group is reserved for [Harmony \(on page 304\)](#) parameters.



Important:

Tempo and **Signature** are global for all snippets and the root container of your arrangement. When you change either parameter, it affects all snippets and the root container of your arrangement alike. It is currently not possible to have snippets with different time signatures or tempos.



Note:

This feature is available with the **Express** and **Pro** editions.

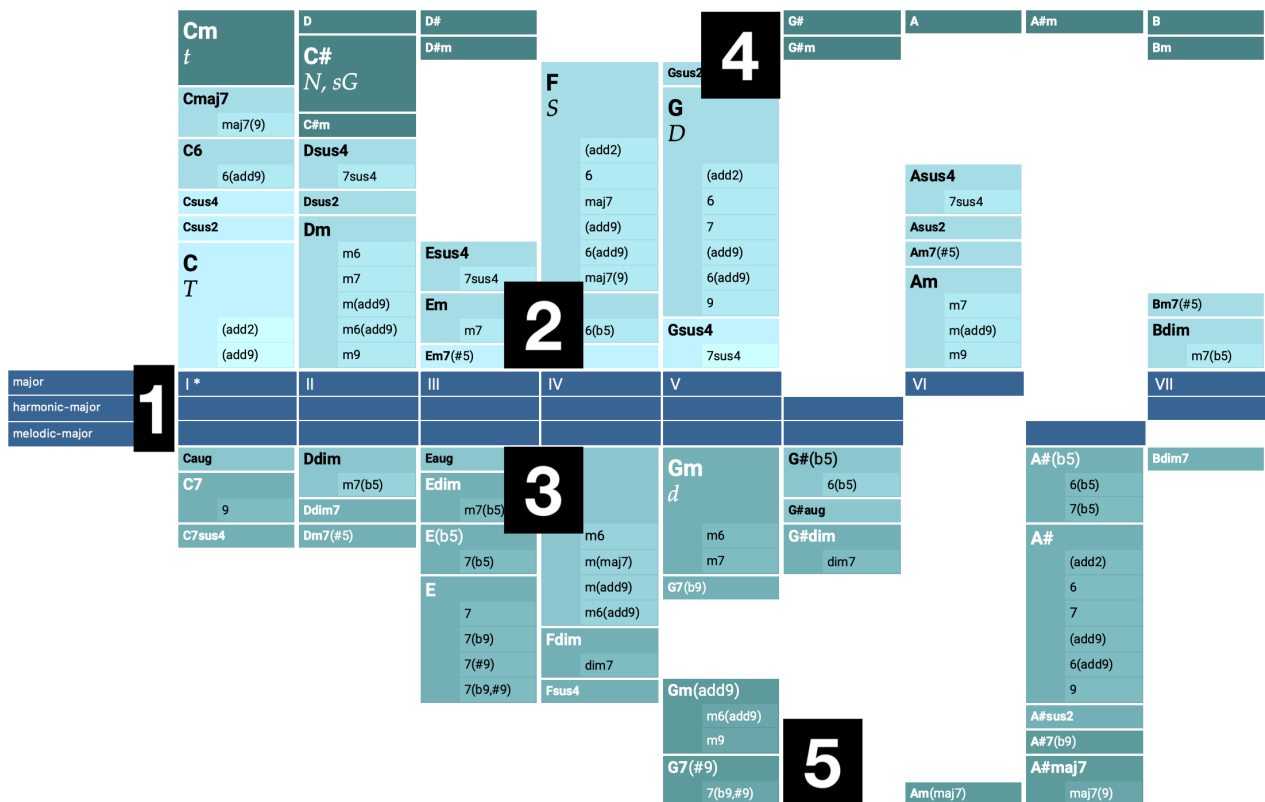
Related information[Snippets Page \(on page 118\)](#)[Snippets Console \(on page 125\)](#)[Snippet Group \(on page 122\)](#)[Snippet \(on page 124\)](#)[Recording Snippets \(on page 267\)](#)

Palettes

Surfing the space of harmony

[Video Tutorial](#)

The **Palette** is a convenient tool for exploring all keys, scales and chords.



Palette layout is divided into five areas:

1. Middle bar with one or more **Horizontal Scales**. The top scale is the **Reference Scale**.
2. **Chords** built from the Reference Scale exclusively.
3. **Chords** built from any of remaining scales.

4. **Related Chords** hanging from the top. These can't be built from scales of the Palette, but still have a significant functional relation to the **Tonal Center**.
5. **Additional Chords** at the bottom edge with only a weak or no relationship to the **Tonal Center**. Such chords offer interesting transitions to other keys or can add variation to a progression.

The Palette basically is a visualization of a **Scale Set** ([on page 11](#)). Its content and appearance can be configured with the Layout menu ([Layout > Settings](#) and [Coloring > Settings](#)).

Scale degrees can be labeled with

- **Roman Numerals** I, II, III, IV, V, VI, VII, VIII for **Standard Palettes** that denote traditional Major/Minor keys.
- Steps 1, 2, 3, 4, 5, 6, 7, 8, etc. for **Alternative Palettes** not limited to any type of tonality.
- Note names.

Chord Columns

Chords built entirely from the **Reference Scale** appear above the middle bar. Other chords appear below. All chords defined in the **Catalog** ([on page 16](#)) are considered for display, unless you exclude them with [Layout > Settings](#). Filtering chords can greatly simplify a Palette, making it easier to navigate for beginners.

Standard Palettes

Standard Palettes resemble the traditional Major and Minor keys in the Circle of Fifths. They are pre-built based on Scale Sets that include the traditional horizontal scales.

Simply [click](#) on a key in the in the **Circle of Fifth** to select any desired key.

Alternative Palettes

Alternative palettes can be built on arbitrary scales. They are not tied to traditional Major/Minor tonality. You are pretty much free to include any type of scale in such a palette and experiment with the chords that show up. Scales may be whole-tone or half-tone scales, modes, or oriental or jazz scales with 8, 9, or more tones. You can in effect add to the **Catalog** ([on page 16](#)) any arbitrary interval structure as a new scale and then start a new palette based on that.



Note:

By editing a palette, you actually edit the **Scale Set** ([on page 11](#)) it is based on. In many ways, the palette is the visual presentation of a scale set.

Reading an Alternative Palette

There is no longer a clear role for the reference scale, which can be totally unrelated to the other scales. Likewise, the root of a palette is not necessarily the tonal center. An alternative palette offers a particular perspective on a selection of chords that can be built from its scales.

This is pretty much uncharted territory, inviting you to experiment and explore. The alternative palette is a tool for navigating an otherwise huge harmonic space, following seemingly odd but meaningful relationships. What looks like

a straight path through the palette may actually be a trip through several traditional keys. The logic behind it may be obscured, but it will shine through your composition and make sense. Discover your own system.

Scale Selection Preferences

Synfire prefers to select scales that can be derived from the scale set of the palette. The scale set thereby significantly influences melodies playing along with a chord. A harmonic context for the same chord will sound differently depending on the palette it was taken from.

You can influence this to some extent by editing the scale selection preferences ([Edit > Scale Selection Preferences](#)).

Related information

[Playing Palettes \(on page 243\)](#)

[Editing Palettes \(on page 111\)](#)

Libraries

Collections of phrases and parameters, the building blocks for arrangements

[Video Tutorial](#)

A **Library** is a collection of **Phrase Pools**, each of which contains one or more **Phrases** ([on page 17](#)) populated with **Parameters** ([on page 2](#)).

All sorts of phrases and parameters, be they imported, sketched, recorded or generated, can be collected in a library and organized in folders. The point is to have these ready for reuse by conveniently dropping them on any destination in an arrangement.

Phrase Pools

A **Phrase Pool** (short: Pool) contains one or more **Phrases** ([on page 17](#)) that are deemed variations of a musical expression. The properties of a pool are shared by all its phrases.

- **Sound**
- [Interpretation \(on page 305\)](#)
- [Signature \(on page 312\)](#)
- [Tempo \(on page 318\)](#)
- [Preview \(on page 311\)](#) (optional)

Since these properties are shared by all phrases, you cannot have phrases in the same pool that would have different sounds or interpretation settings for that matter.

Phrase Pools can be **locked**, which protects them against accidental modification.

Editing Libraries

The folders, pools and phrases in a library can be easily reorganized with drag & drop. You can move or copy all items between multiple open libraries.

Library Sounds

With Synfire Pro, a library can have its own rack of sounds, just like an arrangement. This allows you to collect phrases along with their originally intended sounds. When you drop such a phrase onto a track, Synfire will ask you whether you also want to copy the original rack module to the arrangement rack. This greatly simplifies the task of building an arrangement from scratch.

Related information

[Embedded Library \(on page 24\)](#)

[Library App \(on page 152\)](#)

[Import SMF \(on page 268\)](#)

[Phrases \(on page 17\)](#)

Factories

Generating random parameters and phrases based on musically meaningful rules

[Video Tutorial](#)

A **Factory** is a rules-based algorithm that randomly generates new **Parameters** and **Phrases**. You can think of a factory as a kind of pre-wired modular synthesizer.

On the **Factory** tab in a **Library** you can select a built-in Factory to start a new pool of phrases from scratch. Each factory has a distinct user interface that allows you to influence its output. A generated phrase retains the settings used to generate it, which is indicated by a small factory icon.

Synfire ships with a collection of basic factories suitable for many purposes. These built-in factories are powerful algorithms that you can customize to create new factories for the style and purpose you want. They are merely a starting point for you to grow your own personal collection of phrases and parameters over time. The range of musical expressions a single algorithm can generate is vast and it takes some time to make yourself familiar with its settings.



Important:

Every generated phrase retains the settings used to generate it, so you can return to it later and continue to spawn off new variations. A carefully configured generated phrase therefore is a new **Factory** in its own right. Instead of starting with default settings from scratch, you can select an already generated phrase to recall its original factory settings and continue making new phrases based on that.



Note:

Factories are written in the rules-based AI programming language KIM, which was specifically designed and implemented by Cognitone for the purpose of generating musically plausible and natural sounding phrases.

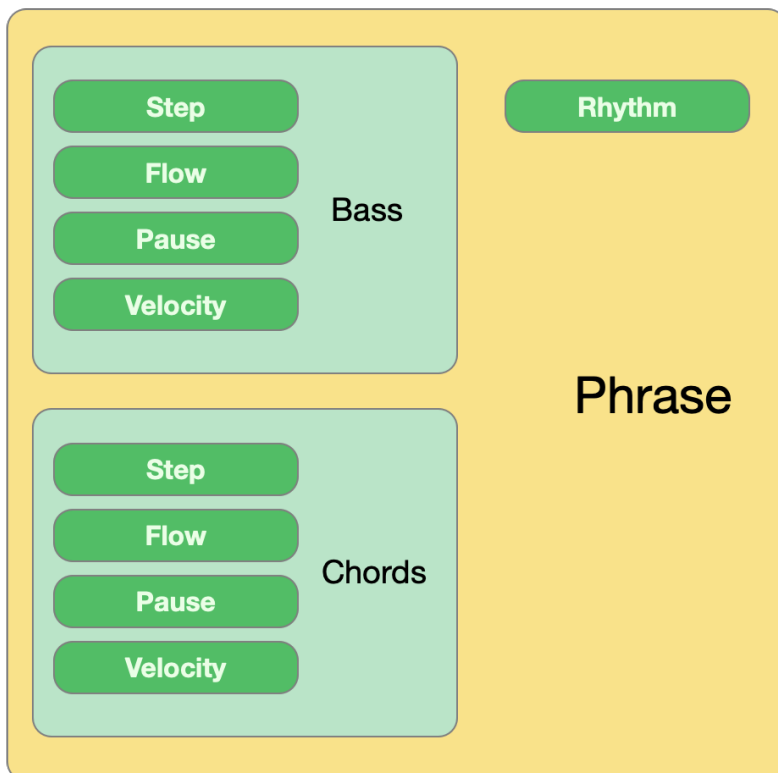
**Note:**

This feature is available with the **Pro** edition.

Factories ([on page 29](#)) are a powerful modular system for generating parameters and phrases. You should [make yourself familiar with the concept](#) ([on page 29](#)) before you begin.

Factory Types

There are factories for **Parameters**, **Lines** and **Phrases**.



Parameter Factories

These factories generate basic parameter data for **Velocity**, **Flow**, **Pause**, **Step**, **Skip**, **Harmony** and others.

Use as Module: Their main purpose is to provide input to other factories, where you pick them from a menu and configure their settings in order to achieve a desired effect. This is similar to a modular synthesizer, where, for example, you would setup a LFO generator and choose it as input to some other module.

Use Standalone: Add a single parameter to a **Phrase Pool**, the phrases of which you can drop anywhere you find it useful. Since the data is musically meaningful (i.e. not just random noise), this makes a lot of sense.

Line Factories

These factories generate a **Figure** parameter of a specific **symbol type**. There are line factories for **Bass**, **Chords**, **Arpeggio**, **Melody**, **Question & Answer**, **Left Hand**, **Right Hand** (of a piano phrase) and more.

Use as Module: Pick a factory from a menu and configure its settings in order to add one or more lines to another phrase factory.

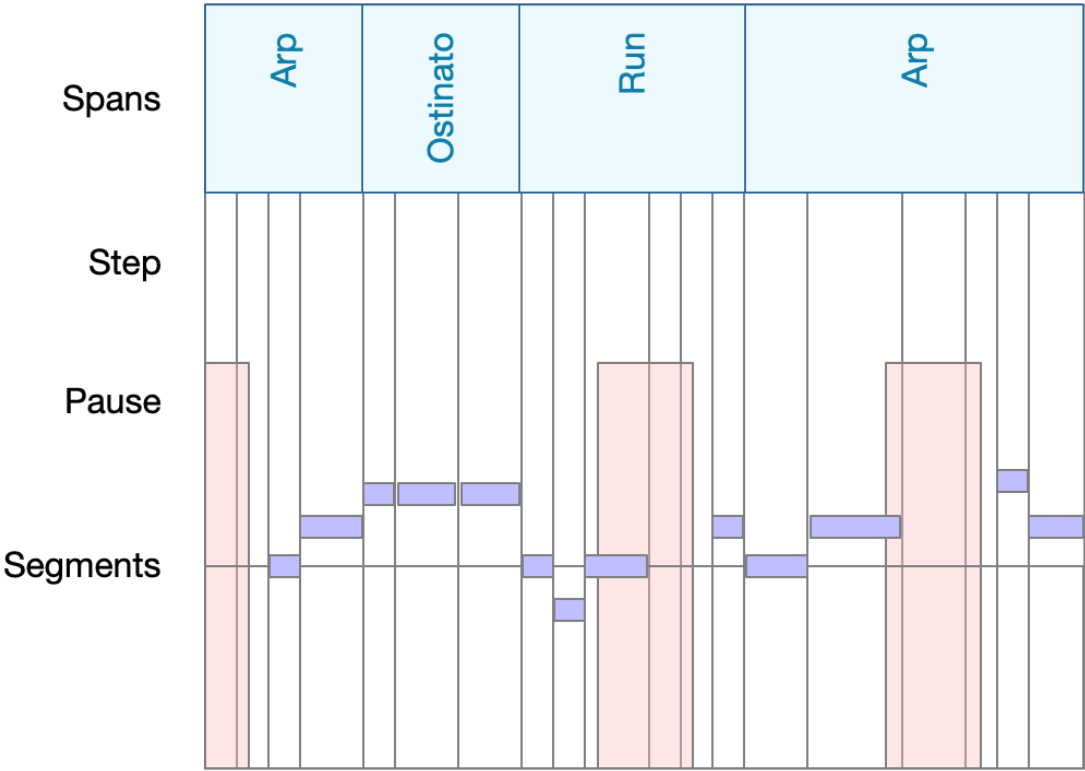
Use Standalone: Add a single **Figure** to a **Phrase Pool** the phrases of which you can use anywhere you want.

Phrase Factories

These factories generate more complex and structured phrases by merging the outputs of one or more line factories into a mixed-type **Figure**. There are factories for **Counterpoint** that generate multiple related melodic lines and factories for **Piano** that generate phrases with lines for bass, chords and melody combined.

Line Factory Algorithm

Most line factories generate a **Figure** using the following algorithm. There are other algorithms and there may come additional algorithms in the future.



1. **Spans:** Divide the phrase in to spans and assign segment types to them.
2. **Step:** Generate a **Step** parameter with another factory.
3. **Pause:** Generate a **Pause** parameter with another factory.

4. **Segments:** Fill the **Figure** from left to right with symbols moving up and down according to each segment type, while skipping any steps that fall into a pause.
5. Apply other parameters like **Velocity** and **Flow**.

Every parameter can be generated by another factory or provided by an [outlet \(on page 45\)](#). This way you obtain control over the results of a line factory to a great extent.

How To Use Factories

Despite the somewhat specific name, a **Piano Factory** can be used for a much wider range of instruments and musical styles. Since it generates lines for bass, chords and melodies from a single algorithm, you basically obtain multiple closely related elements that greatly work together. You can copy either of its lines to any instrument. Most piano phrases make great EDM patterns when you copy their lines to different electronic instruments.

Likewise, the output of a **Counterpoint Factory** is not limited to organs or piano. Many counterpoint phrases sound fantastic when distributed over multiple instruments, or played with a guitar.

Related information

[Factory Tab \(on page 129\)](#)

Sketches

Conducting music in real-time

A **Sketch** renders a short passage of music in real-time. You can play Sketches on **Palettes** and **Progression** ([on page 14](#)) editors as an alternative for the default chords-only playback.

Enable or disable a Sketch from the **Playback** menu.

You can create a Sketch with **File > New > Sketch** or by using the **Make Sketch** command of the **Container** menu.

Limitations

Since a Sketch is rendered in real-time, only a few milliseconds ahead of a new harmony you ask it to play, it has no opportunity to properly prepare for a chord change in advance. This can lead to artifacts like pitch leaps and truncated notes. Depending on musical style, this can be more or less noticeable.

Due to the computing power required for real-time rendering, the number of instruments in a Sketch is limited.

Related information

[Sketch App \(on page 150\)](#)

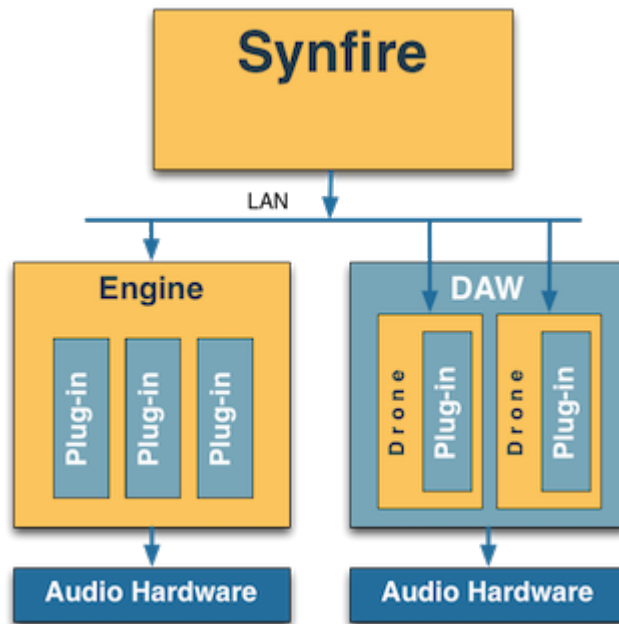
[Making a Sketch \(on page 267\)](#)

Audio System

About instruments, devices, racks, Drones and the general architecture of the Audio/MIDI system

Synfire separates its user interface from the **Audio Engine**, which is running in the background and hosting all audio plug-ins. Both are separate processes that communicate with each other over the local area network. This allows for multiple engines to be run on different computers in your LAN.

Figure 4. Parts controlled by are orange and other parts are blue.



Tip:

When a DAW is synchronized in order to run alongside Synfire, a third program comes into play. Therefore, in order to keep things simple, we recommend you begin without adding a DAW to the mix until you feel comfortable with the novel work flows of Synfire. In contrast to juggling the complexity of multiple programs at the same time, the [Audio Engine \(on page 41\)](#) is managed automatically in the background avoiding distraction while you work on your music.



Note:

Audio output of [Audio Engines \(on page 41\)](#) is not currently sent back to and mixed in Synfire. If you run multiple engines on different computers in a LAN, audio output of each engine is sent to the audio interfaces of each computer individually.

Instruments

[Instruments](#) interpret phrases to render MIDI output.

An **Instrument** interprets the **Parameters** ([on page 2](#)) of a **Phrase** ([on page 17](#)) to render MIDI output, taking care of its **Playing Ranges** ([on page 35](#)), **Category** ([on page 34](#)) and other properties. Consequently, if you alter the properties of an instrument, this will almost certainly alter MIDI output.

The properties of an Instrument include

- Name
- **Sound** ([on page 37](#))
- **Category** ([on page 34](#)) (or type)
- **Playing Ranges** ([on page 35](#))
- **Custom Controllers** ([on page 202](#)) and **Articulations** ([on page 204](#))
- Program/Patch selection details

Instruments show up in an **Arrangement** ([on page 19](#)) as labeled **Tracks** ([on page 20](#)) or as strips on a **Matrix Console**. There are also **Global Instruments** ([on page 40](#)) (and invisible instruments) at work, when you surf a **Palette** ([on page 26](#)), preview a **Progression** ([on page 14](#)) or browse a **Library** ([on page 28](#)).



Note:

Instruments are used over the course of an entire arrangement. Changing the sound midway is not supported. Create a new instrument for every sound you want to use.

Multiple Voices

Multiple tracks may use the same **Sound** for the purpose of separating voices. Technically, these are separate Instruments, although musically you would consider them separate voices. For example, you can add two instruments for the left and right hand of a piano part, or four instruments for the individual voices of a counterpoint part. These instruments will use different **Playing Ranges**, **Interpretation** ([on page 305](#)) settings and other parameters, so you can control the rendering of each individual voice.

Category

Synfire organizes **Sounds** ([on page 37](#)) in a hierarchy of categories that denote the type of instrument they are resembling. Sound categorization has clear advantages.

1. Browsing large collections of sounds is easier.
2. Categories provide default **Playing Ranges** ([on page 35](#)), so if you assign a category to a sound or instrument, it will assume its playing ranges, unless specific ranges are already assigned.
3. Synfire can automatically find a replacement if a sound is not currently available. This happens, for example, when a file was created by another user or in a different studio.
4. Sounds can be previewed with a custom **Phrase** that was assigned to their category.

For synthetic or abstract sounds, it is sometimes not obvious which category to assign. In that case you should assign a category that comes close to the **role** a sound would take on in an arrangement. For example, if a synthetic sound is great in the lower pitch range, you may want to assign it the category **Synth Bass**.

Inheritance

An **Instrument** ([on page 33](#)) uses the category of the **Sound** ([on page 37](#)) currently assigned to it (default), until you override this setting in an **Arrangement** ([on page 19](#)) or anywhere else an instrument can be configured.

**Note:**

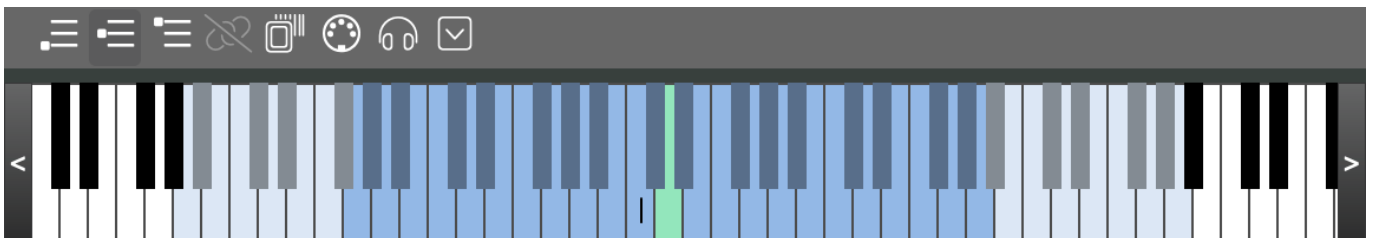
The category tree of Synfire cannot replace the sophisticated sound matching and browsing schemes many plug-ins have to offer. The main purpose of a category is to find replacements for a missing sound and provide Synfire with a hint how a sound is expected to be played.

Playing Ranges

Setting the target MIDI range for an instrument

Almost all [Parameters \(on page 2\)](#) that make up a [Phrase \(on page 17\)](#) are relative (parametric) and thus require context to be resolved against. There is no way to tell in advance what the final MIDI output will be, until all of an arrangement's container hierarchy and [Harmony \(on page 304\)](#) is considered.

In contrast to a piano roll in a DAW, looking at a [Figure \(on page 2\)](#) in Synfire does not tell you anything about the MIDI pitches that will be used. So for Synfire to be able to dynamically transpose and transform musical expressions in order to make them land within a desired pitch range, three playing ranges are set for every Instrument: **Lower**, **Middle** and **Upper**.



The total of all three ranges combined implies the maximum pitch range an instrument is capable of playing. Natural instruments have physical limits and even synthesized sounds might not sound great across the entire spectrum of MIDI notes. You decide what the best playing ranges are for any particular instrument.

Each range has an adjustable **Typical Pitch** that works best for the instrument in the respective range.

1. **Lower: Typical Pitch** should be optimal for using the instrument in a bass voice. The magenta bass symbols of a [Figure \(on page 298\)](#) use this range by default.
2. **Middle:** Used for chords and melodic segments by default. Set the **Typical Pitch** to what sounds best for narrowly voiced chords.
3. **Upper:** Not used unless you assign it to a [Figure \(on page 298\)](#) segment. Set the **Typical Pitch** to what sounds best for a bright lead melody.

**Tip:**

Ranges can be set in advance by creating a [Device Description \(on page 36\)](#) that aggregates this and other meta-data for all sounds it provides. Or you do it on-the-fly while an arrangement is evolving: Fire and forget. The former is more sustainable in the long term, while the latter gets you going faster on an ad-hoc basis.

**Tip:**

Each range should be at least one octave wide. For instruments with a narrow total pitch range (e.g. flutes), you can set all three ranges to the physical limits of the instrument and have the **Typical Pitch** merely reflect slightly different registers.

**CAUTION:**

Do not confuse these ranges with voices! For counterpoint movements with multiple voices, you would set the ranges for each instrument that renders one of the voices.

Inheritance

[Instruments \(on page 33\)](#) use the ranges of the [Sound \(on page 37\)](#) that is currently assigned to them (default) until you override them in an **Arrangement** ([on page 19](#)) or anywhere else an instrument can be configured (e.g. for **Global Instruments** ([on page 40](#))).

Scanning Ranges Automatically

For sounds of any plug-in, you can let Synfire scan the ranges of a sound automatically. Press the **Scan** button and it will analyze the acoustic properties of the sound to determine its ranges. For this to work, Synfire needs to know the sound's category.

Editing Ranges

Use the [Playing Ranges Inspector \(on page 58\)](#) to adjust the ranges of an instrument or sound manually.

Related information

[Editing Playing Ranges \(on page 58\)](#)

Devices

Device Descriptions keep important meta-data for sounds

All internal sound generators, audio plug-ins (instruments and effects) and external MIDI hardware (synthesizers) are referred to as **Devices**. The term is also used as a short form of **Device Description**, because that is basically the only thing you deal with in order to set up devices for use with Synfire.

Device Description

A **Device Description** is a small file that contains meta-data about an actual device (synthesizer, plug-in, sampler preset), the [Sounds \(on page 37\)](#) it has to offer and how these are selected. In particular this meta-data includes for each sound:

- Instrument [Category \(on page 34\)](#)
- [Playing Ranges \(on page 35\)](#)

- [Custom Controllers \(on page 202\)](#)
- [Custom Articulations \(on page 204\)](#)
- Sound bank and program (patch) selection commands

Although all of the above can be set anew for every instrument in an arrangement as you go, we strongly recommend you create a **Device Description** for those sound libraries and synthesizers you will be using most frequently. Especially if **Custom Controllers** and/or **Custom Articulations** are involved.

Sounds

The term **Sound** refers to a patch, program, or preset provided by a **Device** ([on page 36](#)). For an **Instrument** ([on page 33](#)) to be able to render music, it needs to be assigned a **Sound**. This is referred to as **Sound Assignment** ([on page 235](#)).

A Sound cannot be physically accessed in Synfire. It is merely an address used to find and select a real sound connected via MIDI or hosted as audio plug-in, and then send MIDI data to it.

Sound vs. Instrument

While a Sound is a permanent part of a **Device** ([on page 36](#)), an Instrument lives in an **Arrangement** ([on page 19](#)), determining how to play a Sound. Multiple Instruments with different properties may use the very same Sound, such as in a counterpoint part where multiple voices move along in different ranges.

Related information

[Assigning Sounds \(on page 235\)](#)

Device Templates

Device Templates provide complete meta-data for **Sounds** that can be copied to other **Device Descriptions** or **Instruments** when you need them.

Racks

Hosting your sounds.

A **Rack** holds one or more **Rack Modules**. Such a module may host an audio plug-in, the **Embedded GM Synthesizer**, a **Drone** in a DAW, or a **MIDI** port that connects to some external hardware.

There are three types of racks.

1. The **Global Rack** is hosting sounds that are available to the entire system and all open files.
2. The **Arrangement Rack** that is included with every **Arrangement** ([on page 19](#)) to host sounds for the arrangement's instruments.
3. The **Library Rack** that is included with every **Library** to host sounds required by its phrases in order to best demonstrate their character and usage.

Racks are loaded automatically with their respective files. The only rack you would open manually is the **Global Rack**. When a rack is unloaded, all its audio plug-ins are also unloaded from memory.

Related information

[Global Rack \(on page 39\)](#)

[Arrangement Rack \(on page 24\)](#)

[Rack Editor \(on page 131\)](#)

Rack Modules

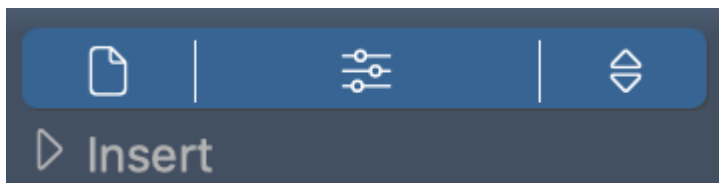
A **Rack Module** somewhat resembles the look of a 19-inch rack-mount device and takes on the role of managing the audio side of one or more instruments. It is not unlike the channel strip of a mixing console.

Since a MIDI port has a capacity of 16 channels, every Rack Module can supply up to 16 different instruments with sounds. Provided the loaded plug-in or connected external hardware is capable of receiving on that many channels, of course.

Rack Module Preset

Save time with presets for your most frequently used sounds

A **Rack Module Preset** includes the current state of a plug-in, plus a copy of the **Device Description** ([on page 36](#)) it is associated with. It can be used to restore both in an instant, simply by dropping it on a rack module or track.



Save a new preset from the plug-in button of a **Rack Module** ([on page 133](#)) to add it to the **Rack Module Library** ([on page 47](#)). It will be listed in the browser on the sidebar automatically, where you can rename, move and edit it. But most importantly, you can grab the preset in the browser and **drop** it on any **Rack**, **Rack Module** or **Instrument** to restore it.

**Note:**

Synfire also uses rack module presets to automatically detect the device to be used for a plug-in by comparing the current plug-in state with those that have been saved as presets.

Related information

[Sidebar: Rack Module Library \(on page 47\)](#)

[Rack Module \(on page 133\)](#)

Transient Rack Modules

Large sound collections on-the-fly.

Rack modules Synfire happens to find on an **Audio Engine** that are not part of any particular arrangement, are transient (temporary). The sounds of transient modules however are available for use, like any other module's.

If you open a project in your DAW that was saved with Drones not belonging to any particular arrangement, these Drones will appear on your racks as transient modules. Provided these modules have once been saved as a preset, Synfire will automatically detect the **Device Description** to use when it appears online again.

When the DAW goes offline (the project is closed), the Transient Drones simply disappear from all racks again.



Notice:

This is an experimental feature that has proved to be useful for some users with very large sound libraries. You should not rely on it when permanently archiving your projects. If Cognitone ever removes this, we will provide a means to migrate these modules back into regular racks.

Special Rack Modules

AUX

For each **Audio Engine** you can add one AUX module to the **Global Rack**. It receives the signals from all **AUX Send** knobs of other modules, processes the mix and sends its own output to the MASTER module.

It is useful for use with a reverb or similar effects processor.

MASTER

For each **Audio Engine** you can add one MASTER module to the **Global Rack**. It mixes the output of all other modules. The **Gain** knob controls overall output volume. On the **Matrix Console** a slider is mapped to this knob.



Tip:

You might want to load a multi-band compressor as **Insert Effect** to balance stark volume differences while you compose.

Global Rack

Shared sounds for palette surfing, progression preview and arrangements

The sounds provided by a **Global Rack** are loaded only once and remain available for any projects you subsequently open. Much like a real hardware rack in a studio that provides sounds for multiple songs you might want to produce. This is especially handy when you open multiple related arrangements at the same time, while you edit and play them in any order and transfer phrases with drag and drop.

Most importantly, the global rack provides six **Global Instruments** ([on page 40](#)) with sounds that are used to play **Palettes** ([on page 26](#)) and preview **Progressions** ([on page 14](#)) and **Phrases** ([on page 17](#)), including the metronome and other audible feedback.

Maintaining multiple global racks has many benefits.

- Switch between musical styles.
- Compose a number of related arrangements based on the same sounds (e.g. a film soundtrack).
- Experiment with different versions of an [Arrangement \(on page 19\)](#) without the need to reload sounds.

The rack is a file you can open, save or close like other documents. You can create as many global racks you want and use them in association with [Arrangements \(on page 19\)](#) or [Libraries \(on page 28\)](#) as needed. However, only a single global rack can be open at a time.

Organizing Global Racks

The current global rack is saved automatically when Synfire is quit, unless you discard the changes. If you work with multiple global racks, save them to the **Config/Racks** folder with **File > Save As**

Associating a Global Rack With an Arrangement

Synfire associates the current global rack with a new arrangement by default. That is, you will be asked whether to load the rack when you open the arrangement. If you associate multiple arrangements with a specific global rack, save it in the same folder next to the arrangement with **File > Save As**

Related information

[Audio/MIDI Setup App \(on page 159\)](#)

[Racks \(on page 37\)](#)

Global Instruments

In order to be able to play a **Palette**, preview the phrases in a **Library**, or listen to a chord **Progression** ([on page 14](#)), Synfire needs a basic selection of sounds to be always available, whether an arrangement is currently open or not. This is accomplished by the **Global Instruments**.

Piano

Standard instrument used for all kind of audible responses. Synfire uses it for previewing scales and chords in the **Catalog** ([on page 16](#)), or rendering melodies when you work with the **Harmonizer** ([on page 15](#)). Although you can choose any sound, a piano is best suited for this general purpose.

Chords

Used for sustained chords, e.g. when you surf a **Palette** ([on page 26](#)). This should be a lush string section or a warm synthesizer pad.

Bass

Used for the bass voice in **Chords Only Mode**, the **Harmonizer** ([on page 15](#)) and the **Palette** ([on page 26](#)).

Guitar

Only used in specific factory preset **Sketches** ([on page 32](#)).

Drums

Used for drums and percussion, when no other sound is available.

Metronome

Used as a count-in for recording. Pick a sound you want to use for the metronome clicks. It should have a low latency.

For every global instrument you assign a **Sound** ([on page 37](#)), set a default volume and pan and edit its **Playing Ranges** ([on page 35](#)) as needed.



Tip:

Since the sounds of these instruments are hosted by the **Global Rack** ([on page 39](#)), they get replaced when you load a different Global Rack. It therefore makes sense to create your global racks based on a minimal set of sounds that always work for you.

Related information

[Instruments \(on page 33\)](#)

Audio Engine

Background application that hosts audio plug-ins on behalf of Synfire

The **Audio Engine** is a background application running in the background of the Synfire user interface application. It is hosting audio plug-ins and effects on behalf of Synfire.

MIDI Routing

About the signal flow of MIDI data

Input And MIDI Through

On the **Inputs** tab, you can enable the **Input** switch for individual MIDI ports and Audio Engine ports ([Playback > Audio/MIDI Setup](#)).

These ports collect and merge all incoming MIDI data for recording and playback. If **MIDI Through** is enabled, the incoming data is forwarded to the **Instrument** you selected last. If you want incoming data to be sent to a different instrument, just **click** on its name on the **Track Sheet** ([on page 98](#)) or in the list of **Global Instruments** ([on page 174](#)).

Targeting Specific MIDI Channels

It is usually not necessary to micro-manage MIDI channels, as Synfire uses the **Device Description** ([on page 36](#)) you selected for a **Rack Module** ([on page 38](#)) to manage them automatically. That is, if you select a particular sound for an instrument, the device description already knows where to send MIDI output.

If you need to address a specific MIDI channel, open the **Sound Wizard** ([on page 196](#)) for an instrument and create a new rack module on the desired MIDI port. On page two, you pick the **Fixed Channels** option and on the last page you pick a channel, name and category for the sound. Then the wizard creates and saves a device description for you.

You can also add a specific channel to an existing **Device Description** ([on page 36](#)). On the device description editor, go to the **Variants, Channels** tab and add the desired channel. On the right sidebar you edit the properties of the sound found on that channel.

Dynamic Sound Allocation

Unlike a DAW, Synfire can open multiple arrangements and libraries at the same time, which may share the same devices on the global rack.

If Song A uses 12 sounds on **Soundcase** and Song B uses 10 different sounds on **Soundcase**, they can still both be open and play, although there are only 16 channels available. The song that comes to the foreground claims and selects the sounds it wants, replacing any sounds that the previously active song may have claimed and vice versa.

Similarly, within a single arrangement if an instrument needs a new sound on **Soundcase** (or any other multi-timbral instrument) it looks for the next unused channel and claims it. If an instrument is removed, its channel becomes available again. You don't have to micro-manage that.



Note:

This only works for devices that support program (patch) selection via MIDI program change messages. For virtual instruments that require you to browse and select sounds using their own editor window, you must use the **Sound Wizard** ([on page 196](#)) to set them up and set **Playing Ranges** ([on page 35](#)) and **Category** ([on page 34](#)) by hand.

Related information

[Assigning Sounds \(on page 235\)](#)

[Devices \(on page 36\)](#)

[Instruments \(on page 33\)](#)

[Live Chord Detection \(on page 266\)](#)

[Rack Modules \(on page 38\)](#)

[Recording \(on page 264\)](#)

[Sounds \(on page 37\)](#)

Cognitone Transport

ReWire module for synchronizing the transport of a DAW with Synfire

Since a Drone is merely a plug-in, it is unable to reliably control the transport of a DAW (tempo, locate, start, stop, pause). This is handled by the **Transport ReWire™** Device installed together with Synfire. The ReWire™ device is loaded automatically by a DAW and communicates with Synfire over the local network. This is managed transparently in the background.

Some DAW require ReWire™ to be enabled before use. Please check the documentation of your DAW.

Drones

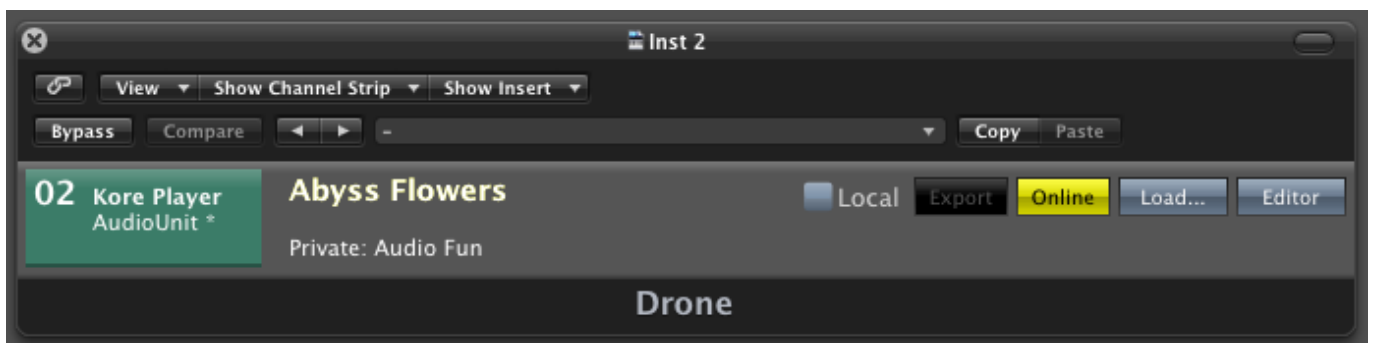
Plug-ins that operate in a DAW on behalf of Synfire

Synfire is able to synchronize with and remote-control a DAW using **Drone** plug-ins. The Drones are hosting guest plug-ins on behalf of Synfire to ensure 100% accurate timing during playback, when Synfire is feeding the Drones with MIDI data over the network slightly ahead of time. This synchronization allows for already recorded audio tracks (e.g. vocals, guitars, natural instruments) to run alongside the music you are composing while it is evolving.



Troubleshooting:

Drones must be fully loaded in a DAW to connect with Synfire. Some DAW suspend or delay loading plug-ins in order to speed up the loading process. This makes an associated arrangement come up broken when you open it. Check the project settings of your DAW and make sure all plug-ins are always loaded, whether or not the DAW thinks they are currently needed.



Be aware though that Synfire has only very limited control over a DAW besides setting the tempo and moving the transport. As much as we wished otherwise, there is little in the way of accessing track data of a DAW from inside a plug-in. DAWs are just not prepared for this and any plug-in loaded into a DAW is completely at the mercy of its host.



Note:

Always save a Synfire arrangement *before* you save the associated project file in your DAW. This is because Synfire transmits all MIDI data and important meta data to the Drones to have them saved with the DAW file.

**Tip:**

While it is possible to build a **Global Rack** based on Drones, we do not recommend it. The **Audio Engine** is better suited for that. It also offers a lower latency when playing live from your keyboard hardware.

MIDI Drones

The **MIDI Drone** is a light-weight version of the **Drone** that loads into your DAW as a **MIDI effects plug-in** to feed it with a stream of MIDI data that is rendered by Synfire. It cannot load a guest plug-in.

Be sure to route a MIDI Drone's output to the desired destination inside the DAW, e.g. an internal instrument.

Depending on the capabilities of your DAW, it may be possible to chain multiple MIDI effects in a row.

**Note:**

Not all DAW support MIDI effects plug-ins in the same way. There may be restrictions as to where such a plug-in can be loaded, if at all. Please consult the documentation of the DAW.

Related information

[Synchronizing With a DAW \(on page 241\)](#)

User Interface Basics

Fundamental principles you should know to get started more quickly

A few things the user interface of Synfire is based on and that are good to know before you start.

Mouse

Knowing some basic gestures greatly improves your user experience and productivity.

Right-Click

The secondary mouse button (right-click) offers convenient access to many operations and contextual menus. Synfire makes extensive use of this. Point the mouse at any object and open a menu with options and commands with a **right-click** on it.

**Tip:**

You can explore many available actions by right-clicking on an object.

For whatever design reasons, Apple discourages the use of the secondary mouse button. It can be enabled in **System Preferences**. We strongly recommend you do so when working with Synfire. Alternatively you can simulate a right-click by holding down the **Control** key while you click on an object.

Double-Click

Throughout the user interface of Synfire, a **double-click** on something often means to look deeper into its details or get out of a detailed view again.

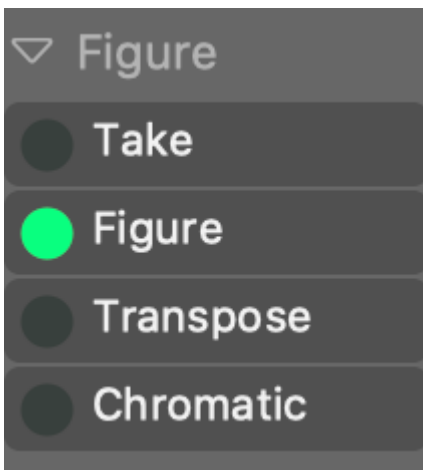
For example, a double-click on a **Parameter View** in an arrangement opens the more detailed **Phrase Editor**. Another double-click into the slack area of its **Parameter View** jumps you back to the arrange view. The same holds true for **Containers** in the **Structure View** and their counterparts on the **Overview** page.

A double-click is also available for executing a command from the toolbar. For example, a double-click on a note length quantizes the current selection to that grid. A double-click on a **Figure Symbol** type applies that type to the current selection, and so forth.

Parameter Outlet

A hub for drag & drop or copy & paste of parameter data

Parameter Outlets indicate the presence of parameter data. They appear in groups (blocks), or as an isolated outlet for a single parameter. They allow for conveniently [copying or moving parameter data \(on page 245\)](#).



You can scroll parameter outlet blocks with the mouse wheel and collapse individual groups to make room for others.

References

Some **Parameter Outlet** appears standing alone, only for a single parameter. This is a reference (or shortcut) to some important parameter, e.g. the [Harmony \(on page 304\)](#) of the current container, or the [Preview \(on page 311\)](#) progression to use for phrase playback by default.

Colors

The LED of an outlet indicates availability of parameter data.



A brightly lit LED indicates physical data is present.



A dimmed LED indicates the parameter is assigned somewhere up in a parent [container \(on page 21\)](#), or a global parameter or system default is used. You can make a **Snapshot** of these, which puts a physical copy in place that you can edit.



A blue LED can be dragged off even though there is no physical data. It will be extracted from the [Figure \(on page 298\)](#) when there is one.



A yellow LED indicates a parameter shared by all phrases in a phrase pool.

Multiple Selection

Multiple objects can be selected using the following tools:



Drag open a span. The objects inside the span will be selected.



Click a context (chord) and hold down the  **Control** key while you click on additional contexts.



Drag a rectangle around multiple objects, or hold the  **Control** key while you click on additional objects.



Drag a rectangle around multiple symbols, or hold the  **Control** key while you click on additional symbols.

Crash Reports

Synfire is designed to be robust against minor bugs. In many cases it can continue to be used after an error has occurred. Just dismiss the error message with **Continue** where it is offered as an option. However, as a precaution you should save your work under another file name when such an error occurs repeatedly.

All crash reports are collected so you can later submit them with [Help > Online Updates](#) to our servers for review. We encourage you to do so as it helps us greatly with improving the software and ironing out bugs.

Chapter 2. User Interface

About the user interface of all apps, parts, inspectors, panels and more

The topics under this section are all entry points for the embedded **Help Browser** where they show up when you hover over or select objects in the application. We therefore suggest you open Synfire and do just that, instead of reading these sections like chapters in a user manual.

Related information

[Help Browser \(on page 86\)](#)

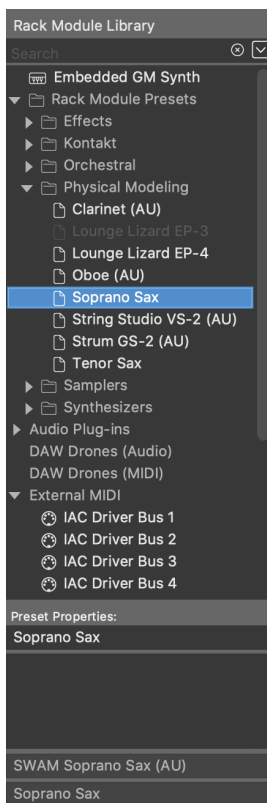
Sidebar: Rack Module Library

Adding sounds made easy

[Video Tutorial](#)

This browser on the left sidebar shows various items that can be used to create or change a **Rack Module** in order to provide sounds for instruments. Open the browser with  on the window toolbar.

Browse and **search** for items that you can **drop** on an **Instrument**, a **Rack** or a **Rack Module** in order to create or change a rack module and use its sounds for instruments.





Embedded GM Synth: Drag it to an **Instrument** or **Rack** if you want to use a sound of the embedded synthesizer. The advantage being that your arrangement or Sketch will work on any installation of Synfire, not depending on specific plug-ins. This item is grayed out if the embedded synthesizer is disabled.



Rack Module Presets: All presets you have saved so far will appear here for browsing. Create additional folders and organize your presets as you see fit. In the panel below, you can edit names and comments.

Drag to an **Instrument** or **Rack** to use the sounds of this preset.

Drag a preset with an effects plug-in to a **Rack Module** to load the plug-in as the module's insert effect.



Audio Plug-Ins: Find all scanned AudioUnits, VST and VST3 listed here. A matching device description will be looked for and suggested when you drop a plug-in on an **Instrument** or **Rack**. Dropping an effects plug-in on a **Rack Module** will load it as the module's insert effect.



DAW Drones (Audio, MIDI): If the DAW is open and has **Drones** loaded, these will be listed here. Drag one to an **Instrument** or **Rack** to claim it for your arrangement and populate it with a plug-in and device description.



External MIDI: Find all MIDI ports known to the system listed here. Drag one to the empty area of a **Rack**, or to an **Instrument**, if you want to send rendered MIDI output to this external hardware or software.

A port is disabled when it is already in use. You can edit the device description using the **Parameter Inspector** on the **Sound** tab to add more channels to the device.



Global Rack Modules: Find all rack modules of the current **Global Rack** here. Drag one to an **Instrument** or into a **Rack** to use a copy of it in your arrangement.



Global Instruments: Drag one to an **Instrument** to use it in your arrangement. The advantage being that your arrangement or Sketch will work on any installation of Synfire, not depending on specific plug-ins.



Global Mix: These are placeholders for a global MASTER and AUX rack module. Drag one to the empty area of your **Global Rack** to add it to the final mix.

Reclaiming a Drone

When you open a DAW project with **Drones** loaded, these will connect to Synfire and appear listed in the rack module library. Those that are still available can be used by your arrangement, but some Drones may be disabled (grayed out) because they are already in use or belong to a different arrangement.

If a Drone belongs to an arrangement that you no longer have access to, or that happens to be broken for other reasons, you have the option reclaim the Drone and add it to the current arrangement. Select it in the browser and click on **Lock** icon to unlock it and add it to your arrangement.



DANGER:

You should do this only to repair a broken setup, or when the link between DAW project and arrangement somehow got lost. Once a Drone has been reclaimed, the original arrangement that owned the Drone will no longer find it.

Related information

[Rack Module Preset \(on page 38\)](#)

[Rack Module \(on page 133\)](#)

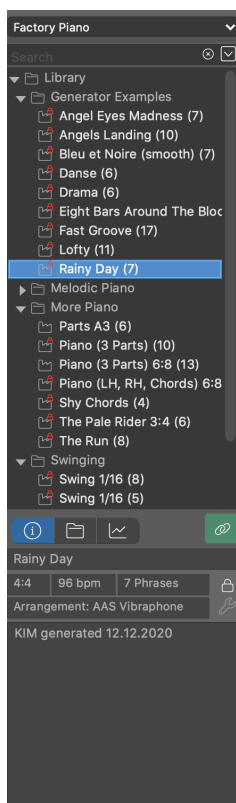
Sidebar: Phrase Library

Your repository for parameters, phrases and ideas

This part on the left sidebar lists all **Phrase Pools** in the currently selected **Library**. You can select the arrangement's own **Embedded Library** ([on page 24](#)), or any external library file from the drop-down menu or the main **Library** menu.

Open the browser with the book icon on the window toolbar.

Browse and **search** for **Phrase Pools** ([on page 28](#)), **Phrases** ([on page 17](#)) and **Parameters** ([on page 2](#)) that you can **drop** on a **Track**, **Parameter View** ([on page 147](#)), a **Parameter Outlet** ([on page 45](#)) or anywhere a phrase or parameter can be used.



Adding New Phrases

Apart from dropping phrases, parameters, tracks and containers, you can add new parameters and phrases to the current library with  **Control- E** or *Library > New Phrase From Selection* anywhere in the arrangement where you have selected a **Figure** or other parameter with the **Span** tool.

- If you selected a span on the **Figure** parameter, the new phrase will also include all other parameters that typically belong to a phrase.
- If you selected a **Take**, only **Take** and **Harmony** will be collected.
- Any other selected parameter will be collected only as a single parameter.
- If needed, you can also drag any parameter to the library with the mouse.

This is very convenient when you harvest an imported file, or encounter a parameter that you find useful for other purposes. It basically works with any parameter. When you grab a **Figure** this way, Synfire also copies the currently associated **Harmony**, **Tempo**, **Interpretation** and other parameters in order to get you a complete reusable phrase.



Note:

The phrase library sidebar must be visible for the command to be enabled.

Toolbar

Library Selection

In addition to the embedded library, you can select [library files \(on page 28\)](#) from this menu to open and browse. Files not listed here can be opened with **Library > Open ...** from the main menu.

The three most recently used [library files \(on page 28\)](#) are kept open in the background, so you can quickly switch between them without the need to reload them from disk. You will be asked whether to save pending changes when the least recently used library needs to be closed or when the **Arrange** window is closed.



Opens a menu with options for the selected phrase pool or folder.

Browser

Contents of a **Library** [\(on page 28\)](#) are organized in a hierarchy of folders. You can arrange folders freely with the mouse. Pools can be moved or copied between folders. Phrases can be moved or copied between pools.

Phrase Pool

- If you **Drag** a pool to a destination that expects a phrase, this will use its **default phrase** as explained the section **Phrases** below. For pools that contain more than one phrase, you may want to pick a specific phrase instead.
- **Drag** a pool to a **Snippet Group** to use all its favorite phrases for live playback.
- **Double-click** on a pool to jump to the **Library** page where you can edit it.
- Alternatively use keyboard shortcuts **Cut**, **Copy**, **Paste**, **Delete** or **Duplicate**.

Phrase

- **Double-click** on a phrase to insert it into your arrangement.
- **Drag** a phrase to an **Instrument Name** on the **Structure** page to replace the entire phrase as a whole.
- **Drag** a phrase to another **Folder** or **Library** to move it. Hold down  **Ctrl** to copy it.
- **Drag** a phrase to a **Parameter View** [\(on page 147\)](#) on the **Structure** page, or to the **Phrase Editor** in order to append, replace, insert or merge the phrase.

Drag a phrase or parameter to a **Parameter View** to replace the span being highlighted under the mouse.

- Hold down  **Control** to insert dropped data at the target position.
- Hold down  **Shift** to merge dropped data with existing data.
- **Drag** a phrase to a **Snippet** to use it for live playback.
- Alternatively use keyboard shortcuts **Cut**, **Copy**, **Paste**, **Delete** or **Duplicate**.

Folder

- **Drop** a track or instrument name into a folder to add its phrase to the library.
- **Drop** phrases or folders from other libraries to copy them.
- **Drop** a **Container** to add all its phrases.
- **Drop** a **Parameter Outlet** to add the current parameter data to the library.
- **Move** folders to reorganize the library.

Containers, Snippets and Memories

Containers, snippets and memory slots can also be stored permanently in a library. Simply drag them into a library. However, their content is static. You cannot add or delete anything, but you can use individual phrases as usual.

Container

Drag it into an arrangement or onto the snippet grid to restore it (Pro). If the container contains aliases, you may need to restore them first. You can use individual phrases and parameters inside as usual.

Snippet

Drag it into an arrangement or onto the snippet grid to restore it (Pro). You can use individual phrases and parameters inside as usual.

Snippet Memory

Drag it to a memory button above the snippet grid to restore it. However, original snippets that no longer exist will not be restored. In such a case, you can manually restore the snippets found inside.

Double-click on the object to schedule its content directly for playback without having to restore the memory slot. In this way, you can keep as many (virtual) memory slots in a library as you like. However, if one of the snippets used has been deleted in the meantime, it will no longer be played.

Tabs



Open this tab for information on the selected **Phrase Pool**.



Show individual phrases in the selected **Phrase Pool** ([on page 28](#)), so you can **drag** them to the arrangement.

Drag a phrase or parameter to a **Parameter View** to replace the span being highlighted under the mouse.

- Hold down  **Control** to insert dropped data at the target position.
- Hold down  **Shift** to merge dropped data with existing data.



Shows an **Outlet** ([on page 45](#)) for every available parameter in the selected **Phrase** ([on page 17](#)) that you can **drag** to your arrangement.

Switches



Preview phrases in the library using the **Instrument**, **Tempo** ([on page 318](#)) and **Harmony** ([on page 304](#)) in the currently selected container. This way you can assess how a phrase will sound in your arrangement.



Note:

You may not hear the phrase if another container plays a different phrase for the instrument at the same position.



Preview phrases and parameters in the library along with all other instruments in the currently selected container. This way you can assess the effect the phrase or parameter will have on your arrangement. This works with any parameter and the **Global Parameters** track, too.



Note:

You may not hear the phrase if another container plays a different phrase for the instrument at the same position.



Transpose the **Harmony** of the currently selected phrase to the key that dominates the current container in the arrangement (or a major/minor parallel). This transposition is also performed when you drag the phrase somewhere.



Copies the current phrase into the arrangement. Hold down **Shift** to also copy the sound to your arrangement rack. Alternatively, you can do this with **Library > Copy Sound To Track**.



Phrase pools can be locked against unwanted modification. Phrases can still be viewed and KIM Factories can be run to generate more variations based on the last used settings. These new phrases are added to a separate pool.



Assign a **Sound** to the phrase pool. Using the **Sound Wizard** that pops up, you can add sounds to the library's own **Rack**. The background color of the button indicates the current status of the sound.



1. **Transparent:** A sound on the **Global Rack** is used, or a sound is not currently needed.
2. **Blue:** A sound on the library's rack or the arrangement's rack is used.
3. **Orange:** The sound remembered by the pool is not currently available and a replacement is used.
4. **Red:** Neither the original sound, nor a replacement could be found.



CAUTION:

Be careful not to copy too many unrelated phrases from other libraries into the **Embedded Library**. This would bloat your arrangement file and slow down save and load times.



CAUTION:

You should be careful not to add too many **Rack Modules** to a **Library**, or risk it taking more time to load.

Related information

[Libraries \(on page 28\)](#)

[Embedded Library \(on page 24\)](#)

[Phrase Pool Editor \(on page 126\)](#)

[Library App \(on page 152\)](#)

Parameter Inspector

The multi-purpose sidebar on the right

This part shows up on several pages on the right sidebar. It can be hidden with on the window toolbar if you need more room for other views. Despite its name, it does not only allow for the inspection of parameters, but also provides a place for editing the selected **Instrument** and other aspects of an **Arrangement**, **Sketch** or **Library**.



Tabs

These are the tabs showing up in the Arrange App.



Parameter: Shows a parameter-specific inspector depending on the parameter currently selected. Go here to edit the parameter.



Instrument: Shows an inspector to edit the Sound and properties of the selected Instrument.



Container: Shows a form to edit the current container's name, length, comments and other properties.



Notation: Edit **Notation Export** preferences for the instrument. Select the **Global Track** to edit general export settings for all instruments.



Synchronization: Edit preferences for external synchronization with a DAW or other software.

Parameter Commands



Listen to an audible preview of the selected parameter. Some parameters don't support this.



Insert a physical [snapshot \(on page 261\)](#) of the selected parameter.

Delete

Remove the selected parameter from the phrase.



Insert a predefined **Parameter Template** from a menu.



Open the **Parameter** menu for various editing options.

Instrument Properties

Settings for an **Instrument** placed on the **Parameter Inspector** ([on page 54](#)).



Sound Settings

Label

Label the instrument if the default (sound name) is not specific enough.

Color

Changes the track color for the instrument.

Status

Indicates the status of the instrument:

- **Green:** Sound is available.
- **Orange:** Sound is a replacement, because the original could not be found.
- **Red:** Sound is not available.

Rack Module Selection

Select a rack module to provide a sound for the instrument.

Rack Module Channel

Select one of the MIDI channels provided by the rack module. If your desired sound is not listed, you may need to edit the rack module to add more channels and sounds.

Preferred Channel

Demand from this instrument to claim a specific MIDI channel where possible.

Open Plug-in Editor

Works only for plug-ins loaded by the **Audio Engine**. Plug-ins loaded by a **Drone** must be opened and edited in the DAW.

Custom Controllers, Articulations

Set up optional **Custom Controllers** ([on page 202](#)) and **Articulations** ([on page 204](#)) for the instrument, overriding those of the sound and device. This is saved with the arrangement only, so the original sound and device are not altered.

Sound Details

If the device has **Allow Modification in Arrange View** enabled, you can flip this switch and edit **Sound Properties** ([on page 143](#)) without navigating to the **Sounds** page.

Buttons



Jump to the **Sounds** ([on page 131](#)) page to edit the rack.



Jump to the **Device Description** editor.



Preview the **Sound** with a phrase set for its **Category**.



Open the **Sound Wizard** ([on page 196](#)) to configure the sound interactively.

Audio

Insert FX Slots

Up to three slots are available for effects plug-ins (Express and Pro).

AUX Send

Controls the amount of post-effects signal sent to the **AUX Module** ([on page 39](#)) (If the **Global Rack** has one).

Volume

Overall output level for the module. Don't use this for mixing. Keep at 0 dB unless you need to compensate for grossly unequal audio levels.



Note:

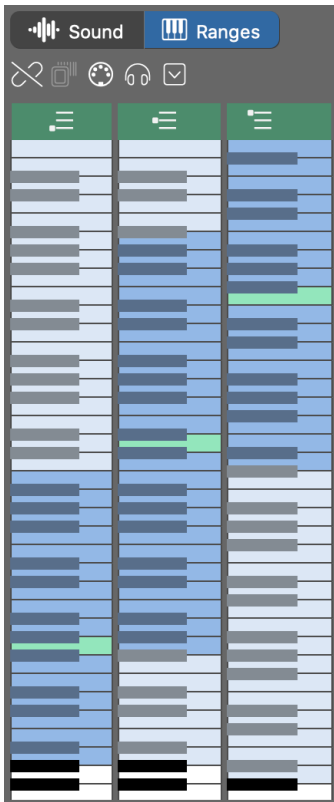
Keep in mind that audio controls are for a whole plug-in. If a plug-in hosts multiple instruments on different MIDI channels, all of them are affected equally.

Related information

[Sound Properties \(on page 143\)](#)

Editing Playing Ranges

Adjust the **Playing Ranges** ([on page 35](#)) of a **Sound** ([on page 37](#)) or **Instrument** ([on page 33](#)). The Arrange App uses this vertically arranged inspector. A horizontal variant of this inspector is used everywhere else.



Modify Ranges

Drag the edges of the blue **Range** to expand or shrink the range. Or **click** while holding  **Shift**.

Drag the green **Typical Pitch** to best possible sound. Or **click** while holding the  **Alt** key to set a particular note.

Toolbar



Accept the default ranges of the **Sound** as specified in its **Device Description**.



Scan ranges automatically by probing audio output of the plug-in. Assign a category first.



Learn the range by tapping on your MIDI keyboard the lowest and the highest note.



Play the preview phrase of the associated **Category**.



Lower Range. Used for bass symbols by default.



Middle Range. Used for chord symbols and both scale symbols by default.



Upper Range. Used only where you assign it to **Figure** segments.

Options Menu

Cut, Copy, Paste

Use these to copy the playing ranges between any instruments or sounds.

Copy Ranges From Sound

Copy the ranges from the sound to the instrument. Basically does the same as the link icon on the toolbar.

Copy Ranges To Sound

Copy the current ranges of the instrument to its selected sound. This is useful when you want to permanently save the current ranges with the device description for later reuse.

Distribute Ranges Like ...

Scale the ranges proportionally to the playing ranges of a **Category**.

Distribute Ranges Equally

Divide the current total pitch range into three equal parts.

Same Extremes For All Ranges

Make all three ranges span the total pitch range and retain their **Typical Pitch**.

Container Properties

Container Name
Verse 2

Length
8m

Offset
24m

☐ Inactive

☐ Show Clip On Track

☒ Keep Child Containers in a Row

At End

Comments
Variation of first verse

Name

A meaningful and short name. Anything that suits your purpose will do.



Assign a color to the container.

Length

Length of the container in terms of its own time signature (**Signature**).

Offset

Position where the container starts, in terms of the parent container's time signature (**Signature**). Allows for any duration expression, e.g. `6m+3/4`. A **special syntax** ([on page 329](#)) applies.

Inactive

Deactivate a container to exclude it from rendering entirely. Great for A/B testing. Aliases may be activated or deactivated independently of their original.

Show Clip On Track

Makes an otherwise empty container show up as a [Clip \(on page 105\)](#) regardless, so you can select it on the **Tracks** page.

Keep Child Containers In a Row

Forces all children into a line without gaps, no matter how you resize or reorder them. Intended to maintain a flat song structure with successive parts.

Auto-Alignment

Automatically places the container within its parent whenever the parent changes size. At the beginning, at the end, in the middle, or the same entire length.

Comments

Any hints or documentation that helps other users understand your intentions or that supports your workflow.

Notation Export Settings

Notation export is very sensitive to these settings, so you may need to try multiple runs until you get the desired result.

Instrument

Instrument settings panel showing options for instrument name, staves, and notation features.

Tune these settings to get the best results for the selected instrument. They apply to all containers.

Auto

Automatically determine suggested settings from rendered notes.

Abbr. Instrument Name

If the name of the instrument is too long, enter a shorter name here. Otherwise, leave the field empty.

Staves

Select the number of staves (stoffs) using the left radio buttons.

Clef

Clef symbol to use for each staff.

Octave

Transpose exported notes up or down to better fit into each staff.

Slurs

Have Synfire determine the use of slurs based on available information.

Percussion

Uses special symbols for percussion.

Slashes

Uses special symbols for rhythm.

Chord Symbols

Chord symbols are attached under the staff.

Tablature

Prints a tablature corresponding to the selected string instrument.

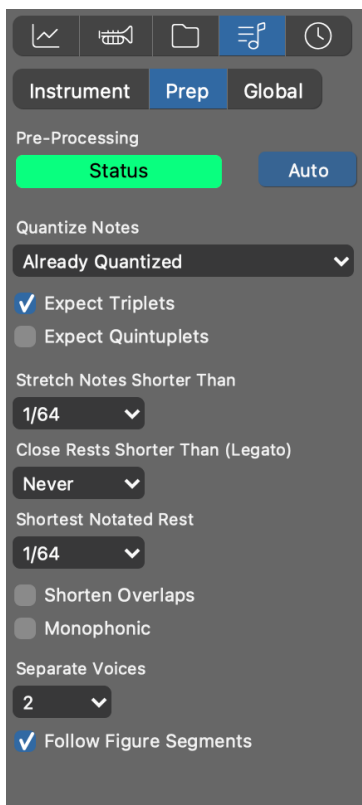
Merge with Previous Instrument

Use this to combine multiple instruments in one exported staff. For example, left and right hand of a piano. Likewise, this applies to multiple contrapuntal voices. The combined output of all merged instruments is exported like output of a single instrument.

Hide

Do not export this instrument.

Pre-Processing



These settings are applied to the rendered sequence of the instrument before any notation export processing is done. You can use them to cleanup overly complex or not yet quantized rhythm and tell Synfire how many voices you expect in polyphonic parts.

Auto

Estimate suggested settings from current **Output**.

Status

This indicator shows whether the instrument is ready for export.

1. **Green:** The pre-processed sequence is valid for notation export.
2. **Orange:** Some elements will be invisible or look odd, but export should still work.
3. **Red:** Pre-processing is unable to eliminate invalid note positions or durations. You need to tune the settings, or edit and manually quantize all **Figure** parameters of the instrument.

Quantize Notes

Apply this quantization to all note onsets and lengths before processing it. If Synfire believes the sequence is already quantized but you still get unexpected results, you can tune this setting manually.

Expect Triplets, Quintuplets

When enabled, seemingly odd durations of notes and rests will be considered potential tuplets and quantized as such. Disable this if you are sure there are no such tuplets.

Stretch Notes Shorter Than

Notes shorter than this will be stretched to this length.

Close Rests Shorter Than (Legato)

Stretch notes in order to close gaps, if the gaps are shorter than this. Use this to remove unintended rests. Any remaining rests may be filtered with **Shortest Notated Rest**.

Shortest Notated Rest

Rests shorter than this will be exported as invisible skips if the file format supports it. Set this to a very long duration to make most rests invisible.

Shorten Overlaps

Remove overlaps by shortening notes where necessary. Note that overlaps are always eliminated per each individual voice. This setting however is applied to the entire sequence prior to voice separation. It is best suited for monophonic parts, but can also be used to clean up a messy playing style.

Monophonic

Eliminate polyphony altogether. This is also applied to the entire sequence prior to voice separation.

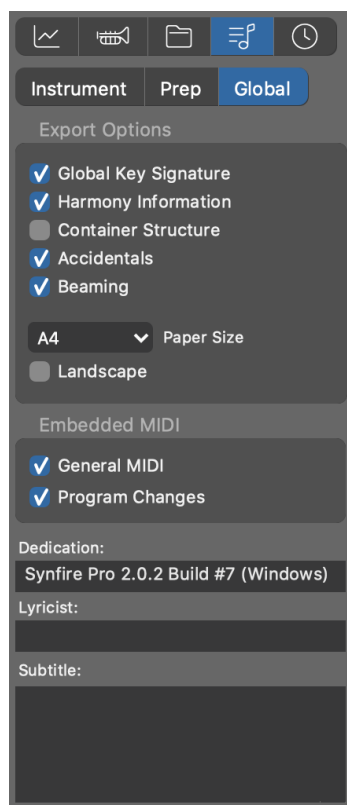
Separate Voices

When Synfire runs its voice separation algorithm, it will look for this number of distinct voices. Voice separation improves the look of polyphonic phrases. Note that this is independent of the number of staves, as voices may also move across multiple staves.

Follow Figure Segments

When separating voices, keep notes together in the same voice that have been rendered by the same **Figure** segment. This helps improve consistency, but also requires that your use of segments is related to voices in the first place.

Global



These settings apply to the exported notation file as a whole. Synfire remembers your last settings.

Global Key Signature

Assumes a single key signature for the entire file. Key changes are not exported as such. All notes are interpreted in the perspective of the global key.

Harmony Information

Adds additional information on chords, scales and keys to the exported file, where the format supports it. This information does not necessarily affect the visual appearance of a score.

Container Structure

Adds container names to the exported file. This information is saved as text markups.

Beaming

Enable this if you want Synfire to take care of the grouping of notes. Notation programs are often much better at this, but it is worth trying both options.

Accidentals

Enable this if you want Synfire to export accidentals to the file. The notation program will probably figure them out on its own, but this option helps in cases where that doesn't work.

Paper Size

LilyPond PDF output only.

General MIDI

Include **General MIDI** compatible information for all sounds.

Program Changes

Include MIDI program change commands where possible.

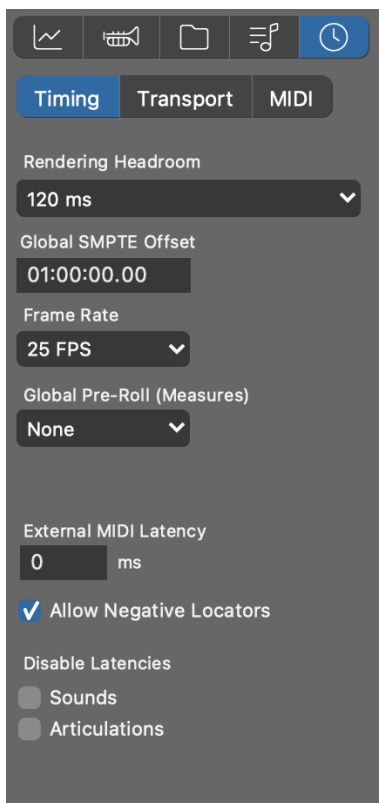
Dedication, Lyricist, and Subtitles

Depending on the exported file format, this information may or may not be printed with the final result.

External Synchronization

Make your DAW, external film projector, or other hardware or software run in sync with Synfire, such that both time lines always match during playback. This is a requirement if you are using **Drones** to host sounds directly in your DAW.

Timing



Render Headroom

Synfire renders real-time **Sketches** slightly ahead of time, in order to give you a chance to pick the next chord from a **Palette**. Extend this time if you experience drop outs.

Global Pre-Roll

Make the first bar of your arrangement start later, if your DAW can't position its play head at a negative time during the small pre-roll period that precedes every playback.

Global SMPTE Offset

Time code position on the external film or tape that corresponds to the start of your arrangement.

Frame Rate

Frame rate to use for **MIDI Time Code**. Even if you are not synchronizing to film, you need to set the same frame rate at both ends.

External MIDI Latency

Compensate for a delay (milliseconds) that affects all external MIDI communication. This is a global setting for all outgoing MIDI ports.

Allow Negative Locators

Disable this if your DAW can't position its play head before zero. Keep this enabled if you are using the **Audio Engine** only.

Disable Latencies

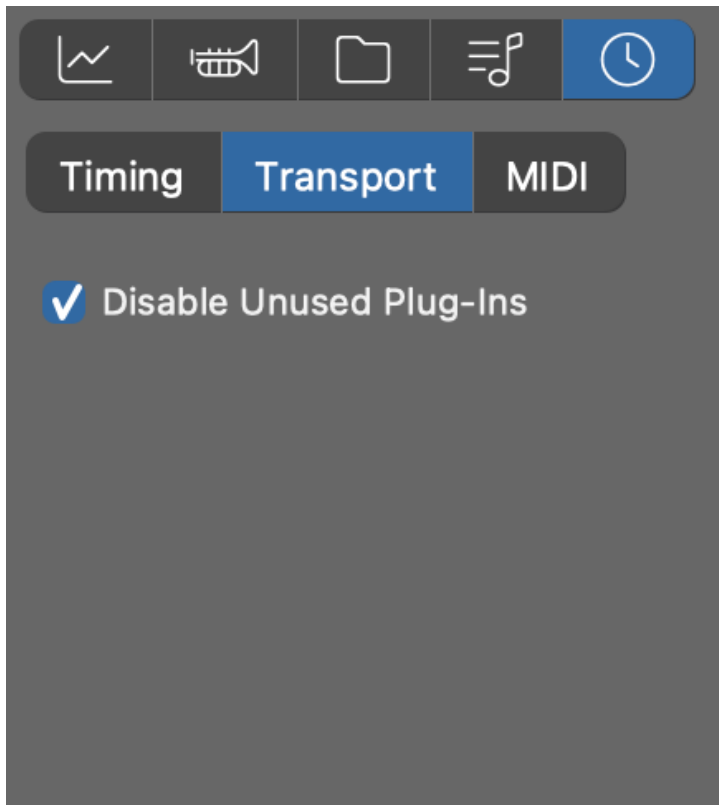
Transmit MIDI messages without latency compensation. This sends notes at the same time, even if they are for sounds with different latencies. Use this if you want to record outgoing MIDI as a way to export your work. If you disable latencies for articulations, they are sent immediately before the first note of a segment.



Note:

The **Express** and **Pro** editions allow for more detailed timing control and support external synchronization with a DAW and other devices.

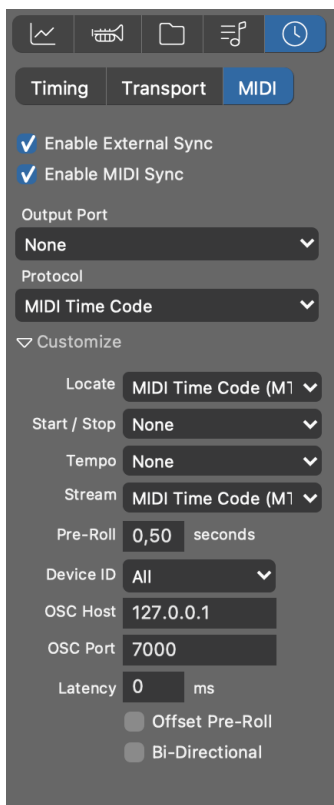
Transport



Disable Unused Plug-Ins

Plug-ins that currently don't have any output to play won't receive transport information. This prevents drum machines from drumming when they are not currently supposed to play (e.g. when you solo other instruments).

MIDI



Enable External Sync

Global switch, same as on the transport toolbar in the main window.

Enable MIDI Sync

You may want to temporarily disable only MIDI synchronization exclusively.

Output Port

Select the MIDI port to use for sending sync messages to your DAW. A port is required, even if you choose to use OSC commands only.

Protocol

Select a preset for the synchronization protocol that your DAW can understand:

1. **MIDI Clock (Song Position Pointer)**
2. **MIDI Time Code (MTC)**
3. **Open Sound Control (OSC)**

External synchronization settings may change depending on the DAW you are using. Please [visit our community](#) site to learn more about detailed settings for your particular DAW.

Customize

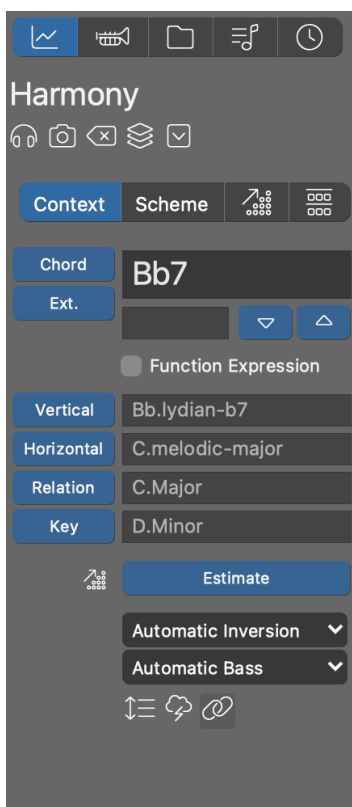
If your DAW doesn't properly respond to transport commands, you have the option to customize each command individually, mixing different protocols in order to obtain full control.

Latency

Amount in milliseconds to send synchronization commands ahead of time to compensate for your DAW responding late.

Harmony Settings

When you select in a chord in the **Harmony** ([on page 304](#)) parameter, you are actually editing a **Harmonic Context** ([on page 12](#)) that includes a lot more information than just a chord.



Chord

Pick a **Chord** ([on page 7](#)) from the menu or type its name right into the input field. You can type multiple chord names separated by spaces. There are many ways you can write a chord. Learn about the [syntax here](#) ([on page 331](#)).

Extension

Pick a [chord extension](#) ([on page 7](#)) from the menu.

Bass

Transpose the bass note up or down. Hold down  **Alt** for chromatic increments. Hold down  **Ctrl** to reset to automatic bass selection. The bass need not necessarily be included with the chord.

Function Expression

Check this if you want to enter harmonic function expressions instead of chord names (Pro only).

Vertical Scale

Pick a **Vertical Scale** ([on page 8](#)) from the menu to use for building melodies over the chord.

Horizontal Scale

Pick a **Horizontal Scale** ([on page 8](#)) from the menu.

Relation

Pick a **Relation** ([on page 12](#)) key from the menu. Local key signature that would best match the horizontal scale (determines color).

Key

Pick a global **Key** ([on page 12](#)) from the menu.

Estimate

Estimates keys, scales and relations for the selected chords, assuming a common underlying key. Remember that different spans in a progression can have different keys (key changes). Hence you can select and estimate multiple spans independently. Alternatively call **Transform > Estimate Keys, Relations and Scales** from the main menu.

The result depends on your current **Scale Selection Preferences** ([on page 195](#)).

Bass Menu

Pick a desired interval for bass. This is an alternative to setting the bass directly.

Inversion Menu

Pick a desired chord inversion to use for **Auto-Chords** ([on page 305](#)) interpretation and the rendering of green **Chord Symbols** ([on page 299](#)).

This may not have an effect in case **Interpretation** ([on page 305](#)) decides to follow the setting of individual **Figure** ([on page 298](#)) segments instead.



Open Voicing: Enable this for open chord voicing. This only affects **Auto-Chords** ([on page 305](#)) interpretation and the rendering of green **Chord Symbols** ([on page 299](#)).

This may not have an effect in case **Interpretation** ([on page 305](#)) decides to follow the setting of individual **Figure** ([on page 298](#)) segments instead.



Minor Seconds: Enable if you are fine with minor seconds to occur in chord voicing.

This may not have an effect in case [Interpretation \(on page 305\)](#) decides to follow the setting of individual [Figure \(on page 298\)](#) segments instead.



Alignment: Align the chord with the previous one. A very basic voice leading algorithm that smoothes out pitch leaps. In a long progression, you should disable this occasionally, as a sort of line break.

This may not have an effect in case [Interpretation \(on page 305\)](#) decides to follow the setting of individual [Figure \(on page 298\)](#) segments instead.

Override Harmony

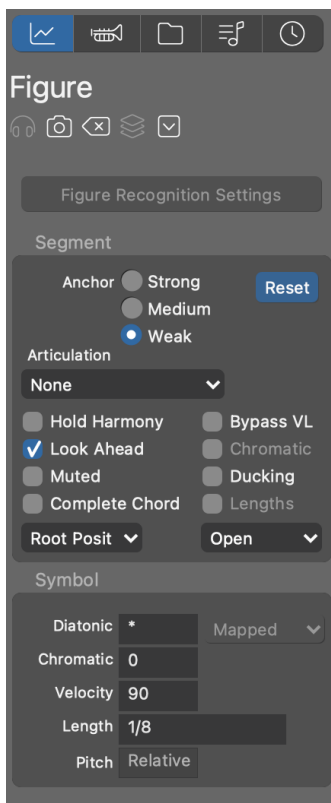
Always use the [Preview \(on page 311\)](#) parameter, even if [Harmony \(on page 304\)](#) is available.

Related information

[Harmony Concept \(on page 7\)](#)

Figure Inspector

The **Figure Recognition Settings** button takes you to the [Take \(on page 74\)](#) parameter, where you can refine the last used preferences for **Figure Recognition**. Switching back and forth between [Figure \(on page 298\)](#) and [Take \(on page 317\)](#) is part of the [recording workflow \(on page 264\)](#).



Segment

Properties of currently selected segments ([multiple selection \(on page 46\)](#) is supported).

Anchor Strength

- **Strong:** Only chord tones are considered for the **Anchor** ([on page 299](#)).
- **Medium:** Chord tones and chord extensions are considered.
- **Weak:** Entire scale is allowed.

Articulation

Select a **Custom Articulation** ([on page 204](#)) for the segment.

Hold Harmony

Keep **Harmonic Context** ([on page 12](#)) unchanged for the length of the segment (only affects this segment). Useful to prevent harmony from switching in the middle of a glissando, for example.

Look Ahead

If there is a harmony change in the immediate vicinity (round 1/8), the segment will responded to it early. Makes sense where notes are pushing ahead of the beat.

Muted

Excludes the segment or individual symbol from being rendered.

Complete Chord

If the current chord has more notes than the segment has symbols, assume those extra symbols are virtually stacked on top of the segment until the chord is complete (requires at least two symbols arranged vertically in a chord segment).

Inversion & Voicing

Override for this segment the default chord inversion or voicing that was set in the **Harmony** parameter. This is useful for **Chord** and **Relative** type segments only. The **Interpretation** parameter may disable this override.

Bypass VL

Disable the voice leading algorithm for this segment. Creates more harmonic tension, albeit chord changes are less pronounced.

Chromatic

Allows any of the 12 chromatic tones to be used, whatever the outcome. Be careful with this if you want the phrase to work also in other harmonic contexts. A harmonically safe octave can be notated with a chromatic shift of 12 or -12.

Ducking

Temporarily excludes notes rendered by other segments while this segment is playing. Affects segments on all tracks that go to the same instrument.

Lengths

Optionally you can include all note lengths with the span that's covered by ducking.

Symbol

Properties of currently selected symbols ([multiple selection \(on page 46\)](#) is supported).

Diatonic

Line number on the Figure staff. Interpretation depends on symbol type.

Chromatic

Offset from the diatonic step in semitones (equivalent to traditional accidentals).

Velocity

Velocity value of the selected symbol(s).

Length

Length(s) of the selected symbol(s).

Pitch

Shows absolute pitch (only Pitch type symbols).

**Note:**

Velocity and length of individual figure symbols are overridden by any [Velocity \(on page 321\)](#) and [Length](#) parameters, if those are present in the phrase, or inherited from a parent container.

**Note:**

It is impossible to display absolute pitch for symbols other than the **P** type. This is because a symbol may render a multitude of different pitches when the Figure is looped.

Related information

[Figure \(on page 298\)](#)

Take Settings

The [Take \(on page 317\)](#) parameter keeps your most recently [recorded \(on page 264\)](#) or imported MIDI data ready for **Figure Recognition** ([on page 6](#)), which will convert it to a [Figure \(on page 298\)](#). After adjusting your settings, press **Apply** to start the recognition process. The result will be stored in the [Figure](#) parameter of the same phrase.

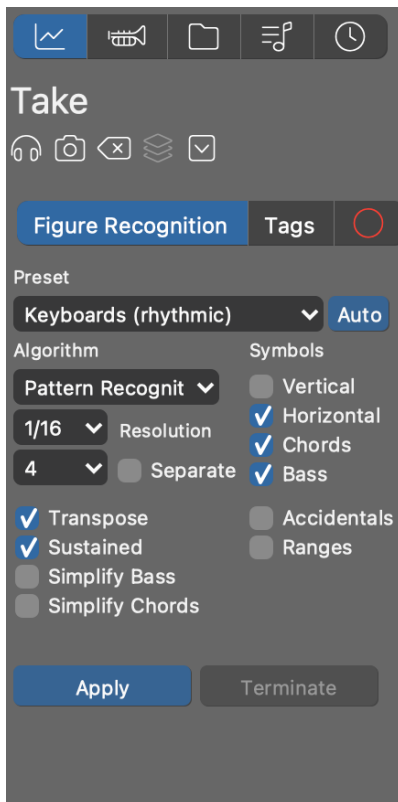


Figure Recognition

Figure Recognition ([on page 6](#)) turns flat MIDI data in a **Take** into a highly structured **Figure**. This is a complex procedure that involves a lot of estimation. If there are enough notes, the **Auto** button can estimate the settings and provide a good starting point. Although sometimes you need to experiment a bit until you find the settings that work best.

Both **Harmony** ([on page 304](#)) and **Playing Ranges** ([on page 35](#)) have a big impact on figure recognition. Be sure to re-harmonize an imported phrase if you suspect harmony does not match the take. Also, when you are recording in an arrangement, make sure you play in the current key.



Tip:

You can select a span in a **Take** and run figure recognition on it selectively.

Preset

Pick a preset that best suits the **Take**. Don't take the label "Keyboards" literally. It can be any polyphonic instrument, actually.

Algorithm

Select a method and strategy for recognizing figures.

1. **Auto**: Estimates an appropriate algorithm automatically.
2. **Linear**: Examines the input from left to right, detecting reoccurring patterns and characteristic movements on the way. Works best for monophonic melodic voices.

3. **Pattern Recognition:** By looking at the take as a whole, this method identifies areas of interest and compares millions of potential segments with each other. A time-intensive but effective method that does a good job recognizing polyphonic phrases.
4. **Rhythm Input:** Every single recorded note is turned in to a chord or bass note. This is great if you simply want to tap-in a rhythm that is supposed to be played as chords or bass.
5. **Simplified Bass:** Converts the input to plain isolated bass symbols only, which works fine for many popular music styles. For contrapuntal and melodic bass voices, you should use **Linear**.
6. **Static Pitch:** Converts the take to absolute pitch symbols. This is extremely fast and good for drums and percussion, or other instruments that don't follow [Harmony \(on page 304\)](#). You can also use this to import large MIDI files more quickly and postpone figure recognition until after the import on a track by track basis.

Segment Types

Select the desired symbol types you want to generate. Some algorithms allow only a single type. The **Linear** algorithm supports multiple types only when voices are separated.

Accidentals

Create symbols with chromatic components where they are needed to faithfully recreate the input. Disable this to get more portable phrases that are easier to edit.

Ranges

When enabled, this assigns a specific playing range (lower, upper) to segments if they are far off the middle range. This moves more segments towards the center, visually, but also helps a phrase translate better to other instruments that might have very different ranges. When this is disabled however, the resulting **Figure** is more easily editable.

Resolution

Notes starting within this window are considered simultaneous. This setting merely affects the grouping of symbols into segments and does not alter the timing of your result.

Number of Voices

How many parallel voices are assumed to be in the **Take**. This is for information only unless you choose to separate them.

Separate

Separate voices from each other before processing them. This can much improve results when voices are sufficiently apart from each other. Where the input is an entangled mess however, it can also make things worse. If in doubt, try both options and see what works best.



Note:

Voice separation works better on isolated phrases than entire tracks worth of imported MIDI data, which may contain multiple sections with contradicting properties.

Transpose

Transpose the input by octaves in order to best match the target instrument's playing range.

Sustained

The sound is sustained while a note remains depressed. Consecutive notes that overlap each other are meant to be independent voices. Disable this to better handle decaying or percussive sounds like guitar and piano.

Simplify Bass

Place bass segments around the zero line, so they will translate to whatever is the current bass, rather than attempt to recreate the original input. Makes a phrase more portable.

Simplify Chords

Generalize chords such that a phrase translates better to different **Harmony**.

Apply

Start **Figure Recognition**. Depending on complexity this can take a while. A log console will open if the process turns out to be running longer than expected. Results are saved to the [Figure \(on page 298\)](#) parameter. After this you can optimize the settings and repeat figure recognition until you are satisfied with the result.

Terminate

Prematurely end the recognition process if it takes too long, or if you want to try different settings.

Tags

You can help **Figure Recognition** achieve better results by grouping symbols into segments or tagging their supposed types beforehand. In the **Parameter View** ([on page 147](#)) of **Take** ([on page 317](#)), simply group segments and change their symbol types as you would do with a [Figure \(on page 298\)](#).

Recording Options

Under the tab with a red circle, you'll find several options that will alter your input before it is processed by **Figure Recognition**.

Quantize

Select a grid to destructively snap all notes to immediately after recording.

Monophonic

Reduce recorded input to a single voice before processing it.

Overdub

Don't clear the phrase before recording, that is, add whatever is recorded to the existing **Take**.

Related information

[Recording \(on page 264\)](#)

[Figure Recognition \(on page 6\)](#)

Interpretation Settings

Form

The screenshot shows the 'Form' settings panel. It has three tabs: 'Form', 'Voice Leading', and 'Preset'. The 'Form' tab is active. The settings are as follows:

- Anchors:** A dropdown menu set to 'Independent'.
- Range:** A dropdown menu set to 'Fold'.
- Limit Strictly:** An unchecked checkbox.
- Preserve Harmony:** An unchecked checkbox.
- Strings:** A dropdown menu set to 'None'.
- Auto-Split:** A dropdown menu set to 'Off'.
- Monophonic:** An unchecked checkbox.
- Legato:** A checked checkbox.
- 8m:** A dropdown menu set to '8m'.
- Tie Notes:** A checked checkbox.
- Segments:** A section with two checked checkboxes: 'Voicing' and 'Inversion'.
- Harmony:** A section with two checkboxes: 'Alignment' (checked) and 'Dissonance' (unchecked).

Form settings control the transformation and rendering of [Figure \(on page 298\)](#) segments.

Anchors

How the pitch of an **Anchor** is influenced by the previous anchor:

- **Independent:** Anchors don't influence each other.
- **Linked within 1/8:** If the previous anchor is within this distance, an attempt is made to map the current anchor relative to that.

Only anchors of the same symbol type can influence each other, where a chord change falls between them and the resulting difference to the notated pitch is not too extreme.

Range

How to deal with segments that happen to reach outside their assigned playing range or the total pitch range of the instrument.

- **Open:** Allows all notes outside the instrument's total pitch range to pass through. This is potentially dangerous, as it might randomly trigger key switches or have other unwanted side effects.
- **Clip:** Keep a segment as rendered and drop any notes that fall outside the total pitch range of the instrument. This is safe but may skip some notes.
- **Shift:** Transposes a segment as a whole in order to fit it into the individually assigned range (upper, middle, lower), or at least the total pitch range of the instrument. Notes that happen to fall outside the total pitch range are dropped.
- **Fold:** Breaks down a segment into smaller parts in order to fit it into the individually assigned range (upper, middle, lower), or at least the total pitch range of the instrument. Notes that still fall outside the total pitch range are dropped.

Limit Strictly

When applying **Shift** or **Fold**, limit output to the individual playing range of a segment (upper, middle , lower). Otherwise the total pitch range of the instrument is allowed.

Preserve Harmony

When applying **Shift** or **Fold**, do so in increments of octaves rather than scale steps. This is useful where harmony is more important than relative melodic movement.

Strings

Select a particular tuning for a string instrument. The tuning controls how segments of type **Chord** are rendered.

Auto-Split

Divide and transpose long sustained notes that create unwanted dissonances by violating the **Harmonic Context** ([on page 12](#)). Consider only notes that overlap into the dissonant context by at least this set length.

Monophonic

Limit output to a single voice.

Legato

Stretch successive notes to close gaps between them. Notes farther away than two bars away not considered.

Tie Notes

Merge successive notes of the same pitch into a single note.

Segment Voicing

Allow individual chord segments in the **Figure** parameter to override the default voicing suggested by the **Harmony** parameter.

Segment Inversions

Allow individual chord segments in the **Figure** parameter to override the default inversion suggested by the **Harmony** parameter.

Harmony Alignment

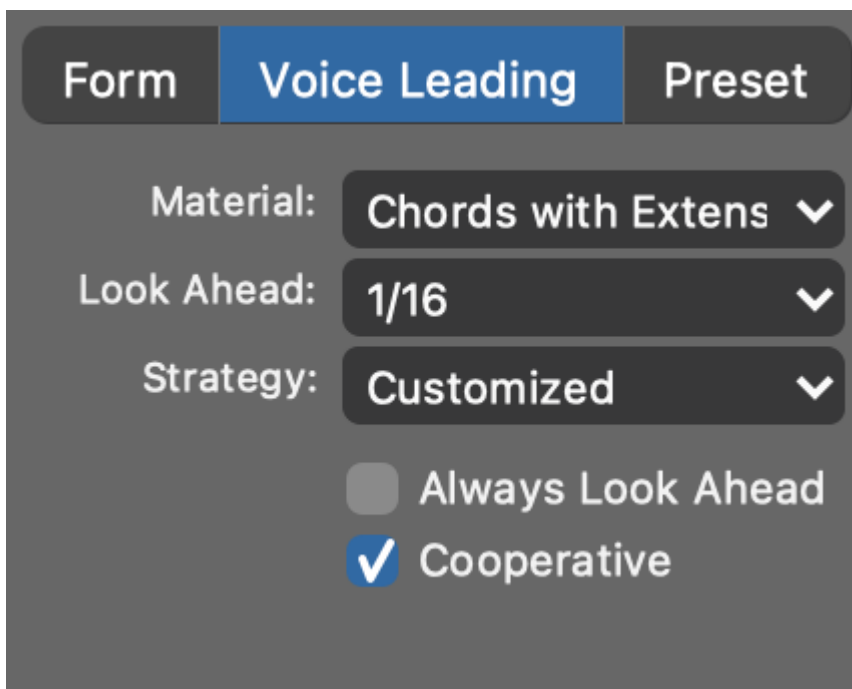
For the inversion and voicing of chords, the previous chord is taken into account if this has been set in the **Harmony** parameter. Deactivate this to generate all chords independently of each other.

Harmony Dissonance

If set in the **Harmony** parameter, minor seconds are allowed in chords. Deactivate this to avoid dissonances.

Voice Leading

Voice leading determines how melodies are supposed to be carried across multiple chord changes.



The screenshot shows the 'Voice Leading' settings panel. At the top, there are three tabs: 'Form', 'Voice Leading' (which is selected and highlighted in blue), and 'Preset'. Below the tabs, there are three dropdown menus: 'Material' set to 'Chords with Extens', 'Look Ahead' set to '1/16', and 'Strategy' set to 'Customized'. At the bottom, there are two checkboxes: 'Always Look Ahead' which is unchecked, and 'Cooperative' which is checked with a blue checkmark icon.

Material

Limits the set of notes that can be used. Rhythm guitar, for example, benefits from playing only chord notes.

Look Ahead

How much earlier all **Figure** segments tagged with **Look Ahead** are supposed to respond to the next **Harmonic Context**. With a positive value, the next chord and scale are picked up earlier, with a negative one they are delayed.

The choice largely depends on rhythm and the sound envelope of an instrument. A phrase that pushes ahead benefits from an early response. Different values for multiple instruments can create dissonances and blurring effects.

Strategy

1. **None:** Disables voice leading.
2. **Default:** A balanced all-purpose setting.
3. **Adaptive:** Adapts to the figure automatically by forcing rhythmically more significant notes to be harmonically stronger.
4. **Adaptive (dynamic):** Notes with higher velocity are forced to be harmonically stronger.
5. **Adaptive (dynamic and rhythmic):** Notes with higher velocity or longer duration are forced to be harmonically stronger.
6. **Stabilizing:** Starts with a full scale and continually increases emphasis on the chord as the measure proceeds. Obscures chord changes to some extent.
7. **Solo:** Affords extra leeway for melodic nuance.
8. **Strong:** Strong emphasis on chords with only few scale tones in between.
9. **Medium:** Allows more scale tones between chords.
10. **Weak:** Full scale allowed between chords. Can lead to interesting results, but may sound indifferent or dissonant at times.

Always Look Ahead

Shift **Harmony** as a whole for the individual instrument. Great for adding dissonance and surprising effects.

Cooperative

Follow a stricter policy to avoid conflicts with other instruments. Disable this for more dissonance and variety.

Preset

Synfire offers an array of templates for different instruments and uses that you can recall here.

Preset

Select a predefined preset from the drop-down menu.

Auto-Detect

Let Synfire examine the Figure and suggest a preset.

Save

Save current settings as a new preset. It will appear in the menu *Parameter > Insert Template*.

Bypass

Interpretation and voice leading are completely disabled. Symbols are rendered literally, consequences be damned.

Generate Pedal

Estimate sustain pedal action from [Figure \(on page 298\)](#) and [Signature \(on page 312\)](#). Very good for melodic piano phrases and brass solos.

Auto-Chords

Automatically generate a sustained chord for every harmonic context in [Harmony](#).

Auto-Bass

Automatically generate a sustained bass note for every harmonic context in [Harmony](#).

**Note:**

The **Express** and **Pro** editions allow for much more detailed control of voice leading, how an instrument is supposed to respond to harmony changes, the amount of dissonance that is allowed and how to deal with an instrument's playing ranges.

Related information

[Fine Tuning Interpretation \(on page 262\)](#)

Morphing Settings

For any [Morphing \(on page 309\)](#) action to take place, two **Phrases** for the same **Instrument** need to be present in adjacent containers. Morphing thus affects the transition from one container to the next.

Fade:	Steps:	Each:
Fade-in ▼	8	1/2
☒ Figure	☒ Linear	
☒ Lengths	☐ Random	
☒ Velocities		
☒ Controllers		
☐ Include Originals		
☐ Add Variation		
<button>New Suggestion, Please!</button>		

Fade

You can choose between

1. **Fade-in** In the next container, the old phrase is gradually blended into the new.
2. **Fade-out** In the previous container, the old phrase is gradually fading into the new.

Steps

Number of gradually different fragments to create during the cross-fade.

Each

The length of each such fragment.

Linear

Smoothly blend between both phrases.

Random

Take a fragment from either phrase with gradually increasing random probability.

Figure, Lengths, Velocities, Controllers

Include only selected parameters with the cross-fade.

Include Originals

Whether to add a fragment of either original phrase at the beginning and end of the cross-fade. This increases the total length of the cross-fade.

Add Variation

Adds random segment transformations to the output.

New Suggestion Please

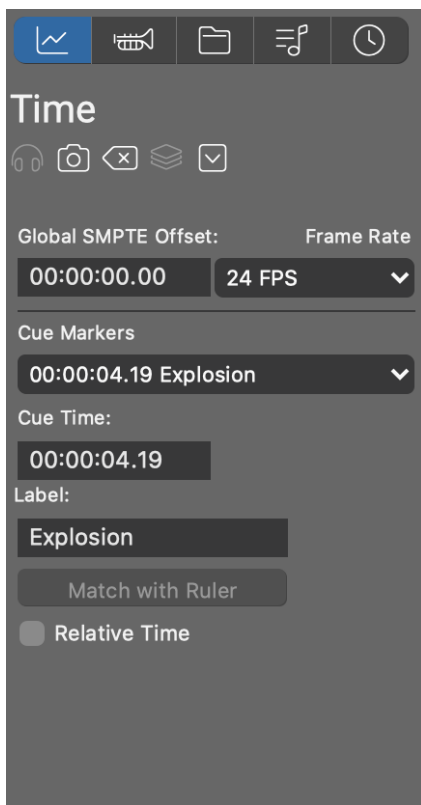
If you selected **Random** for the cross-fade, this throws the dice for different results.



Tip:

Morphing transforms the [Figure \(on page 298\)](#) before it is rendered. You can hear, but not see this change. If you want to keep the morphed figure, put an empty container next to it and do [Container > Make Snapshot](#).

Time Inspector



Edit the details of the selected **Cue Marker** (Cue) in the [Time \(on page 318\)](#) parameter. Insert new cues with a drawing tool and position them more precisely by entering absolute time using this inspector.

Global SMPTE Offset

The time code on the external equipment that matches the beginning of your arrangement.

Frame Rate

FPS rate of the external video synchronized with Synfire. The frame rate has no influence on absolute time. It merely says how many frames can be addressed per second.

Cue Markers

Pick an existing cue from the menu to select it and jump there.

Cue Time

Edit the time of the selected cue. Format is **HH:MM:SS.FF**. The dot before the frame number is required. The time actually shown depends on the frame rate and the **Relative Time** switch below.

Label

Any brief description of the event or action happening at the time of the cue.

Match With Ruler

Create [Tempo \(on page 318\)](#) changes such that the measure currently selected on the time ruler meets with the time of the cue. This makes a beat in the music play at the time of the cue.

Display Relative Time

Whether to display time arrangement time, instead of absolute time in the synchronized film.

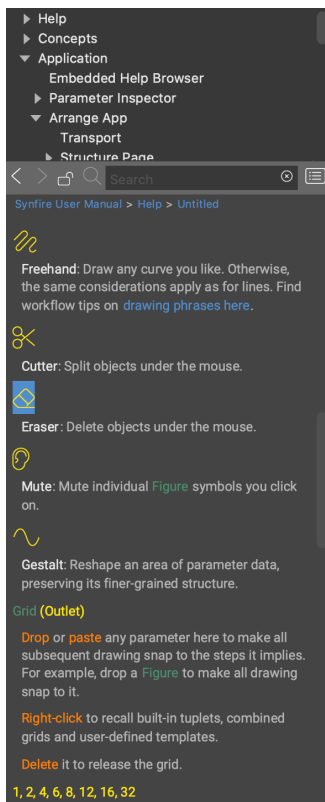
Related information

[Fitting Music Between Cue Markers \(on page 263\)](#)

Help Browser

Your interactive user manual

The embedded **Help Browser** navigates you to places in the user manual interactively.



1. Open the browser with **Help > Embedded Help**.
2. **Hover** with the mouse over elements of the user interface to get them explained.
3. **Select** elements of the user interface to get information on the selected object.
4. Lock the browser with F1 (or the padlock icon) if you want to read on uninterrupted while doing something with Synfire.

Alternatively or in addition to the browser, you can enable **Help > Tool Tips** to show a small pop-up window next to the mouse for a more brief information on the item being hovered over.

**Tip:**

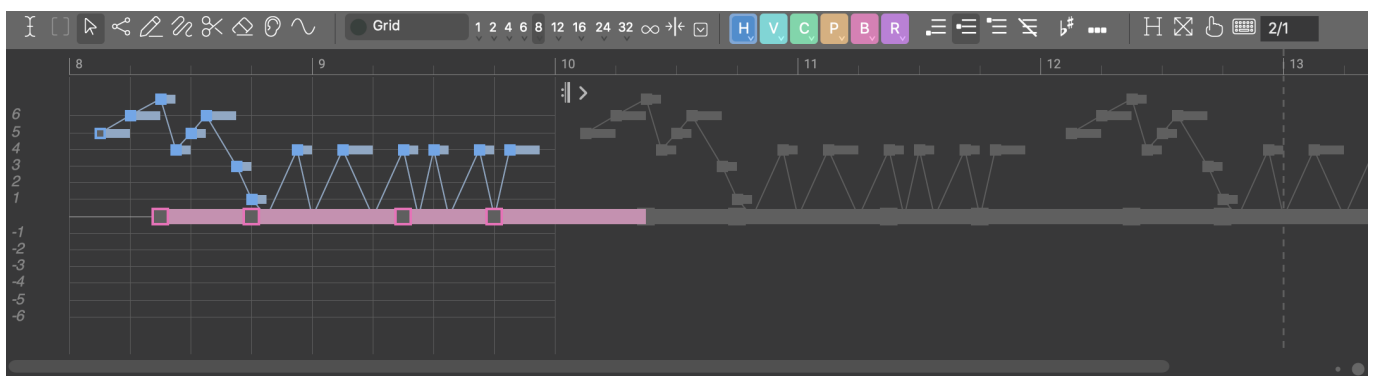
The help system works like a small web browser and can slow down user interface response times quite noticeably. You should close it as soon as you no longer need it to get back to normal speed.

Phrase Editor

Editing parameters in full detail

To open this editor, **double-click** on an instrument name, or into the empty area of a **Parameter View** ([on page 147](#)), or on a **Parameter Outlet** ([on page 45](#)).

Double-click anywhere in the empty area to close the editor.



All commands are applied to the entire parameter data if no selection is currently established. For example, you can **click** into a **Parameter View** ([on page 147](#)) and then use the arrow keys to transpose all values. Be sure to deselect any **Span** selection first before you do so.

Toolbar



Span: Selects a horizontal range of the parameter. A span with zero length shows as a vertical line and includes exactly one position.



Chord: Selects one or more chords in a [progression \(on page 14\)](#).



Pointer: Selects a segment in a [Figure \(on page 298\)](#), or a data point in any other parameter. You can move, transpose, stretch, and compress a selection.

Press **ESC** to return to the last used pointer-like tool from any other tool.



Symbol: Select individual symbols of a [Figure \(on page 298\)](#) segment.

Press **ESC** to return to the last used pointer-like tool from any other tool.



Line: Draws values along a straight line based on the current grid. If drawing of duplicates is disabled, grid positions may be skipped depending on the angle of the line.

Click once to add a single value.

Hold  **Shift** when you begin drawing in order to extend the nearest segment, or add parallel values to polyphonic parameters like [Velocity \(on page 321\)](#).

Find workflow tips on drawing phrases [here \(on page 251\)](#).



Freehand: Draw any curve or shape you like. Otherwise the same considerations apply as for the **Line** tool.



Cutter: Split objects under the mouse.



Eraser: Delete objects under the mouse. You can also drag open a span to delete multiple objects at once.



Mute: Mute individual [Figure \(on page 298\)](#) symbols you click on. You can also drag open a span to mute multiple objects at once.



Gestalt: Shape parameter data along a curve while preserving its fine-grained structure. You can use this to gradually transpose controller data or alter dynamics over time. It works for [Figure \(on page 298\)](#) as well.



Duplicates: Enable this to allow multiple equal values to be drawn in a row. Disable it to prevent redundant controller data or repeated symbols from appearing on a horizontal line.

Double-click to remove duplicate values from the current selection or parameter.



Accidentals: Enable this to allow flat or sharp symbols to be drawn with the Line tool or Freehand tool. Figure segments with accidentals will render chromatic melodic runs where the segment properties and [Interpretation \(on page 262\)](#) settings allow this.

Double-click to remove accidentals from symbols by rounding them to the nearest diatonic step.

Grid (Outlet)

Drop or **paste** any parameter here to make all subsequent drawing snap to the steps it implies. For example, drop a [Figure \(on page 298\)](#) to make all drawing snap to it.

Right-click to select from tuplets, combined grids and user-defined templates.

Delete it to remove the grid.



Open a pop-up menu for options how to apply the grid to the current selection or parameter. Also allows the grid to be shown or hidden.

1, 2, 3, 4, 6, 8, 12, 16, 32

Grid: Set the grid to a fixed note length.

Double-click to quantize selected objects to that grid.



Work without any grid in full MIDI resolution.



Snap to positions of already existing values. Useful if you want to add parallel values to a polyphonic parameter or replace them while preserving rhythm.

H, V, C, I, P, B, R

Symbol Type: Select the [type of symbol \(on page 299\)](#) to draw.

Double-click to change all selected symbols to that type. If you press and hold the button, a menu opens where you can select, convert or focus symbols of this type.



Playing Range: Select the [playing range \(on page 35\)](#) for new segments.

Double-click to apply the playing range to selected segments.



Hyper Edit: Switch to a mode where you can edit the inherent [Velocity \(on page 321\)](#), [Length](#) and [Step \(on page 315\)](#) of a [Figure \(on page 298\)](#) as if they were actual parameters.



Zoom: Zoom to fit all contents. **Right-click** or hold **Ctrl** while you click to switch between zoom memories A and B.



Click Board: Open an [additional toolbar \(on page 91\)](#) for various high-level editing functions to apply to the current selection or entire parameter data.



Text Input: Read and write data values with the keyboard. Some parameters support this. Polyphonic values are enclosed in parentheses.

Edit existing values by selecting them with the **Span** tool. Type one or more values into the input field and the span will be filled accordingly.

Length Input

Set a desired length of the parameter as a [duration expression \(on page 334\)](#).

Navigation

The editor's toolbar has some elements for navigation.

Container Selection

A long button that bears the current container's name.

Double-click on the button to open the **Structure View** [\(on page 93\)](#).

Right-click or **Click-and-hold** on the button to select another container from a menu.

Background

Select an instrument to display in the background.

Right-click or **Click-and-hold** on the button to select an instrument to show up in the background.

Double-click on the button to switch to that instrument.

Instrument Headers

When the **Track Sheet** [\(on page 98\)](#) is closed, the list of instrument headers appears left of the phrase editor where you can select any instrument you want to edit.

Double-click on the caption to open the **Track Sheet** [\(on page 98\)](#) again.

Related information

[Editing Parameters \(on page 246\)](#)

[Editing Figure \(on page 250\)](#)

[Editing Harmony \(Progressions\) \(on page 254\)](#)

Click Board



Open the **Click Board** with  on the toolbar. A variety of tools show up that allow for intuitive and creative manipulation of parameter data.

Most tools are shortcuts to commands that are also available on a menu or as a keyboard shortcut. Some buttons feature multiple options, popping up a menu when you keep holding the mouse button down.



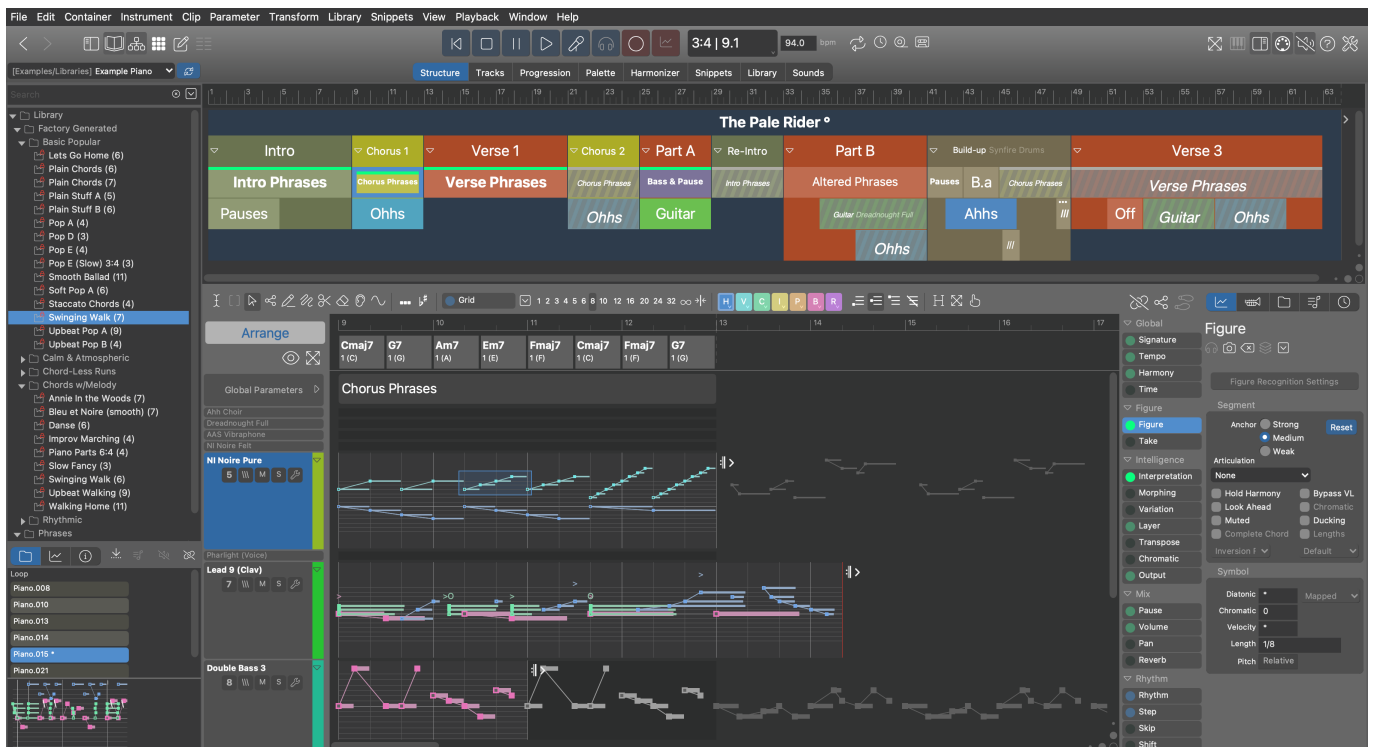
Note:

This feature is available with the **Express** and **Pro** editions.

Arrange App

Edit one or more arrangements that belong to your project

The main Synfire window shows an **Arrangement** ([on page 19](#)). Since **Music Prototyping** ([on page 1](#)) benefits from reusing objects, you can have multiple arrangements open at the same time and exchange data with drag & drop (or copy & paste).



Window Toolbar



Navigate back to the previous page or return to the page you previously returned from.



Open the **Embedded Library**, or any other **Library** on the sidebar.



Open the **Rack Module Library** on the sidebar.



Show or hide the **Structure View** to make room for other views.



Open the **Phrase Editor** on the current page.



Show or hide the **Track Sheet** to make more room for the **Phrase Editor**.



Zoom to fit all content in the **Structure View**, **Snippets Grid**, **Phrase Editor** or whatever currently is the main content. **Right-click** or hold **Ctrl** while you click to toggle between zoom memories A and B.



Show the **Snippets View** alongside the **Structure View** so you can drag & drop phrases between both worlds.



Show or hide the keyboard widget.



Show or hide the right sidebar, usually the **Parameter Inspector**, to make room for other views.



Enable or disable **MIDI Through**.



Disable immediate audio feedback on object selection, if you want to edit more quickly.



Show or hide the embedded help browser.



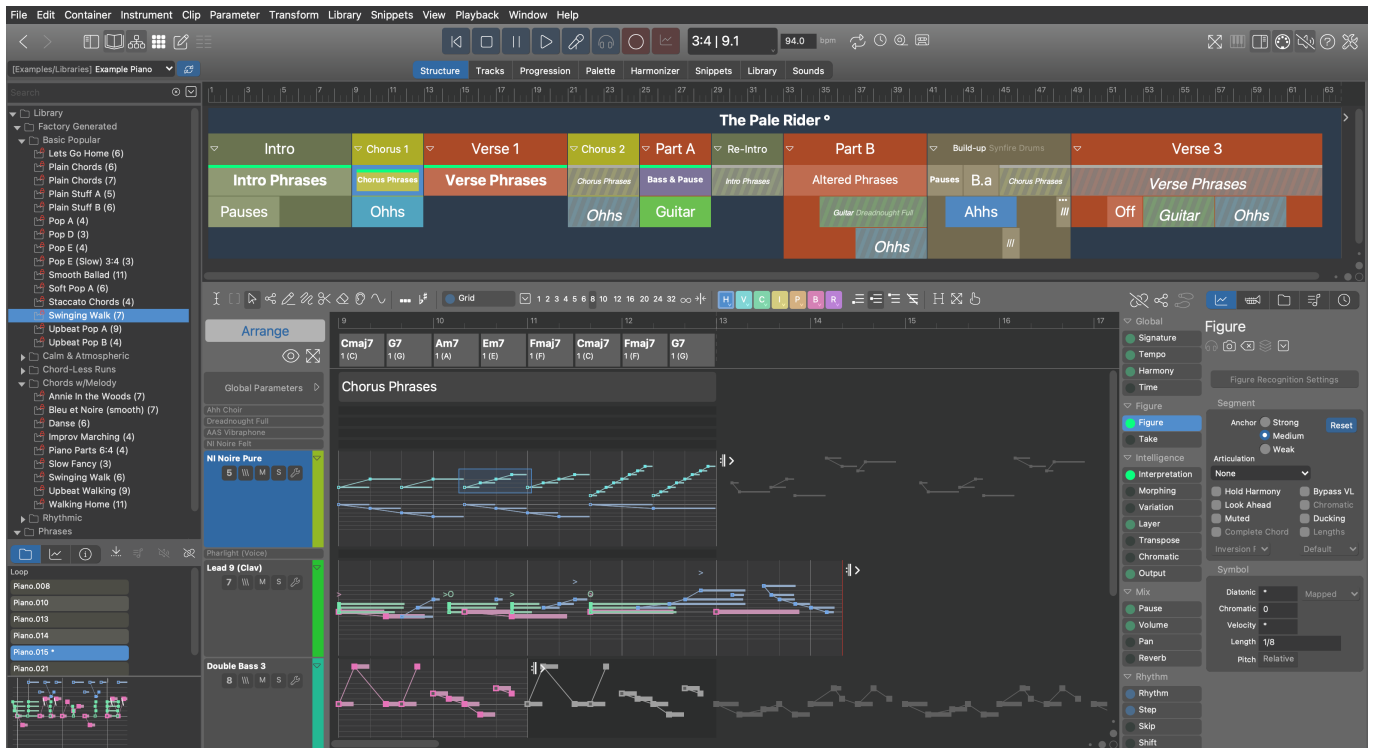
Open the **Audio/MIDI Setup** window to configure the **Global Rack** and general settings.

Structure Page

[Video Tutorial](#)

The **Structure View** ([on page 93](#)) on top shows a hierarchy of **Containers** ([on page 21](#)) that make up the structure of your arrangement. In the **Container Contents** ([on page 97](#)) area below, all instruments are listed along with any **Phrases** ([on page 17](#)) that are assigned to them in the currently selected container.

To the right is the **Parameter Block** ([on page 146](#)) which indicates the parameters in the currently selected phrase. On the sidebar on the right you find the **Parameter Inspector** ([on page 54](#)) where you can edit the details of whatever selection you last made.



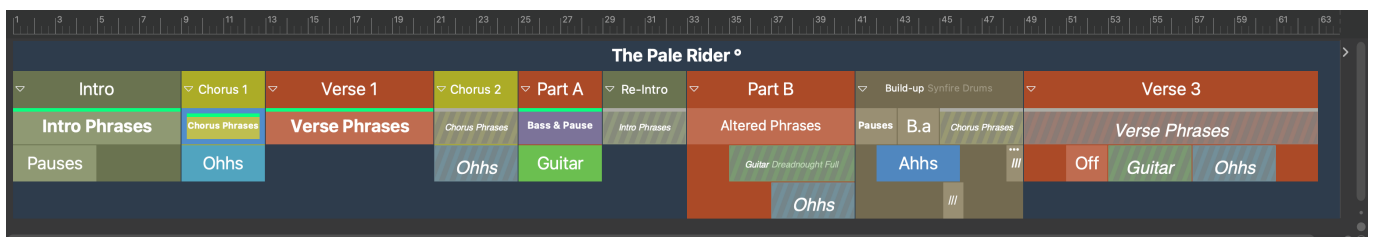
Navigation

While you are selecting containers in the structure, the current instrument and parameter selection is not changed. So you can see at a glance what's different with them in each container. Also when you drop a parameter on a container in the structure view, it always goes to the currently selected instrument there.

Structure View

Video Tutorial

This map shows where **Containers** ([on page 21](#)) are placed on the timeline. The **Root Container** at the top bears the arrangement's name and spans the duration of the entire piece. The most common situation is to have at least one container for each part of a song.



Select a container to make its **Phrases** ([on page 17](#)) appear on the **Track Sheet** ([on page 98](#)).

Double-click on a container to open or close the **Phrase Editor** ([on page 87](#)).

Drag a container to a library to save its contents.

Drop a container from a library to restore its contents.

Drag a container to another arrangement to export all its contents and sounds (Pro).

Creating Containers

Container > New places a new container inside the current one. By selecting a span on the time ruler first, the new container will be placed at that position.

Container > New Parallel Container adds an empty container with the same length below the current container. You can use this to add something to a part you can't modify because it's an alias.

Container > New Container With Selected Clips moves all currently selected phrases (selected instruments) into a new container next to the current one. You can use this to split a part into groups of instruments and move them elsewhere.

Titles

In addition to the container name, the title area of a container is showing hints that say something about its content and status.

Superscript Circle (°)

A **Harmony** parameter is present in the container.

Bold Font

At least one parameter is provided for the selected instrument.

Green Bars

The selected parameter is in effect for the selected instrument during the indicated time span. This **Parameter Trace** ([on page 96](#)) can be disabled in the **View** menu.

Striped Colors And Italic Font

The container is an [alias \(on page 22\)](#).

Shaded Black Lines (\\ \\)

The container is currently inactive.

Color

You can assign a color on the **Container** tab of the **Parameter Inspector** ([on page 54](#)).

Instrument, Parameter

Containers that include only a single phrase are [Clips \(on page 105\)](#). The instrument will then show next to the title if there is enough room. If there's only a single parameter in the clip, it is also indicated in the title.

Commands

Some of these can be found on the **Container** menu or the **right-click menu** over a container.

Move / Copy

Move containers around with the mouse. Hold  **Ctrl** to make copies. Place containers inside others to build a structure. You can also move containers with the **Arrow Keys**. Hold down  **Shift** to move in finer steps.

Resize

Resize containers by dragging them at the right edge. You can input a specific length on the **Container** tab of the **Parameter Inspector** ([on page 54](#)).

Rename ...

Prompts you for a new name. A convenient alternative is to use the **Container** tab of the **Parameter Inspector** ([on page 54](#)).

Add To Library

Drop a container on a **Library** ([on page 28](#)) to add all phrases of the container.

Purge Empty Containers

Cleans up any containers that have no effect whatsoever.

Divide

Mark a position on the time ruler and do **Edit > Divide** to split a container. Child containers are also split where necessary. Where phrases need to be divided, a physical snapshot is made that is split accordingly.

Move Upwards

Move all selected containers one level up into the parent of their parent. You can use this to "ungroup" individual containers without accidentally messing with their position due to unintended mouse movements.

Close Gap

After marking a span on the time ruler, this moves all containers that are right of the span to the left. Requires the marked span to be empty, i.e. it must be a real gap. Be aware this works *inside* the currently selected container.

Make Room

After marking a span on the time ruler, this moves all containers starting at the beginning of the span or later further to the right. Be aware this works *inside* the currently selected container.

Inactive

Deactivate a container to exclude it from rendering entirely. Great for A/B testing. Aliases may be activated or deactivated independently of their original.

Keep Child Containers In a Row

Forces all children into a line without gaps, no matter how you resize or reorder them. Intended to maintain a flat song structure with successive parts.

Make Alias

Creates a read-only [Alias \(on page 22\)](#) of a container that you can place elsewhere to reuse its content.

Make Alias Physical

Turns a read-only [Alias \(on page 22\)](#) into a physical copy that you can modify.

Make Snapshot

Turns all child containers and inherited (gray) parameters into a single flat container with physical copies that you can modify. Do this only if you want to significantly alter inherited parameters, or [condense child containers \(on page 261\)](#) to a flat structure.

Make Sketch

Creates a **Sketch** [\(on page 32\)](#) from the selected container that you can play in real-time on **Palettes** and in **Progression** [\(on page 14\)](#) editors.

Export

Export a **Standard MIDI File** by dragging a container to your desktop or DAW ([more on this here \(on page 274\)](#)).

Recompile

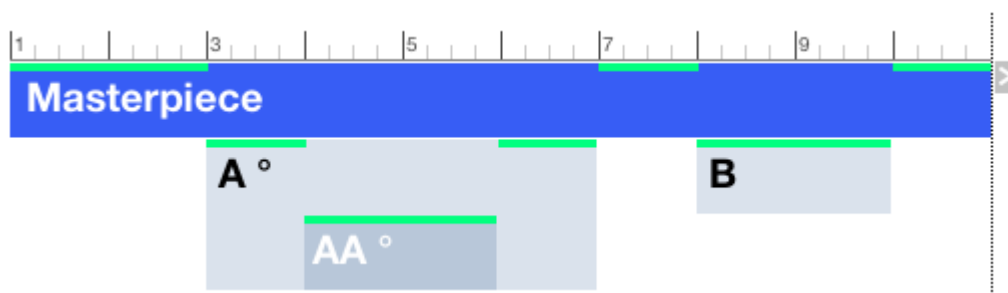
Flushes all output and renders the entire arrangement from scratch. Do this when you are in doubt whether something was not rendered as expected.

Layout

The layout of containers in the **Structure View** is computed automatically from their position and nesting. You can't arrange containers vertically by hand. The algorithmic layout makes sure the [rules of inheritance \(on page 22\)](#) are not obscured, so it is easier for you to track parameters and understand how they are affecting each other.

Parameter Trace

Enable **View > Parameter Trace** to see a green indicator on containers indicating the presence of data for the current parameter and instrument.

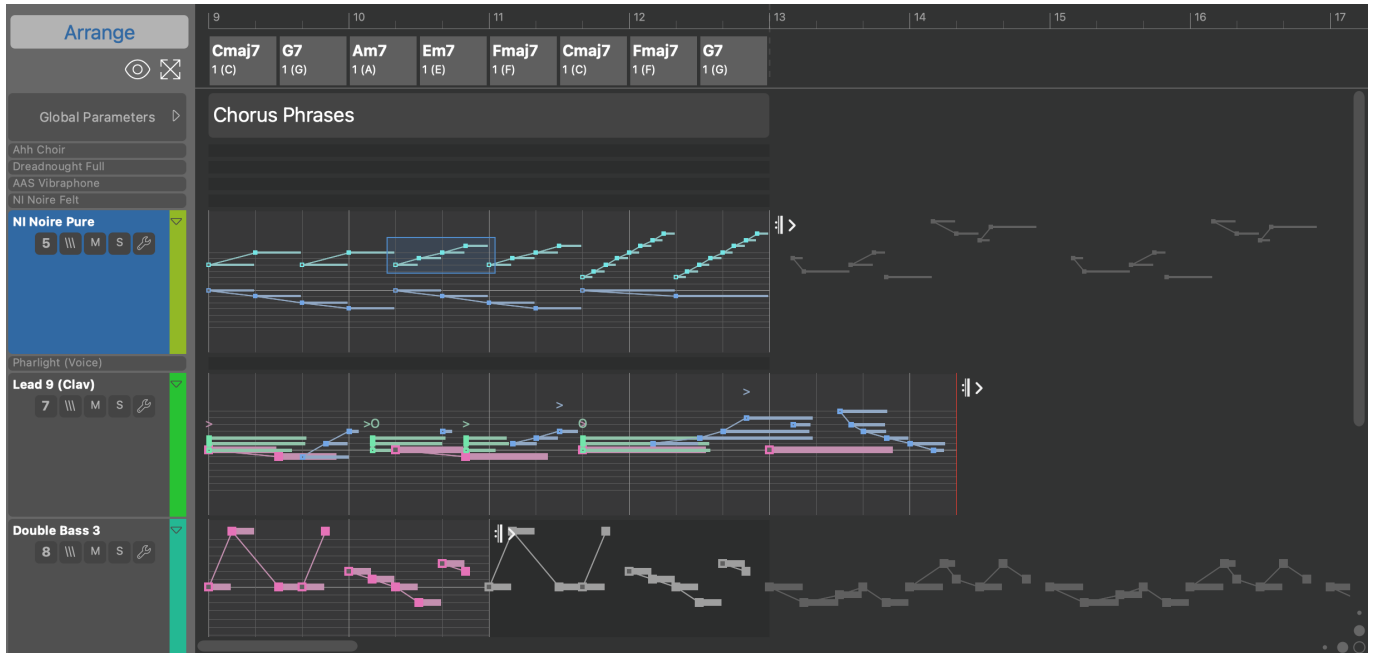


The trace also demonstrates nicely how parameter **Inheritance** ([on page 22](#)) works, by temporarily overriding parameter data for the duration of a sub container. In the example above, every container has parameter data present.

Container Contents

This view shows the contents of the currently selected **Container** ([on page 21](#)). Here you can determine what one or more instruments should play over the length of the container.

You can set any number of **Parameters** ([on page 2](#)) for an instrument. If at least one is present, that makes it a **Phrase** ([on page 17](#)), which also shows up as a **Clip** ([on page 105](#)) on the track sheet.



Harmony Lane

The **Harmony Lane** ([on page 97](#)) provides access to the **Harmony** ([on page 304](#)) parameter of the selected **Container** ([on page 21](#)). You can edit chords in-place using the **Parameter Inspector** ([on page 54](#)) on the sidebar and the menus **Parameter** and **Transform**.



Double-click on a chord or the **Harmony** ([on page 304](#)) outlet to switch to the **Progression** ([on page 14](#)) page for more details and convenience.

Chords are grayed out when there is no physical **Harmony** ([on page 304](#)) in the container. With **Parameter > Make Snapshot Of Harmony** you can insert a physical copy. Alternatively you can write chord names right into the input field of the **Parameter Inspector** ([on page 54](#)).

Related information[Harmony Concept \(on page 7\)](#)[Harmony Settings \(on page 70\)](#)

Instrument List

Toolbar

Switch between three presentation modes. Hold down  **Shift** to apply the change to all containers equally.

1. **Open:** Phrases with at least one parameter show a full-size **Parameter View** ([on page 147](#)) and others are minimized.
2. **Collapsed:** All tracks are collapsed to a summary of the same size.
3. **Minimized:** Instruments without a phrase are minimized to make room. Phrases with a phrase show a summary. This is the most compact presentation.



Zoom to fit all contents. **Right-click** or hold  while you click to switch between zoom memories A and B.

Group Buttons (A, B, C, D, E, F)

Control the visibility of **Instrument Groups**.

Click to view or hide a group. Alternatively you can use the menu **View > Instrument Group**.

Double-click to show all instruments again.

Right-click to remove all instruments from a group.

Headers

Global Parameters

The parameters in this phrase apply to all instruments in the container alike. This is where [Harmony \(on page 304\)](#), [Tempo \(on page 318\)](#), [Signature \(on page 312\)](#) and other global parameters are stored automatically, no matter where you edit them, or on which instrument you drop them.

You can experiment with non-global parameters here, like [Rhythm \(on page 311\)](#), [Step \(on page 315\)](#), [Transpose \(on page 320\)](#), [Shift \(on page 313\)](#), to achieve dramatic effects when they apply to all instruments at the same time.



Collapse or expand the **Parameter View** ([on page 147](#)). **Double-click** on the arrow to minimize or maximize. In **Single-Phrase Snippets Only** mode, this setting can't be changed manually in a Snippet.

Instrument Name

Click to select the instrument. **Double-click** to open or close the **Phrase Editor**. Names appear **bold** if at least one parameter is filled with data.

Instrument Number (Pause)

Three-way switch to control the [Pause \(on page 310\)](#) parameter. [Pause \(on page 310\)](#) need not be constant, though. This switch is merely for convenience.

1. **Red**: Pauses the entire phrase for the duration of the container.
2. **Green**: Overrides any pauses in parent containers and forces it off.
3. **Gray**: Neutral. Pause state possibly changes over the course of the container.



Inactivate (disable) the entire phrase. Great for A/B testing.



Mute audio output for this instrument.



Solo audio output for this instrument.



Open the **Sound Wizard** ([on page 196](#)) to configure a sound for the instrument. There are [more ways to assign a sound \(on page 235\)](#).

Group Button (A, B, C, D, E, F)

Controls the visibility of the **Instrument Group**.

Click to toggle between showing the group or all instruments.

Right-click to remove the instrument from its group.

Use the **Right-click Menu** over a track header, or the menu **Instrument > Assign Group** to assign the currently selected instruments to a group.

Commands

Click on an instrument name first, to make it receive subsequent keyboard commands. You may select multiple instruments at the same time.

Cut, Copy, Paste, Delete, Duplicate

These commands deal with the phrase as a whole, including all its parameters. If you want to edit a parameter, select something in the **Parameter View** ([on page 147](#)) or click on an outlet in the **Parameter Block** ([on page 146](#)) first.

Move Phrase

Drag the instrument name of a track header to another container in the **Structure View** ([on page 93](#)) to move the phrase to that container. Hold down  **Ctrl** to copy the phrase.

Order of Instruments

Move a track with the keys  **Shift** + **Up** or  **Shift** + **Down** or change their order by dragging a track with the mouse.

Options

Right-click brings up the *Instrument* menu.

Instrument Groups

The purpose of **Instrument Groups** is to temporarily create sets of instruments that you want to focus on while editing your score. You may feel tempted to organize instruments by category (Woodwinds, Strings, Brass), but that's probably only useful if the groups are small enough for two or more of them to fit on one screen.



Note:

This feature is available with the **Pro** edition.

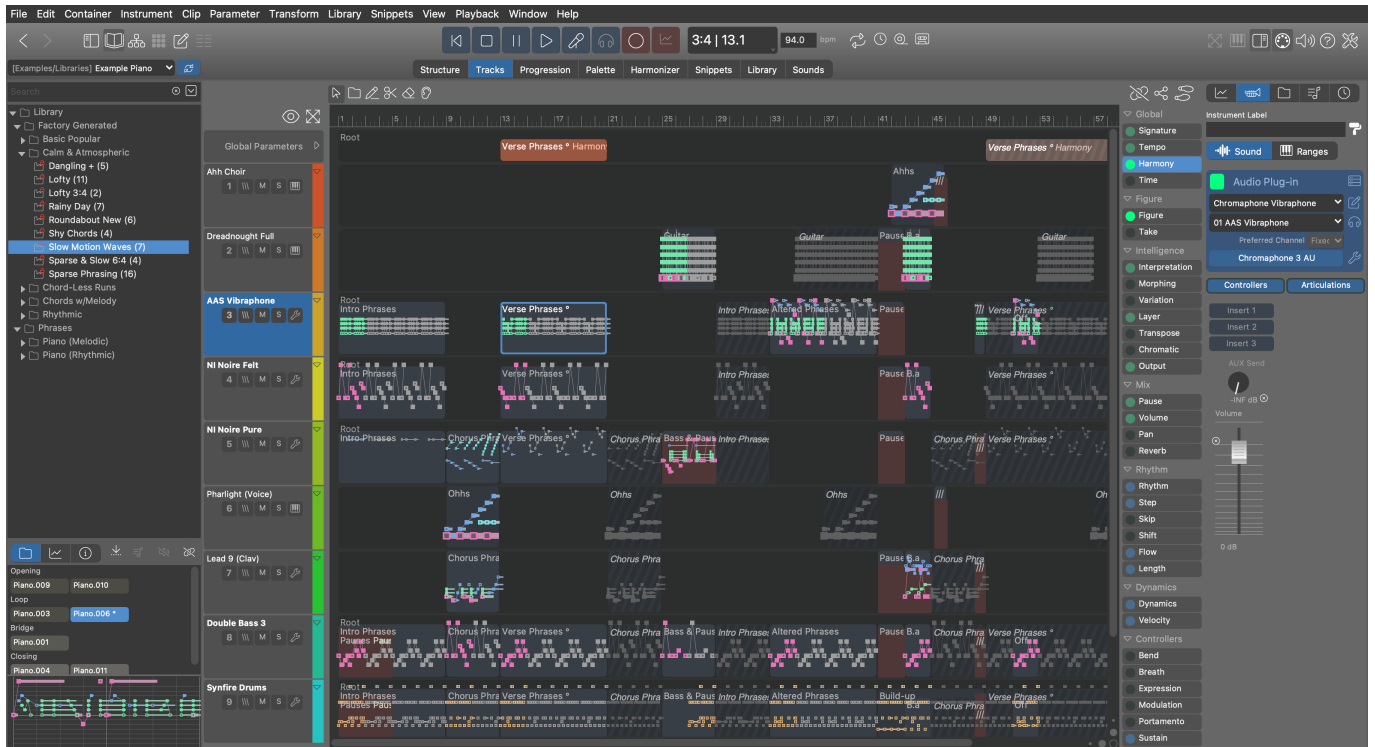
Related information

[Tracks \(on page 20\)](#)

[Global Parameters \(on page 23\)](#)

Tracks Page

This page may look familiar to you as it is similar to the track sheet of a DAW. You see at a glance which output the container produces for each instrument. A [Clip \(on page 105\)](#) appears for every container in which at least one **Parameter** ([on page 2](#)) is set for the instrument. Everything you do on the **Structure** page is automatically showing up here (and vice versa).



The [Output \(on page 309\)](#) parameter is shown by default. You can link the track sheet to the **Parameter Block** ([on page 146](#)) in order to see any other parameter.



Note:

The page provides an overview how your arrangement would be exported to a DAW. Working entirely with tracks is fine for small projects. You should however build larger arrangements primarily on the **Structure** page. [More on this here \(on page 20\)](#).



Open the **Phrase Editor** ([on page 87](#)) to edit the selected phrase.

Headers

Switch between three presentation modes. Hold down  **Shift** to apply the change to all containers equally.

1. **Open:** Phrases with at least one parameter show a full-size **Parameter View** ([on page 147](#)) and others are minimized.
2. **Collapsed:** All tracks are collapsed to a summary of the same size.
3. **Minimized:** Instruments without a phrase are minimized to make room. Phrases with a phrase show a summary. This is the most compact presentation.

Tools

These tools can be used to create, modify and delete clips.



Select a [Clip \(on page 105\)](#) to learn which parameters it includes, move it around, or edit its contents. You can do quite a few things with clips which is [explained here \(on page 105\)](#).



Select the container that contains the clip you click on. See at a glance which clips are included in the container.



Create new clips by drawing a span.



Divide clips.



Delete clips.



Mute clips.

Parameter Block

Activate this link to show the currently selected parameter in all clips of the **Track Sheet** [\(on page 98\)](#). If this link is not active, you can edit parameters on the sidebar without losing sight of **Figure** or **Output**.

Default Parameter: Determines whether **Figure** or [Output \(on page 309\)](#) is showing by default when the link is not active.

Parameter Trace: Highlights all clips that include the currently selected parameter. You see at a glance where in your arrangement a particular parameter is used.

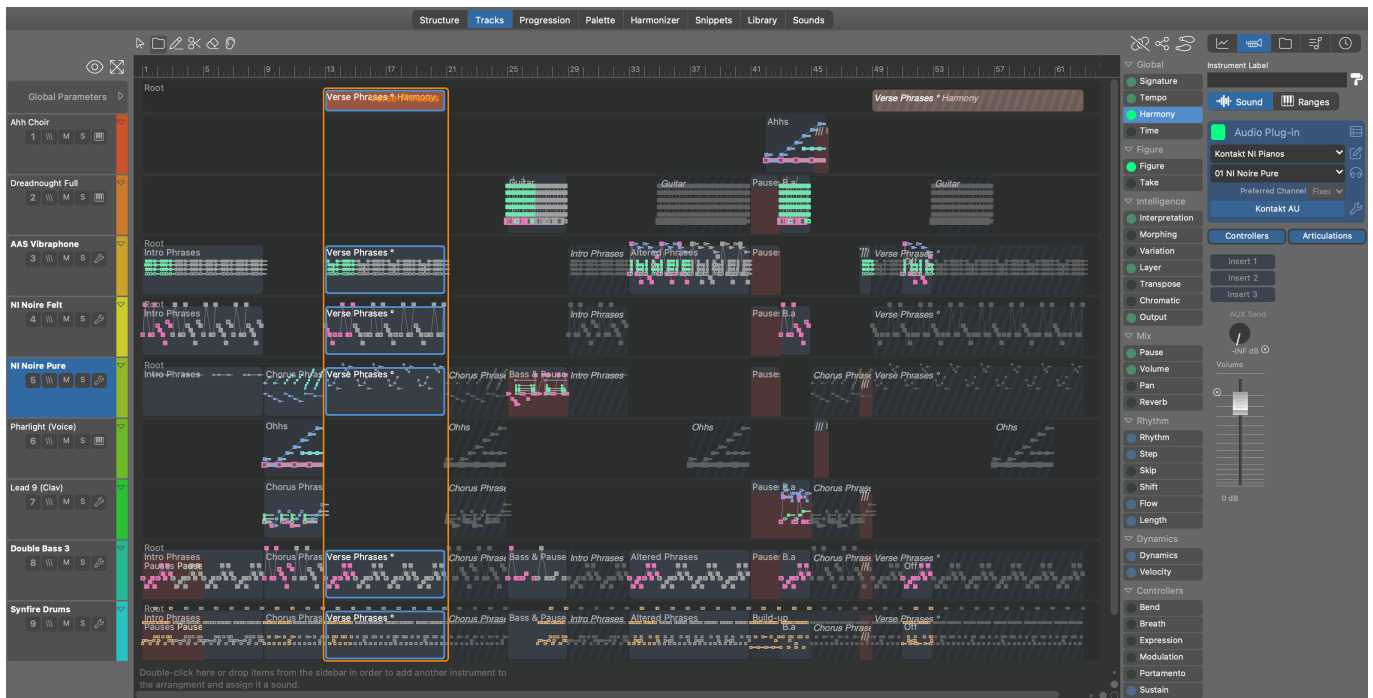
Related information

[Clips \(on page 105\)](#)

[Structure vs. Tracks \(on page 20\)](#)

Track Sheet

This view shows all clips for every instrument over the entire course of the arrangement.



Instrument List

Toolbar

Switch between three presentation modes. Hold down  **Shift** to apply the change to all containers equally.

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2. **Collapsed:** All tracks are collapsed to a summary of the same size.
3. **Minimized:** Instruments without a phrase are minimized to make room. Phrases with a phrase show a summary. This is the most compact presentation.



Zoom to fit all contents. **Right-click** or hold  while you click to switch between zoom memories A and B.

Group Buttons (A, B, C, D, E, F)

Control the visibility of **Instrument Groups**.

Click to view or hide a group. Alternatively you can use the menu **View > Instrument Group**.

Double-click to show all instruments again.

Right-click to remove all instruments from a group.

Headers

Global Parameters

The parameters in this phrase apply to all instruments in the container alike. This is where [Harmony \(on page 304\)](#), [Tempo \(on page 318\)](#), [Signature \(on page 312\)](#) and other global parameters are stored automatically, no matter where you edit them, or on which instrument you drop them.

You can experiment with non-global parameters here, like [Rhythm \(on page 311\)](#), [Step \(on page 315\)](#), [Transpose \(on page 320\)](#), [Shift \(on page 313\)](#), to achieve dramatic effects when they apply to all instruments at the same time.



Collapse or expand the [Parameter View \(on page 147\)](#). **Double-click** on the arrow to minimize or maximize. In **Single-Phrase Snippets Only** mode, this setting can't be changed manually in a Snippet.

Instrument Name

Click to select the instrument. **Double-click** to open or close the **Phrase Editor**. Names appear **bold** if at least one parameter is filled with data.

Instrument Number (Pause)

Three-way switch to control the [Pause \(on page 310\)](#) parameter. [Pause \(on page 310\)](#) need not be constant, though. This switch is merely for convenience.

1. **Red**: Pauses the entire phrase for the duration of the container.
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3. **Gray**: Neutral. Pause state possibly changes over the course of the container.



Inactivate (disable) the entire phrase. Great for A/B testing.



Mute audio output for this instrument.



Solo audio output for this instrument.



Open the **Sound Wizard** ([on page 196](#)) to configure a sound for the instrument. There are [more ways to assign a sound \(on page 235\)](#).

Group Button (A, B, C, D, E, F)

Controls the visibility of the **Instrument Group**.

Click to toggle between showing the group or all instruments.

Right-click to remove the instrument from its group.

Use the **Right-click Menu** over a track header, or the menu **Instrument > Assign Group** to assign the currently selected instruments to a group.

Commands

Click on an instrument name first, to make it receive subsequent keyboard commands. You may select multiple instruments at the same time.

Cut, Copy, Paste, Delete, Duplicate

These commands deal with the phrase as a whole, including all its parameters. If you want to edit a parameter, select something in the **Parameter View** ([on page 147](#)) or click on an outlet in the **Parameter Block** ([on page 146](#)) first.

Move Phrase

Drag the instrument name of a track header to another container in the **Structure View** ([on page 93](#)) to move the phrase to that container. Hold down  **Ctrl** to copy the phrase.

Order of Instruments

Move a track with the keys  **Shift** + **Up** or  **Shift** + **Down** or change their order by dragging a track with the mouse.

Options

Right-click brings up the **Instrument** menu.

Instrument Groups

The purpose of **Instrument Groups** is to temporarily create sets of instruments that you want to focus on while editing your score. You may feel tempted to organize instruments by category (Woodwinds, Strings, Brass), but that's probably only useful if the groups are small enough for two or more of them to fit on one screen.



Note:

This feature is available with the **Pro** edition.

Related information

[Tracks](#) ([on page 20](#))

[Global Parameters](#) ([on page 23](#))

Clips

A **Clip** automatically appears for every container where at least one parameter is set for the instrument. It means some parameter is influencing the output at that position. You can move clips around and create new clips with the drawing tool, or by dropping phrases from a library.



Actions

- **Click** to select a clip and put it into focus.
- Press **Cut, Copy, Paste, Clear, Delete** to edit the **Clip** as a whole. Select a target position on the timeline before you paste a clip, unless you want to replace the currently selected one.
- **Double-click** on a clip to open the **Phrase Editor** ([on page 87](#)) where you can edit all parameters.
- **Right-click** for a menu of commands.
- **Drag** a clip to another track to move it to that **Instrument**. Hold down  **Alt** to make a copy.
- **Drag** a clip to a library to save a copy for later reuse.
- **Drag** the end of a clip to change its length.
- **Drop** a **Phrase** from a library to replace the contents of a clip.

Commands

- **Select multiple clips** that start at the same time and do **Clip > Collect Into Container** to move them into a single container. This is useful to, for example, group all clips that belong to one section of your song. You can then rename the container on the sidebar's inspector.
- **Select one or more clips** and do **Clip > Separate From Each Other** to move phrases each into their own container. You would do that when you want to subsequently collect those phrases in a different place.

Using these commands you can group and ungroup clips on the **Tracks** page to some extent, although you should preferably do all structuring on the **Structure** page, where the hierarchy is more obvious and easier to edit. If you build an arrangement exclusively on the **Tracks** page, the resulting heap of clips on the **Structure** page doesn't make a lot of sense, because it simply isn't structured anymore at all.



Tip:

Use the arrow keys to move a clip if you merely want to change its position. This way you don't accidentally mess with the structure by inadvertently dropping it into another container.

Related information

[Phrases \(on page 17\)](#)

[Tracks Page \(on page 100\)](#)

[Structure vs. Tracks \(on page 20\)](#)

Matrix Page

This page provides **Parameter Outlets** ([on page 45](#)) for all **Phrases** in the selected **Container** ([on page 21](#)). It is a good place to check for the presence of parameter data and [move it \(on page 245\)](#) between instruments and containers.



The Matrix console is meant as a switchboard for copying and moving parameters between instruments and containers.

- **Drag** any parameter **Outlet** to another instrument, container or library.
- **Drop** any parameters on the **Outlet**.
- **Double-click** on a **Outlet** to open or close the **Phrase Editor**.
- **Drop** an item from the **Rack Module Library** here (or in between the strips) to add a new **Instrument**. Drop it on an existing matrix strip to change that instrument's sound.



Note:

In order to keep it simple for beginners, the Matrix page is not visible by default. You can make it visible on the **View** menu.

Matrix Console

The Matrix console is meant as a switchboard for copying and moving parameters between instruments and containers.

- **Drag** any parameter **Outlet** to another instrument, container or library.
- **Drop** any parameters on the **Outlet**.
- **Double-click** on a **Outlet** to open or close the **Phrase Editor**.
- **Drop** an item from the **Rack Module Library** here (or in between the strips) to add a new **Instrument**. Drop it on an existing matrix strip to change that instrument's sound.

On the **Matrix** tab on the **Parameter Inspector** ([on page 54](#)), you can configure for which parameters you want an outlet to show up in the matrix.



Important:

The faders for **Volume** ([on page 323](#)), **Pan** ([on page 296](#)) and similar controllers don't do *audio* mixing. They merely transmit MIDI messages and set the corresponding **Parameter** ([on page 2](#)) that is used to render MIDI output. This has no effect if a plug-in or device doesn't respond to the MIDI controller as expected. The master faders and **Solo**, **Mute** and **Master** buttons work at the audio level, though.

Progression Page

Video Tutorial

Edit the **Harmony** ([on page 304](#)) parameter of the currently selected **Container** ([on page 21](#)) and adjust the **Signature** ([on page 312](#)) to match your verse metric.



Related information

[Editing Harmony \(Progressions\) \(on page 254\)](#)

[Progressions \(on page 14\)](#)

[Circle Of Fifth \(on page 186\)](#)

Harmonizer Page

[Video Tutorial](#)

The Harmonizer looks into one or more [Take \(on page 317\)](#) buffers or rendered [Output \(on page 309\)](#) sequences in the current [Container \(on page 21\)](#) and suggests chords that match them best. When ready, you can save the resulting [Harmony \(on page 304\)](#) parameter to the container with **Apply**.

Playing with the Harmonizer can also give rise to refreshing chord replacements in existing progressions.



Related information

[Harmonizing a Phrase \(on page 258\)](#)

[Circle Of Fifth \(on page 186\)](#)

Palette Page

[Video Tutorial](#)

A [Palette \(on page 153\)](#) with all bells and whistles helps you explore chords, scales and keys and their relationships, while you edit the [Harmony \(on page 304\)](#) parameter of the currently selected [Container \(on page 21\)](#).



Container

At the top of the page, the name of the current **Container** ([on page 21](#)) is indicated. **Right-click** on it or **click-and-hold** to select a different container.

Progression

The **Harmony Lane** ([on page 97](#)) on top of the palette shows the **Harmony** parameter of the currently selected **Container** ([on page 21](#)).

Drop any chords from the palette to edit the progression.

Double-click into the progression to jump to the **Progression** page so you can edit it in more detail.

Outlet

Drag the current progression from this **Parameter Outlet** ([on page 45](#)) to any place you want to use it. You can drop it on the embedded library on the left sidebar, for example.

Drop a progression from anywhere else to assign it to the current container.

Select this outlet and edit its contents with keyboard commands **Cut**, **Copy** or **Paste**.

Menus

These menus are the same as found on the standalone **Palette App** ([on page 153](#)).

Open a different palette layout with **Palette > Open ...** found on the left sidebar.

For more information see: **Palette App** ([on page 153](#)).

Related information

[Playing Palettes \(on page 243\)](#)

[Editing Palettes \(on page 111\)](#)

[Circle Of Fifth \(on page 186\)](#)

[Keyboard Widget \(on page 188\)](#)

Editing Palettes

When you edit a **Palette** ([on page 26](#)) you actually edit the **Scale Set** ([on page 11](#)) it is based on. You can save that Scale Set to the **Catalog** ([on page 16](#)) for later reuse.

Adding And Removing Scales



Click on the triangle to make this scale become the **Reference Scale**. This changes the ordering of the scales.

Add a Horizontal Scale

To start a new palette on any scale, **double-click** on it in the **Catalog** ([on page 16](#)).

- Use the **right-click menu** over a scale name or the **Layout** menu to add more scales to a palette.
- **Drag** a desired scale from the **Catalog** ([on page 16](#)) to the palette.
- **Copy** a scale with  **Control-C** and return to the palette to paste it there.

Add a Vertical Scale

Vertical scales need not be included with a **Scale Set** ([on page 11](#)) in order to be available for chords. But of course you can, for example if you like its characteristic sound and want to make it a horizontal scale that starts from a particular step.

- For example, if we are in the key of C Major and want to play the scale `G.phrygian-dominant` (not in C Major) on the fifth degree over the chord `G`, open the **right-click menu** on chord `G` and select **Layout > Add Vertical Scale > G.phrygian-dominant**.
- Synfire automatically calculates the equivalent horizontal scale `C.harmonic-minor` and adds it to the palette, because `C.harmonic-minor@5 = G.phrygian-dominant`.

Remove a Scale

Click on a scale label and press , or use the **right-click menu**.

Root

Changing the root of a Scale Set with **Palette > Change Root ...** merely transposes everything without altering its structure and chord relationships.

Shifting Root

An interesting transformation arises when the root of a palette is **shifted around**. You can, for example, pretend that the fifth be the root. Right-click on the 5th scale step and do **Assume X is Root**. The palette will be revolved correspondingly and all scales will be rotated as well.

Tonal Center

You can choose a different **Tonal Center** ([on page 11](#)) with **Palette > Tonal Center ...** to create an alternative palette which puts all chords, scales and note names in a different perspective.

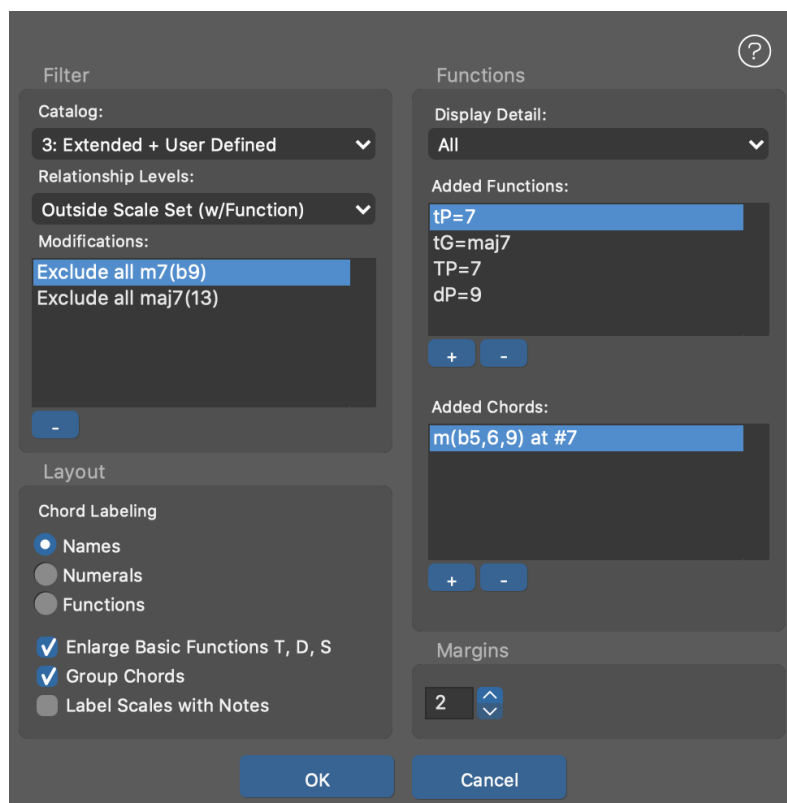
Related information

[Palette Layout & Coloring \(on page 112\)](#)

[Playing Palettes \(on page 243\)](#)

Palette Layout & Coloring

Customize the layout, chord filter and dynamic coloring of a **Standard Palette** or **Alternative Palette** to help you explore new paths to building chord progressions.



Layout

Edit the chord filter and layout options with [Layout > Settings](#). Make all possible chords appear in a layout with [Layout > Reset Filter](#). With [Layout > Reset Default Layout](#) you can restore the default layout.

Chord Filter Settings

Catalog

Select a level of detail: **Basic Chords Only**, **Standard**, **Extended** or **Extended + User Defined**.

Relationship Levels

Minimum grade of relationship for a chord to show up:

1. **Scale Members Only** Chords that can be built exclusively from the notes of one of the scales.
2. **Members of Merged Scales** Likewise, but including chords that can be built from the union of all scales. When available, these chords appear in the lower part of the palette.
3. **Partial Members with Function** Likewise, but including chords that have at least one note in common with a scale and have an essential harmonic function in the tonal center. When available, these appear hanging from the top of the palette.
4. **Non-Members with Function** Likewise, but including all remaining chords that have a harmonic function in the tonal center. When available, these appear hanging from the top of the palette..
5. **All** No restrictions. All chords is displayed.

Modifications

A list of options you have set for individual chords from the [right-click menu](#) over a chord. This list is for information and selectively deleting options.

Functions (Display Detail)

Level of detail for harmonic function labels.

Added Functions

Add arbitrary harmonic functions to the palette, typed as [function expressions \(on page 324\)](#) or as a [chord \(on page 331\)](#).

Added Chords

Add arbitrary chords that do not appear in the palette by default, like more remotely related functions. If Synfire recognizes the chord as a valid harmonic function, it will be added to the **Added Functions** list.



Troubleshooting:

If a chord has been added but does not appear in the palette, this may be due to the current filter or the other layout settings.

Layout

Other layout settings

1. **Names, Numerals or Functions** Determines the way in which chord names are displayed. In Function mode, chords that have no significant function are filtered out, reducing the number of chords significantly.
2. **Enlarge Basic Functions T, D, S** Emphasizes the primary functions Tonic (T), Sub-dominant (S), and Dominant (D) by enlarging the chord boxes.
3. **Group Chords** Similar chords are grouped into a common box. Greatly improves clarity.
4. **Label Scales With Notes** Note names are used to label the center line instead of Roman numerals.

Margins

The margins between boxes.

Including And Excluding Chords

Besides using the layout settings dialog, there are more ways to include chords with a palette, or exclude (hide) them.

Including Chords

1. Add a chord by name or function as described above.
2. **Drop** a chord on the palette from another palette or progression.
3. To show chords that have previously been hidden, select any chord at the desired scale degree and choose **Layout > Add Chord** or **Layout > Add Chord Outside Scale Set** from the **right-click menu** respectively.
4. Use **Layout > Progression On Clipboard > Include All Chords** to include all chords of the current progression on the clipboard.

Excluding Chords

Hide all chords that you find unnecessary, distracting or can't play.

1. Select one or more chords in the palette and hide them with **Edit > Delete**.
2. Hide all chords of a particular type with **Layout > Remove All Chords of Type X**.

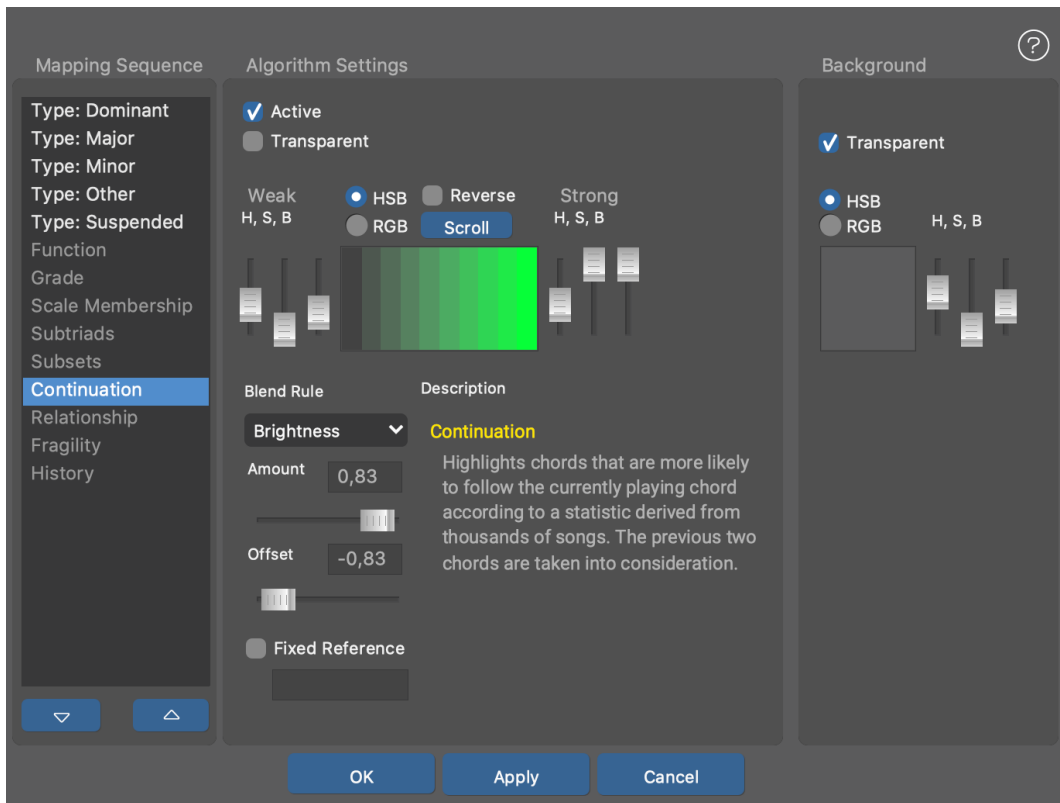
Marking Chords

Highlight chords with a color band, so you can better remember them, or to draw the attention of others to a distinctive spot on your palette.

1. Select the desired chords in the palette and use the menu **Layout > Markings** to add or remove color markings.
2. To mark all chords of a the same type, hold down  **Shift** when picking the above mentioned menu item.
3. Use **Layout > Progression On Clipboard > Marker Chords** to mark all chords of the current progression on the clipboard.

Coloring Settings

The current **Coloring Scheme** of a Palette can be examined and edited with *Coloring > Settings ...*. Several built-in coloring algorithms can be placed in a sequence to compute the final color of a chord from the top down.



Mapping Sequence

Select an algorithm. Use the **up** and **down** buttons below the list to change the position of an algorithm in the sequence. Color is computed from the top down, each algorithm processing the color of the previous one.

Active

Enables the selected algorithm. A disabled algorithm is bypassed.

Transparent

Makes the previous color pass through unchanged where the algorithm delivers an **undefined** value.

Color Gradient Settings

Defines how values **0.0 ... 1.0** are mapped to a color. Select RGB or HSB color space and set the beginning and end values of the gradient. Use **Reverse** to reverse the gradient and **Scroll** to rotate it.

Amount, Offset

Multiplies the value of the algorithm by an **Amount** and adds an **Offset** to it, before it is mapped to the color gradient. Not all blend rules make use of these settings.

Blend Rule

Determines how the color of the previous algorithm is combined with the color of the current one.

1. **Blend**: Blend both colors in a ratio set by the **Amount** slider.
2. **Brightness**: Modulate the brightness of the previous color, using the **Amount** and **Offset** sliders.
3. **Saturation**: Modulate the saturation of the previous color, using the **Amount** and **Offset** sliders.
4. **Hue**: Modulate the color hue of the previous color, using the **Amount** and **Offset** sliders.
5. **Replace**: Replace the previous color with the current, unless it is **undefined**.

Fixed Reference

Defines a particular chord as the permanent input to the coloring scheme. That is, the coloring stays put and won't follow the chords being clicked. **Select** the desired chord in the palette *before* you open the dialog and enable this setting.



Tip:

Fixed Reference is a way to permanently freeze a coloring you happen to find useful.

Coloring Algorithms

The **Coloring** menu can be used to enable or disable any of the built-in coloring algorithms, all of which are listed below.

Static Coloring

These coloring algorithms provide useful background shading for orientation and don't update with a new chord.

Type: Suspended

Highlights suspended chords with shades of green.

Type: Dominant

Highlights dominant chords with shades of red.

Type: Major

Highlights major chords with shades of yellow.

Type: Minor

Highlights minor chords with shades of blue.

Type: Other

Highlights other chord types with shades of cyan.

Function

Highlights chords with a strong functional significance. Primary functions Tonic, Sub-dominant, and Dominant are considered strong. Secondary functions appear dimmed. Chords lacking a clear function remain dark. This scheme provides orientation, especially in [Alternative Palettes \(on page 27\)](#) with an unfamiliar structure.

Grade

Indicates the grade of relationship a chord has to the [Scale Set \(on page 11\)](#) of the palette. The brighter a chord, the closer its relationship to the [reference scale \(on page 11\)](#).

Scale Membership

Each scale of the [Scale Set \(on page 11\)](#) is associated with a color. A chord shows up in a color only if it can be built exclusively from the notes of the associated scale (and no notes from other scales). This highlights all chords that may best emphasize the characteristics of a particular scale.

Dynamic Coloring

These coloring algorithms highlight some relationship with the chord currently playing.

Sub-triads

Highlights all simple triads that are completely contained in the currently played chord. You can play these triads as simplified substitutes for the current chord, or achieve [polytonality \(on page 15\)](#) by letting multiple instruments each play a different sub-triad using the [Layer \(on page 306\)](#) parameter.

Subsets

Highlights all chords that are completely contained in the chord currently being played. This allows you to find several smaller chords that would make up the current chord if played together.

Supersets

Highlights all chords that contain the current chord in full. This allows you to find more complex chords that are suitable as an extension to the current chord.

Intersection

Highlight appears brighter the more notes a chord has in common with the currently playing chord. If you click along a path of brighter chords, the sound will only change gradually. Conversely, you can achieve a stronger contrast by following a path along darker chords.

Relationship

Highlights chords whose [harmonic function \(on page 324\)](#) is closer to the function of the currently playing chord.

Strength

Highlights chords that, when played next, introduce a strong change from the currently playing chord. A short distance in the circle of fifths is considered strong. Longer distances are considered weaker. For example, you could follow the bright path for a chorus and the dark path for a verse.

Continuation

Highlights chords that are more likely to follow the currently playing chord according to a statistic derived from thousands of songs. The previous two chords are taken into consideration.

History

Highlights the recently visited chords as a slowly fading trail of green color to help you remember what you were playing.

Tonnetz

Chords related to the current chord are highlighted according to the Tonnetz (Tone Network) theory. Neighbors S, N, L, R, P each show a distinct color. Learn more about the Tonnetz on [Wikipedia](#).

Saving Presets For Layouts

You can save a layout as a preset with **Layout > Preset > Save As ...**. Presets you saved to the folder **Layouts** in the **Configuration Folder** will appear in the preset menu.

Saving Presets For Coloring Schemes

Save a coloring scheme as a preset with **Coloring > Preset > Save As ...**. Presets you saved to the folder **Colorings** in the **Configuration Folder** will appear in the preset menu.



Tip:

You can save the current layout and coloring scheme in combination as the system default with **Palette > Default Filter and Coloring > Save**. This command is available only on the File menu of a standalone palette editor.

Snippets Page

[Video Tutorial](#)

The **Snippets View** is home to **Snippet Groups**, each of which provides multiple slots for **Snippets** ([on page 25](#)). You can populate these slots simply by dropping **Phrases**.



Learn more about **Snippets** ([on page 25](#)).

Navigation

While you are selecting snippets, instrument and parameter selections automatically switch to whatever is included in the current snippet. So you can see at a glance what's in each snippet. When you drop something on a Snippet, it will ask you where you want the object to go if necessary.

Toolbar



Navigate back to the set of snippets you had playing before.



Schedules all currently playing snippets to be stopped next time you press the launch button. Use this when you want to schedule an entirely new set of snippets from scratch.



Schedule a random selection of snippets to play next. Hold down  **Shift** to keep the current **Harmony** unchanged.



Launches all armed snippets. If you want to start or stop multiple snippets in synch, arm them with a **right-click** on their play icon first and then **click** this button to execute the changes at the same time.

A, B, C, D, E, F, G, H

Memories holding the current state of playback. **Right-click** to save, **left-click** to recall. Hold down  **Shift** to exclude **Harmony** from the recall.

Right-click while holding  **Control** to clear a memory slot.

Drag a memory button to a container on the **Structure** page to insert it into your arrangement.

Drag a memory button to a library to save its phrases and current playback state.

Drop a memory button from a library to restore its previous playback state. This is only useful for short term backups though, as snippets that have been deleted will not be restored automatically. You restore snippets manually by dropping the individual phrases on the snippet grid.

Rearrange memory buttons with the mouse. Their values are swapped.

Harmony (Outlet)

Drop a **Harmony** ([on page 304](#)) parameter here to use as the default chord progression when no currently playing snippet provides one.

Grid Size

Shrink or enlarge the grid.



Change orientation of the grid.



Options Menu:

- **Single-Phrase Snippets Only:** Enable this mode if you want all groups to play a single instrument only. Groups won't accept containers anymore and Synfire will less frequently ask you questions what to do when you dropped something on a slot.
- **Make Snippets From Arrangement:** Collect phrases from all containers and create a snippet for each.
- **Make Arrangement From Last Session:** Assemble a new arrangement from the playback you just stopped.
- **Mark/Unmark Used Snippets:** Earmarks all snippets that are currently used by any memory slot. Helps you make room for new content without accidentally deleting important snippets.
- **Profiles:** All current probabilities can be saved in a profile or appended to an existing profile. Probabilities are associated according to the respective category of an instrument.
- **Clear Snippets:** Delete all snippets.

Transport

The transport buttons on this page operate live snippets playback exclusively. If you want to start or stop the current arrangement, you need to switch to the **Structure** page.



The play button starts or continues live snippet playback. You won't hear anything until at least one snippet is scheduled for playback.



The stop button pauses current live playback. Clicking the stop button again clears all currently scheduled snippets so you can start over from scratch.



Save audio output of your next session to a file. The file is placed next to the arrangement document ([File > Show File in Finder](#)).

Console

The console on the **Snippets** page controls the live mix to some extent, provided your plug-ins respond to the respective MIDI controllers.

Export Snippets As Audio Loops

You can export individual snippets, snippet groups or the entire grid as audio loops to disk ("Clips") to import them into your DAW. You find this option on the right-click menus of snippets and groups, and the options menu of the grid.

Select a Snippet with **Harmony** first. Its progression will be used to render all snippets in order to make them compatible with each other (unless a snippet contains its own **Harmony**). The audio files are placed next to the arrangement document ([File > Show File in Finder](#)).

You can cancel a running export at any time with **Stop**. You should avoid manual interventions while an export is being processed, as all audio output is recorded as it goes into the clips. The audio files are trimmed only after the last snippet has been captured. Do not use any files before this process has completed.



Note:

Exported snippets are trimmed to a multiple of the length of **Harmony**. They may loop more than once if they are shorter than this. This ensures all clips are harmonically compatible with each other when you play them in your DAW's grid live.



Note:

This feature is available with the **Express** and **Pro** editions.

Related information

[Snippets Console \(on page 125\)](#)

Snippet Group

A **Snippet Group** bundles a number of **Snippets**, each of which contains parameters or **Phrases** for one or more instruments. Only one snippet in a group can play at a time. A group shows up in the first column of the grid as a button with the group's name.



Tip:

We recommend you reserve the first group for [Harmony \(on page 304\)](#).

Drop a **Phrase Pool** ([on page 28](#)) on a group to create a snippet for each favorite phrase in the pool.

Drag a snippet group up or down to re-arrange groups on the grid.

Right-click or click and hold on a group to open the options menu.

Options

Rename

Rename the group.

Set Color

Set a color for the group.

Make Snippets From Harmony

Collect from the current arrangement all [Harmony \(on page 304\)](#) parameters and add a snippet for each to this group.

Make Snippets From Instrument

Collect all phrases for an instrument from the current arrangement and add a snippet for each.

Types

A group automatically changes its type depending on what is currently included with its slots.



The group is empty and ready to take phrases and parameters that you can drop on any of its slots. Unless **Single-Phrase Snippets** are [enforced \(on page _____\)](#), the group will also take containers with phrases for multiple instruments.



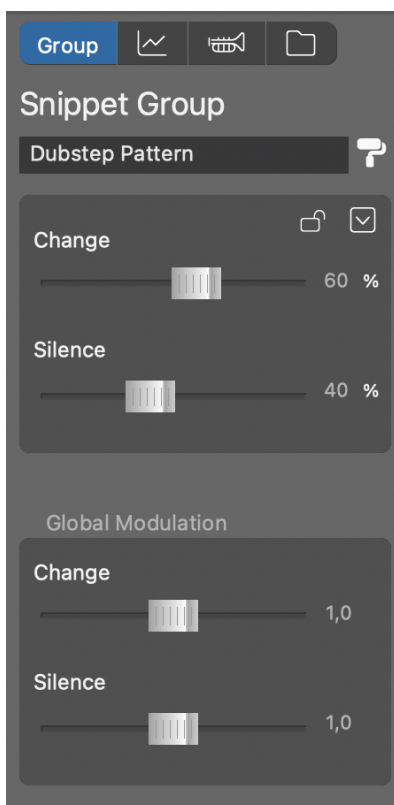
The group includes snippets with phrases for a single instrument only. If you want to assign an instrument to a group, simply drop a phrase on an empty slot to create a first snippet. The group will assume the instrument associated with the phrase.



Indicates a **Mixed Group** that includes snippets with phrases for multiple instruments, or global parameters that affect all instruments.

Group Inspector

When a snippet group is selected, you can edit its name, color and other properties on the right sidebar.



Probability Of Change

When rolling the dice, this is how likely the playback state in this group will change. If you want to control a group manually, you can disable this by selecting zero percent.

Probability Of Silence

When rolling the dice, this is how likely all snippets in this group will go silent. Set to zero percent if you want this group to play one of its snippets all the time.

Global Modulation

Multiplies each group's probabilities with a factor you can set here. If you increase the silence factor, your random arrangement will, on average, get more sparse and less dense. If you increase the change

factor, more snippets will be replaced on each turn, leading to more drama and variety. This setting is global. It shows same values no matter which group is selected.

Snippet

The slots of a snippet group are initially empty. Once you drop something on them, a **Snippet** will be created and show up in the slot.



Drag snippets to re-arrange their order in a group. Moving a snippet to another group will ask you whether to also move the phrase to that instrument, or make a **Mixed Group** with multiple instruments. Hold down  **Ctrl** while you drag to make a copy.

Drop a snippet, a regular container, a phrase, a parameter or a (partial) selection on a slot to create a **Snippet** ([on page 25](#)) or replace its current content.

Double-click on an empty slot to create an empty snippet.

Double-click on a populated snippet to edit its phrases on the [Structure](#) ([on page 92](#)) page.

Cut or **Copy** a snippet to insert it elsewhere.

Paste a snippet, a regular container, a phrase, a parameter or a (partial) selection to populate the slot. For example, you can copy a range of chords from a progression and paste it here, or drag and drop that selection with the mouse.

Click on an empty snippet cell to select the root container of all snippets. It contains three parameters **Tempo**, **Signature** and **Harmony** only. The harmony parameter is used as a default in case no currently playing snippet provides one.

Drag a snippet to a library to backup its contents.

Drop a snippet from a library to restore its contents.



The triangle is used to control playback of the snippet.

Click to schedule the snippet for playback when the next measure is due.

Right-click to arm the snippet to be scheduled for playback the next time you **click** the launch button  on the toolbar. You can use this to arm any number of snippets in advance and then schedule all of them at the same time.

Snippets Are Containers

Since a Snippet is basically the same as a **Container**, you can include with it any number of **Parameters** ([on page 2](#)) for any number of **Instruments**. This way you can place all sorts of sections and parts on your snippet grid and experiment with them live.

In **Singe-Phrase Snippets Only mode** ([on page 124](#)) however, all Snippets can take parameters or phrases for a single instrument only. While this is easier to handle, it doesn't allow you to arrange parts and sections in real-time.

Snippets Console



The small console on the **Snippets** page controls the live mix to some extent, provided your plug-ins respond to the respective MIDI controllers.

- **Drop** an item from the **Rack Module Library** here (or in between the strips) to add a new **Instrument**. Drop it on an existing matrix strip to change that instrument's sound.



Important:

Arrangement containers and snippets share the same instruments. That is, these are identical. If you add or remove instruments on either page this will be mirrored on both.



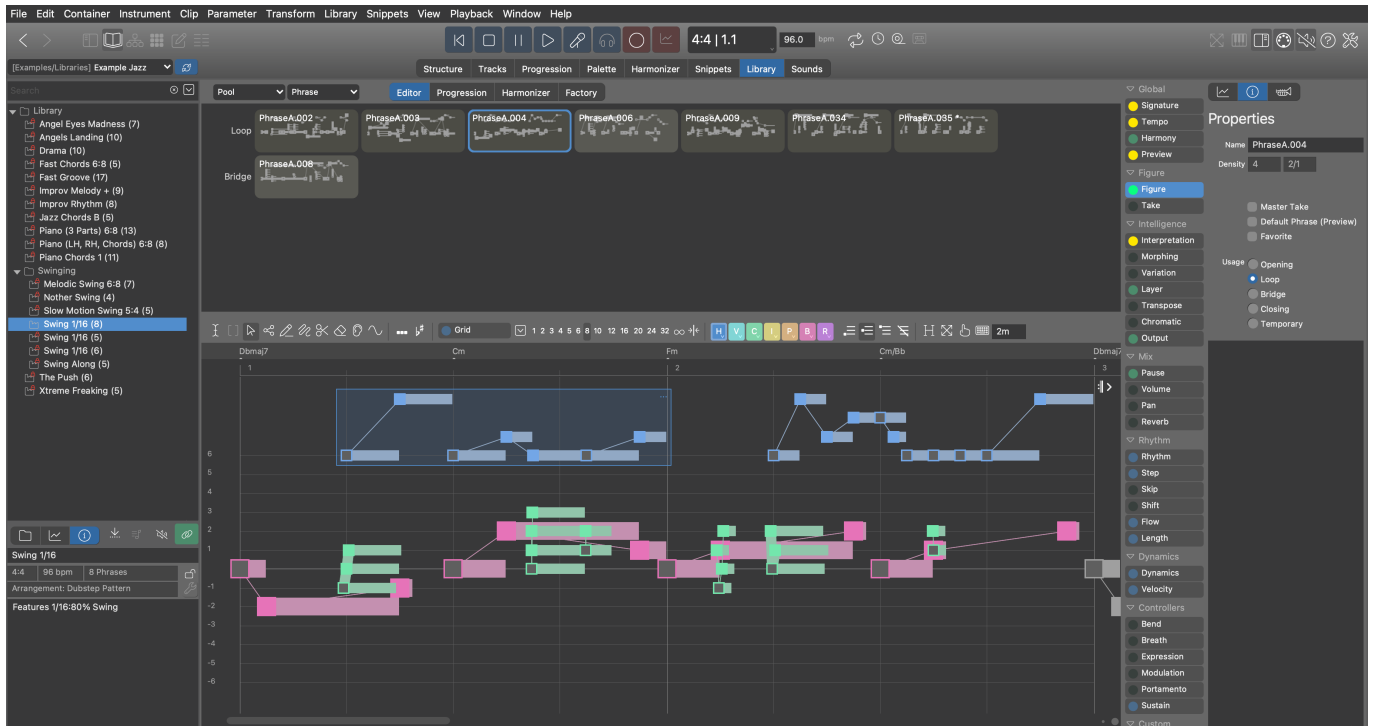
Important:

The faders for [Volume \(on page 323\)](#), [Pan \(on page 296\)](#) and similar controllers don't do *audio* mixing. They merely transmit MIDI messages and set the corresponding [Parameter \(on page 2\)](#) that is used to render MIDI output. This has no effect if a plug-in or device doesn't respond to the MIDI controller as expected. The master faders and **Solo**, **Mute** and **Master** buttons work at the audio level, though.

Library Page

[Video Tutorial](#)

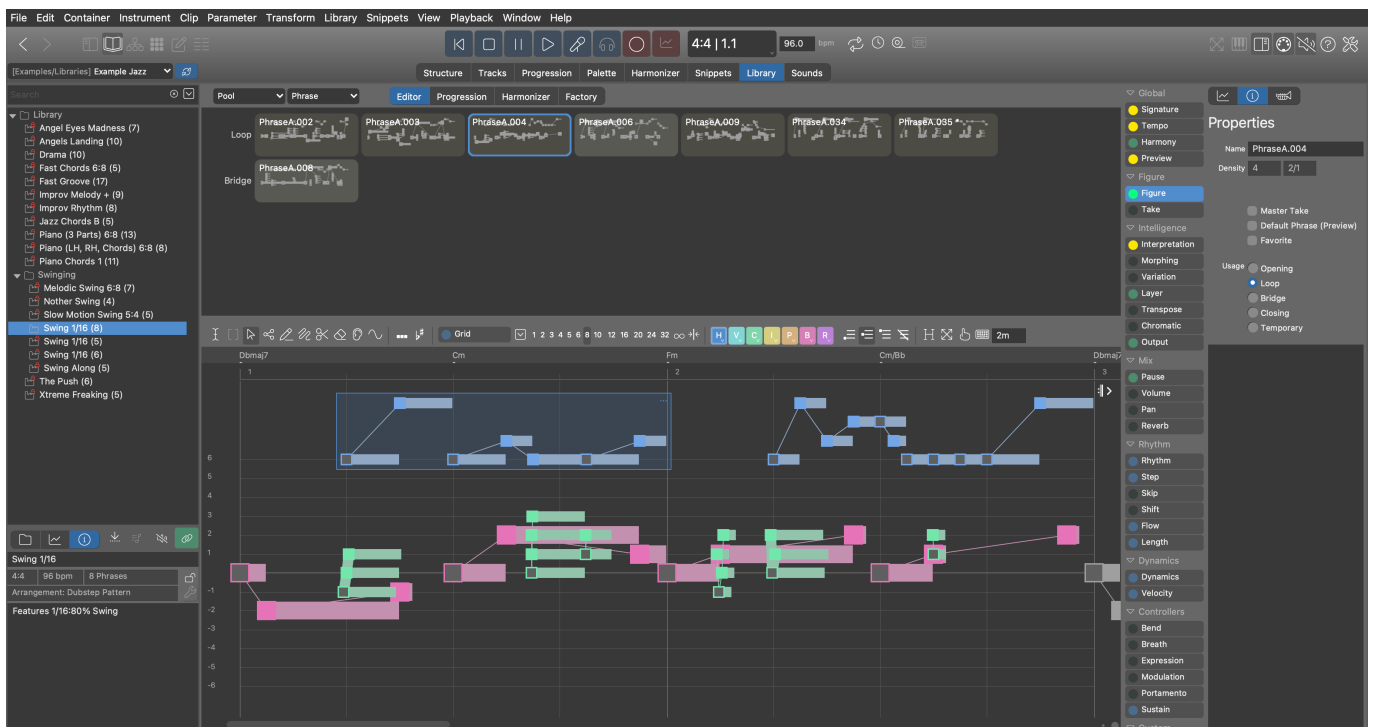
Here you edit the **Embedded Library** ([on page 24](#)) owned by this arrangement. You also have the option to open and edit any other **Library** ([on page 28](#)), if you don't want to use the **Standalone Library Editor** ([on page 152](#)).

**Note:**

This feature is available with the **Express** and **Pro** editions.

Phrase Pool Editor

The **Phrases** contained in the selected **Phrase Pool** ([on page 28](#)) are listed on top of the page. Click on any phrase to select it and load it into the editor.



The pages **Editor**, **Progression** and **Harmonizer** exist for your convenience, each providing a focus on a specific task that is involved with editing a pool. Under **Factory** you can generate new phrases.

Preview (Outlet)

Drop any [Harmony \(on page 304\)](#) here to make it the **Preview Progression** of the pool. It will be used to play all phrases, unless a phrase comes with its own [Harmony \(on page 304\)](#) parameter.

Pick a template from the [right-click menu](#).



Preview the selected phrase using the **Preview Progression** of its pool, or its own [Harmony \(on page 304\)](#) parameter, if one is present.

Sidebar

The screenshot shows a sidebar titled "Properties" with a dark grey background. At the top, there are two icons: a line graph and an information icon. Below the title, the "Name" field contains "Piano.022". The "Density" field shows "6" and "8/1". A timestamp "15.12.2020, 00:00:00" is displayed. There are three checkboxes: "Master Take" (unchecked), "Default Phrase (Preview)" (checked), and "Favorite" (checked). Under the "Usage" section, there are five radio buttons: "Opening" (unchecked), "Loop" (checked), "Bridge" (unchecked), "Closing" (unchecked), and "Temporary" (unchecked).



Show the **Parameter Inspector** [\(on page 54\)](#) for the selected parameter. Alternatively, [double-click](#) on a parameter outlet.



Edit meta data and properties of the selected phrase.

Name

Any name you find helpful.

Density

Estimated value for sorting phrases by the number of notes in them per measure.

Master Take

Marks the phrase as a resource that was obtained from import or recording. Such a phrase is usually very long and the actual phrases of the pool get extracted out of it by splitting it into pieces.

Default Phrase (Preview)

Play this phrase when a pool is selected as a whole in the library browser.

Favorite

Mark the phrase as a favorite. You can later delete all other phrases in one go with [Pool > Keep Only Favorites](#).

Usage

This is a suggestion what role the phrase might typically take.

1. **Opening:** Good as an intro for building up tension.
2. **Loop:** Good for being repeated over and over, like a riff.
3. **Bridge:** Good for bridging two parts, introducing a change.
4. **Closing:** Good for bringing a part to a close.
5. **Temporary:** To be honest, this is a pretty useless item that I should be beaten to.

Related information

[Phrase Pools \(on page 28\)](#)

Editor Tab

Switch to this page to edit an existing phrase or cleanup an imported phrase for subsequent **Harmonization** and **Figure Recognition** on the next two pages. **Select** the phrase you want to edit from the grid above.



Show the **Parameter Inspector** ([on page 54](#)) or **double-click** on any parameter **Outlet**.



Edit a phrase's properties.

Typical Tasks

- Remove parameters that are not needed for a reusable **Phrase**.
- Trim and tag **Take** ([on page 317](#)), in case you still need to run **Figure Recognition**.
- Trim and optimize **Figure** ([on page 298](#)) to make it as reusable as possible.

- Assign a **Preview** ([on page 311](#)) progression to the pool.
- Assign a **Sound** to the pool.

Related information

[Phrase Editor \(on page 87\)](#)

Harmonizer Tab

Switch to this page after you have cleaned up (and possibly tagged) the phrase's **Take** ([on page 317](#)) for harmonization. Here you estimate a **Harmony** ([on page 304](#)) parameter based on the **Take** ([on page 317](#)) of the currently selected **Phrase**.

The presence of a **Harmony** ([on page 304](#)) parameter is a prerequisite for **Figure Recognition**, which you can perform on the [next page \(on page 129\)](#).



Tip:

Short fragments do not lend themselves to good harmonization, since they contain too few notes. You will get better results from long takes, preferably an entire track worth of imported MIDI data.

Related information

[Harmonizing a Phrase \(on page 258\)](#)

Figure Recognition Tab

Switch to this page after you obtained a **Harmony** ([on page 304](#)) parameter from the previous page. This page is basically the **Phrase Editor**, only hard-wired to show a window layout that is best for the task. Perform a **Figure Recognition** ([on page 74](#)) as always, until you are satisfied with the result.

Now your phrase is ready for use.

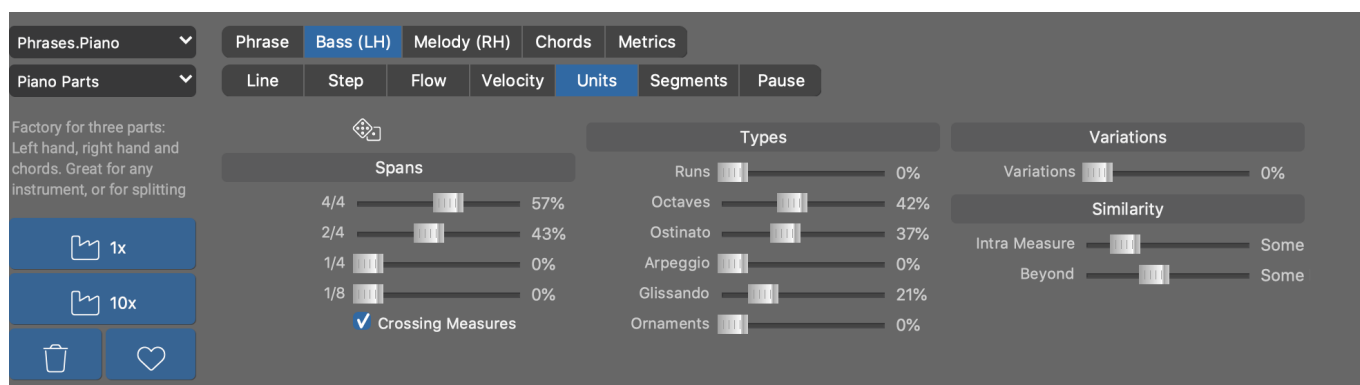
Related information

[Figure Recognition \(on page 6\)](#)

[Take Settings \(on page 74\)](#)

Factory Tab

Switch to this page if you want to generate random phrases from scratch, using one of several KIM Factories, or generate new variations of existing phrases that have been generated previously.



Select a **Factory** ([on page 29](#)) from the pop-up menus in order to generate new **Phrases**, or select an already generated phrase to recall its original factory settings. Every generated phrase is basically a new Factory, of which you can generate more variations, or alter its settings and spawn off a new series of different phrases.

Bundles

Select from this pop-up menu a KIM Bundle of factories.

Factories

Select from this pop-up menu a KIM Factory from the current bundle.

Factory User Interface

Each Factory has a distinct user interface that reflects its structure. Think of it as a pre-wired modular synthesizer. Navigate the structure of the **Factory** using the tabs.



Tip:

Open the **Help Browser** for information on each Factory.



Generates a new phrase based on the current settings. The generated phrase is added to the current pool in the library. When you switch to the **Structure** page (or any other page), you will find it on the **Phrase Library Sidebar** ([on page 49](#)), where you can drag it to anywhere you want to use it.



Marks a phrase as a favorite. With **Pool > Keep Only Favorites** you can eventually cleanup a pool to only retain the phrases you marked this way.



Deletes the currently selected phrase.



Important:

Every generated phrase retains the settings used to generate it, so you can return to it later and continue to spawn off new variations. A carefully configured generated phrase therefore is a new **Factory** in its own right.

**Tip:**

You can edit a generated phrase in any way you choose. For example, you can transpose melodies or delete symbols to make more room for other instruments.

**Note:**

This feature is available with the **Pro** edition.

Related information

[Factories \(on page 29\)](#)

Sounds Page

The **Arrangement Rack** is hosting **Sounds** for the **Instruments** of the arrangement. **Device Descriptions** are copies included with the file in order to make it self-contained and independent. You can edit these devices here.

Enable [View > Library Sounds](#) to see the racks of all currently open **Libraries**.



Rack Editor

There are three types of racks. **Arrangement Racks** ([on page 24](#)), **Library Racks** ([on page 152](#)) or the **Global Rack** ([on page 39](#)). Their **Rack Modules** ([on page 38](#)) (aka Modules) appear listed in this view.



Window Toolbar



Opens the **Rack Module Library** ([on page 47](#)) on the left sidebar where you can search for **Rack Module Presets** and other items and drop them on the rack to add a new **Rack Module** ([on page 38](#)) or load a plug-in and device into an already existing module.

Rack Toolbar

All, MIDI, Embedded, Engine1

Select one of these to focus on the modules hosted on that type of port. This selection also determines which host a new module is added to when you **double-click** in the empty area of the rack.



When active, the arrangement remembers the **Global Rack** ([on page 39](#)) that is currently open. Next time you open the arrangement, you will be asked whether to also load that global rack.



Loads the **Global Rack** ([on page 39](#)) that was open at the time this arrangement was last saved.



Open the current **Global Rack** ([on page 39](#)) in the **Audio/MIDI Setup** ([on page 159](#)) app.



Reload all rack modules. This may help to restore a more stable state if something went wrong.



Sort all rack modules by type and port.



Opens a pop-up menu to control the **Audio Engine** ([on page 41](#)) and purge unused modules, devices or ports.

Selection, Drag & Drop

- **Select** a module to see its [contents on the right sidebar \(on page 135\)](#). Select a channel on the sidebar to open a **Keyboard Widget** where you can play a sound and examine its **Playing Ranges**.
- **Drag** a module to another rack to copy it.
- **Drop** an item from the **Rack Module Library** ([on page 47](#)) to insert a new module or load a plug-in and device into an already existing module. You can drop items between the modules.
- **Drop** an effects plug-in or effects preset from the **Rack Module Library** ([on page 47](#)) on an existing module to load it as the insert effect.
- **Move** modules up or down to change their order.

Related information

[Rack Module \(on page 133\)](#)

[Sidebar: Rack Module Library \(on page 47\)](#)

[Device Inspector \(on page 135\)](#)

Rack Module

Setup a **Rack Module** ([on page 38](#)) to provide the **Sounds** ([on page 37](#)) you need.



Audio Port

Moves the module to another host or port. Select an **Audio Engine Port** or **Drone** as the target where you want the module to be moved. Learn how to move a module to a Drone in a DAW [here \(on page 242\)](#).

Output Port

Pick an external MIDI port for the module to send its output to (MIDI modules only). Any port may receive output only from a single module.

Device Description

Select a known **Device Description** that matches the plug-in or external hardware, or perform one of these actions:

Detect

Matches the current state of the plug-in with previously saved **Rack Module Presets** and select the device description associated with those.

Unknown Device

Go without a device description for now.

Create New

[Create a new device description \(on page 237\)](#) for use with this module.

Extract From Plug-in ...

Attempt to [extract a device description \(on page 239\)](#) from the plug-in.

Download From Repository ...

Search the **Online Repository** [\(on page 185\)](#) for a device description that matches the current plug-in.

Show Device Layout

Opens an inspector showing the channel layout of the device you selected for the module.

3-Way Plug-in Button

This button allows for three tasks to be performed:

1. Load or save a **Rack Module Preset** [\(on page 38\)](#). New presets are listed in the **Rack Module Library** [\(on page 47\)](#) automatically.
2. Open the current **Plug-in Editor**.
3. Load an **Audio Plug-in**.

Insert FX Slots

Up to three slots are available for effects plug-ins (Express and Pro).

AUX Send

Controls the amount of post-effects signal sent to the [AUX Module \(on page 39\)](#) (If the **Global Rack** has one).

Volume

Overall output level for the module. Don't use this for mixing. Keep at 0 dB unless you need to compensate for grossly unequal audio levels.

Solo

Temporarily mutes all other rack modules.

Mute

Temporarily mutes only this rack module.

Colors, Icons

You can customize a rack module to improve your oversight.

Label

Enter a name for your rack module.

**Note:**

Keep in mind that audio controls are for a whole plug-in. If a plug-in hosts multiple instruments on different MIDI channels, all of them are affected equally.

Option Menu

Exclude From Rack

Detaches the rack module from the current rack, so you can attach it to another. Makes it a **Transient Rack Module** ([on page 39](#)) that is no longer saved with the current rack.

Include With Rack

Attaches a **Transient Rack Module** ([on page 39](#)) to the current rack, making it a permanent part of it.

Commands

- **Drag** a rack module to another rack to copy it.
- Keyboard shortcuts for **Cut**, **Copy**, **Paste** or **Duplicate** also work on a rack module.

Related information

[Special Rack Modules \(on page 39\)](#)

[Rack Module Preset \(on page 38\)](#)

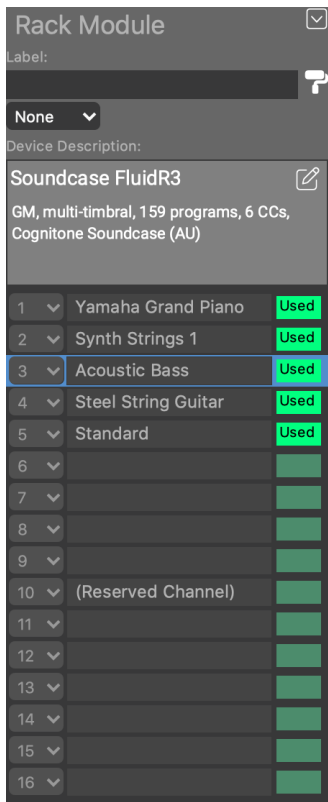
[Sidebar: Rack Module Library \(on page 47\)](#)

[Relocating From Engine to DAW \(on page 242\)](#)

Device Inspector

Shows a brief overview of the **Device** used in a **Rack Module**, listing its channels and which sounds are selected and used at this time.

Select a channel to make a keyboard controller appear, allowing you to play or preview the sound.

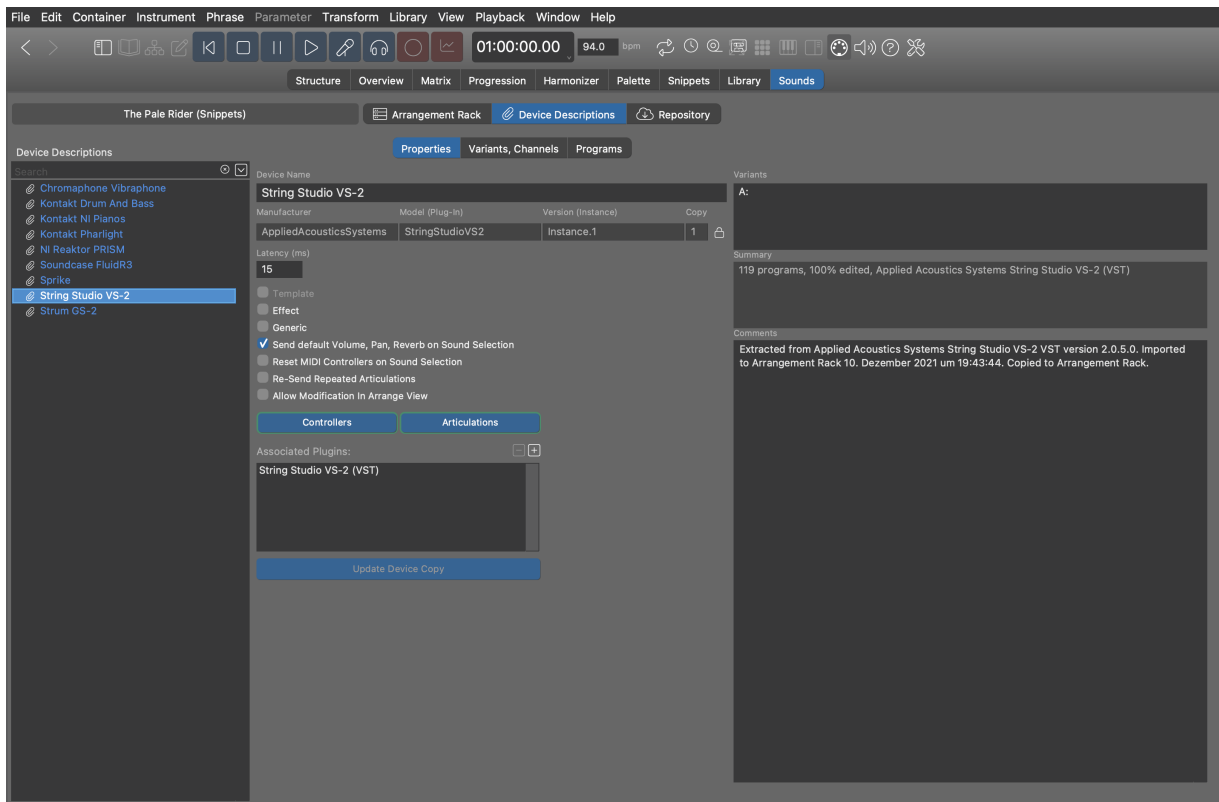


Jump to the device editor for more details, or in-depth editing of the **Device Description**.

Devices Page

Under the tab **Device Descriptions** you manage your collection of **Devices** ([on page 36](#)). Devices managed inside an **Arrangement** ([on page 19](#)) are a part of that arrangement. They can't be used by other arrangements unless you copy them with **Device > Save to Global Rack**.

Devices managed by **Audio/MIDI Setup** are global. They can be used by all **Global Racks** and copied into **Arrangements, Sketches** or **Libraries**.



Saving Devices

Synfire automatically saves pending changes of all devices to disk. With the **Audio/MIDI Setup** window, you can also save a device manually with **File > Save As ...** to a different place.

Device Browser

This browser helps you organize all your **Device Descriptions** in folders. Global devices are maintained by the **Global Rack**. The folder structure is mirrored in the file system, so every device is an actual file on disk.

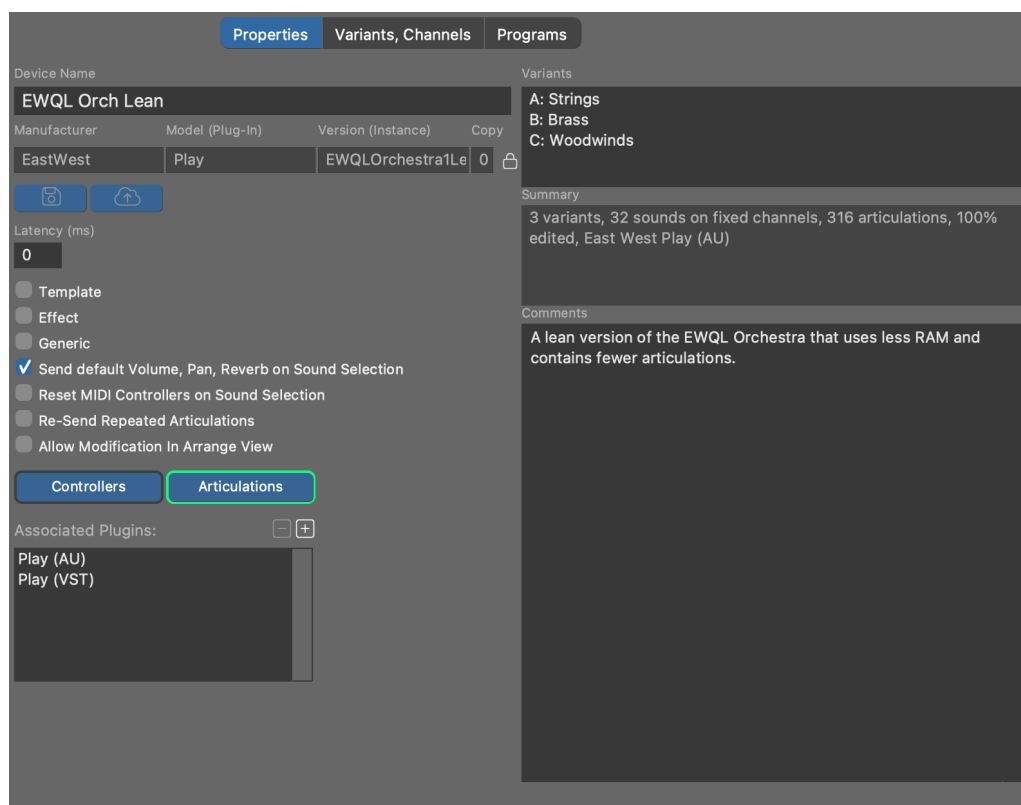
The devices that were copied into an **Arrangement Rack** however are stored internally with the arrangement. You won't find them on your hard disk as separate files.

Related information

[Devices \(on page 36\)](#)

Device Properties

On the tab **Properties** you can edit general settings of a device.



Device Name

The name of the device is used to display it on the list and elsewhere in the software. You can change this name at any time.

Manufacturer

This designation should contain a short name for the manufacturer, e.g. **NI** for Native Instruments, or **YAMAHA**. Please always use exactly the same name for the same manufacturer.

Model (Plug-in)

Name of the hardware model or plug-in: **JV2080**, **MU90R**, **EWQLPlay**, **Kontakt6**, etc.

Version (Instance)

In case it's a plug-in, put a designation for the loaded preset here that is described by the device description: **My Orchestra Kit**, or **Misc Basses**. You can leave this empty for hardware synthesizers.

Copy

This number is incremented every time a device is copied or cloned. It is for your information only, so you can determine which of multiple copies of a device is probably the most current.



CAUTION:

Manufacturer, Plug-in/Model and Version are used to create a unique file name the device is saved to. Where possible, you should not change this identifier anymore after you began using it in your projects. In order to



change the identifier, you need to unlock the input fields first. Synfire will propagate the change to all currently open files to ensure that instruments still point to the same device.

Latency

Enter a value in milliseconds by which MIDI data shall be sent ahead of time in order to compensate for the device's latency.

Template

Check this box, if this device description is supposed to be a **Device Template** ([on page 37](#)).

Effect

Check this box if the plug-in or hardware is an effects processor.

Generic

Indicates this device was created automatically when one was needed, in order to serve as a starting point. You may remove this box and edit the device to fully suit your needs.

Send Default Volume, Pan, Reverb on Sound Selection

Whether to automatically send **Volume** ([on page 323](#)), **Pan** ([on page 296](#)), **Reverb** and other mixing-related CC whenever a sound is selected. Disable this if Synfire shall not interfere with a mix you manually set up in your DAW or with external hardware.

Reset MIDI Controllers On Sound Selection

Some devices require that MIDI CC be reset to default values after a new program/patch was selected. If you notice that your device is behaving strangely with respect to sustain pedals, pitch bend or modulation, you may need to check this option.

Re-Send Repeated Articulations

Send **Articulations** ([on page 204](#)) every time, regardless whether the previously sent articulation has not changed.

Allow Modification In Arrangement

Whether you want the **Instrument Inspector** of an arrangement to show the full details of the sound you selected for an instrument. Although this spares you a visit to the device editor on the **Sounds** page, it adds a lot of information that might distract you. This option is always disabled for global (shared) devices.

Custom Controllers, Articulations

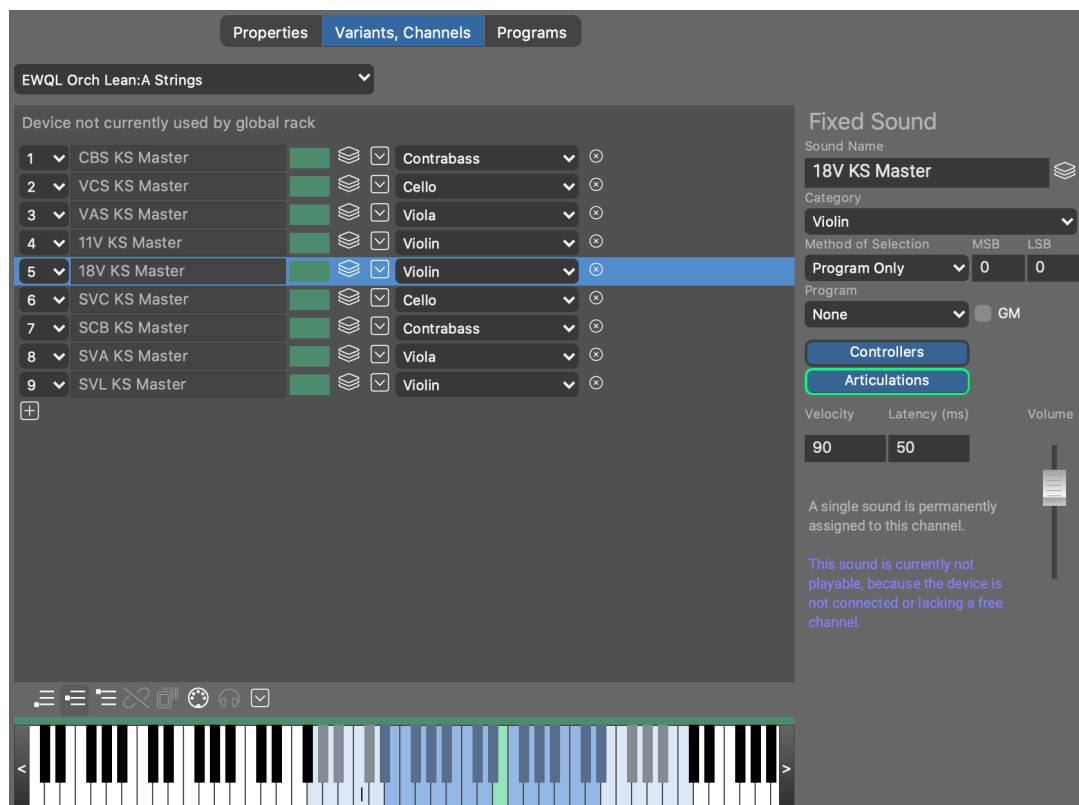
Edit the **Custom Controllers** ([on page 202](#)) or **Custom Articulations** ([on page 204](#)) available for this device.

Updating an Embedded Device

If a device was originally copied into the arrangement, you can update it to the current version of the **Global Device Description** ([on page 39](#)). This imports a new copy into the arrangement.

Device Variants & Channels

The MIDI ports and channels of a **Device** are configured on the **Variants, Channels** tab. One device may support more than one port and channel layout, called **Variants**.



For most devices a single port with 16 MIDI channels is sufficient. For comprehensive sound libraries, you may want to add up to four **Variants** A, B, C, D. Each variant represents a different configuration, operation mode, or preset of the same device and supports up to 16 MIDI channels. The advantage of using variants versus creating multiple devices is that **Custom Controllers** ([on page 202](#)), **Articulations** ([on page 204](#)) and **device properties** ([on page 137](#)) need only be defined once for all variants.

Every MIDI channel can be set to one of three types:

Fixed Sound

A single sound is permanently addressed on this channel. Its properties can be set using the inspector on the sidebar.

Dynamic Program Selection

An arbitrary program or patch of the device is selected by sending a MIDI bank and program selection message. The list of available sounds is managed on the tab **Programs** ([on page 141](#)).

Reserved Channel

On this channel only those sounds can be selected that have the same channel number set as their **reserved channel** (for example, this is the case for GM drum kits that require channel 10). These sounds are also managed on the tab **Programs** ([on page 141](#)).

Multiple channel types can be mixed in the same variant. If a device has multiple variants with dynamic channels, Synfire considers all of them for sound assignments equally.

A green indicator labeled **Used** indicates whether a channel is currently in use by one or more instruments, which are listed on the sidebar for your information.

**Tip:**

You can use this page to edit a sound's properties, controllers and articulations while the plug-in is loaded and then call **Copy Sound To User Bank** from the options menu to save it permanently to the **Programs** page. This is handy when you have many sounds to add for a large library.

**Tip:**

For General MIDI (GM) synths and sound generators, we recommend you always exclude channel 10 from dynamic allocation. The standard requires it be reserved for drum kits.

**Note:**

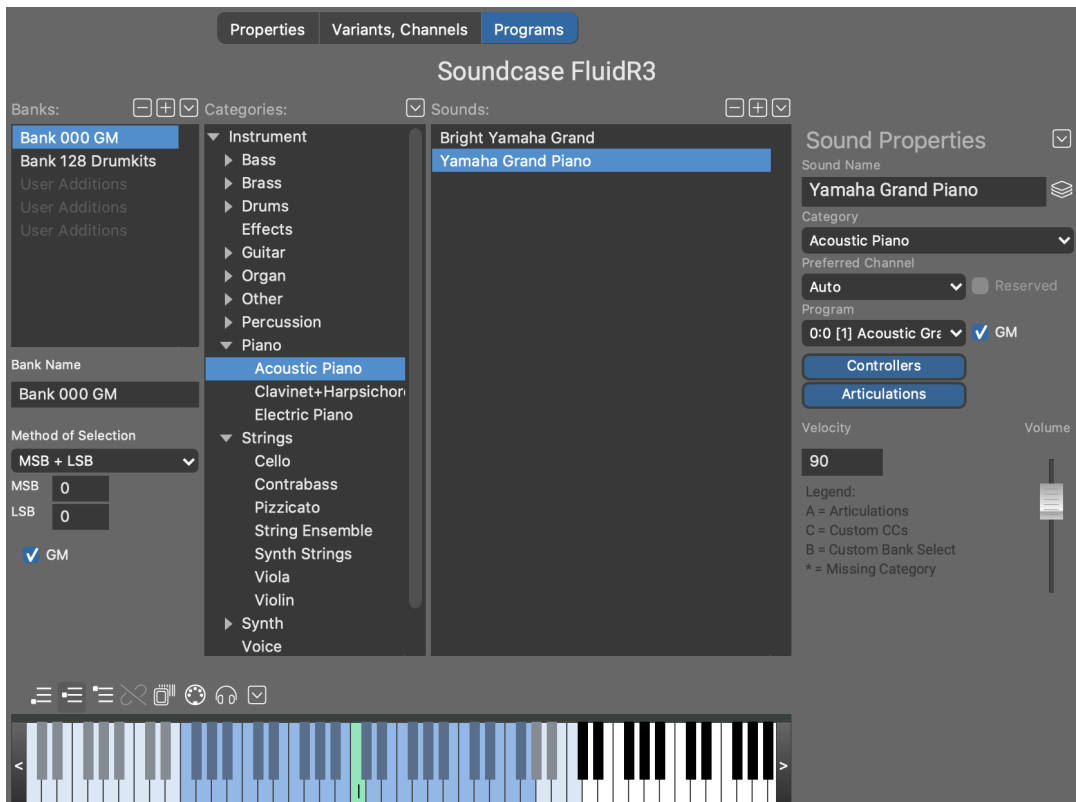
Dynamic channels are managed by Synfire automatically. When multiple arrangements are open at the same time, the current foreground window may temporarily put the sounds of a background window aside in order to ensure all sounds of the foreground window are ready to play.

Related information

[Dynamic Sound Allocation \(on page 42\)](#)

Device Programs

Programs or patches that are selected by sending a MIDI message are managed on the tab **Programs**. Sounds are organized in Banks and classified by **Category** ([on page 34](#)).



Sound Banks

The MIDI standard allows a maximum of 128 sounds per bank. Sound banks are most common for hardware synthesizers and their software emulations. If your device doesn't support sound banks, create a single bank that takes all sounds.

Use the **+** and **-** buttons of the banks list to add or remove banks.

Name

Be sure to name each bank.

Method of Bank Selection

For audio plug-ins, the method **Plug-in Preset Selection** usually does the trick. Please consult the MIDI documentation of your device about the MIDI messages sent to select a particular bank and patch/program. Pick that type of message from the drop-down menu. The variables **MSB** and **LSB** are placeholders filled in by the particular sound.

GM (General MIDI)

Check this box if all sounds in the bank conform to the **General MIDI Standard** (GM). The standard defines a set of program change numbers, names and categories, sparing you the effort of setting up the sounds yourself. Use the list's options menu (right-click) **Initialize General MIDI** to populate an entire bank with sounds according to the standard. Already existing programs will be preserved.

Categories

This tree shows a hierarchy of **Instrument Categories** ([on page 34](#)). They are basically like folders.

Drop one or more sounds on a category to assign that category to them.

With **Option > Preview Phrase** on the list, you can cut, copy or paste any **Phrase** ([on page 17](#)) you want to use to preview sounds of that category.

Sounds

The list of sounds can be sorted by **Name, Program, Category**. You may select one or more sounds to edit their properties on the sidebar inspector.

- **Select** one or more sounds to edit them as a group together.
- **Drag** one or more sounds to a different **Sound Bank** to move them. Hold down  **Ctrl** to copy them.
- Use keyboard commands **Cut, Copy, Paste** to copy or move one or more sounds to and from other **Devices** or **Sound Banks**.

Creating New Sounds

Do the following to add a new sound to the list from scratch.

1. Select the bank it should be added to.
2. Select an appropriate category in the tree.
3. Click on  in the list toolbar.

Now fill in the form to configure the sound.

Sound Properties

Edit the properties (meta-data) of a **Sound** ([on page 37](#)) on the **Parameter Inspector** ([on page 54](#)) or the **Sounds** page.



Browse **Template Devices** ([on page 37](#)) for already known sound properties in order to copy them into this sound.

Sound Name

The name that shows up next to your **Instrument** ([on page 33](#)) and when you browse for sounds.

Category

Pick a **Category** ([on page 34](#)) from the menu, or drop one or more sounds on the desired category found on the tree.

Method of Selection

How the program/patch represented by this sound is [selected \(on page 141\)](#) (optional).

Preferred Channel

Set only if the sound requires or prefers a specific channel. If this is a reserved channel, also tick the box **Reserved**. If the sound is always found on the same channel, you must edit the channel on the [Variants, Channels \(on page 140\)](#) tab, not here!

Program

The number used to select the sound with a MIDI program change message (1 - 128). Check the **GM** box, if program change and instrument category conform to the **General MIDI** standard.

Controllers, Articulations

Setup optional **Custom Controllers** ([on page 202](#)) and **Articulations** ([on page 204](#)) for the sound.
Those defined for the device already need not be redefined.

Velocity, Volume

These are optional preferences used only for previewing phrases when no such values are available otherwise.

Latency

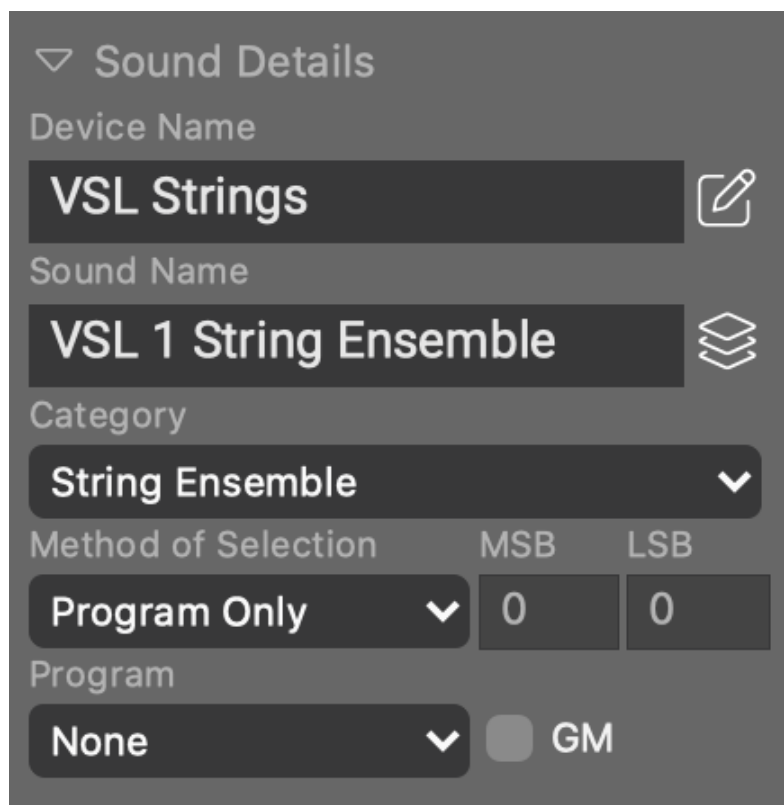
Sound latency (milliseconds). Added to the device latency.

Additional Information

Explains why a sound is not currently audible. Be aware that if you edit a device description, it is not necessarily "online", i.e. currently used by a **Rack Module**. If so, you can't hear the sounds you are editing, of course.

Sound Details In Arrangement

Some properties of a sound can be made visible and edited on the **Parameter Inspector**. This form is usually read-only (grayed out) unless you enabled **Allow For Modification in the Arrange View** with the device description. Device descriptions created by the **Sound Wizard** for convenience do allow this by default, so you can easily alter a sound's properties without visiting the device editor.



The screenshot shows the 'Sound Details' panel with the following settings:

- Device Name:** VSL Strings (with an edit icon)
- Sound Name:** VSL 1 String Ensemble (with a stack icon)
- Category:** String Ensemble (dropdown menu)
- Method of Selection:** Program Only (dropdown menu)
- MSB:** 0
- LSB:** 0
- Program:** None (dropdown menu)
- GM:** ☐ (checkbox)



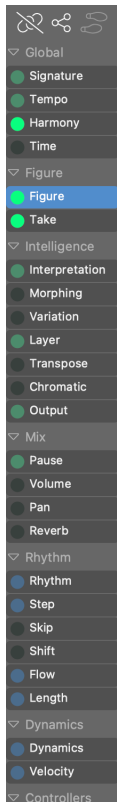
Jump to the device editor where you can edit the sound and all other sounds of the device in context.

Related information

[Instrument Properties \(on page 55\)](#)

Parameter Block

This scrollable block shows a **Parameter Outlet** ([on page 45](#)) for every available parameter. It is used to select the current parameter that shows up on the **Parameter Inspector** ([on page 54](#)) located to the right of it.



Activate this link to show the currently selected parameter in all clips of the **Track Sheet** ([on page 98](#)). If this link is not active, you can edit parameters on the sidebar without losing sight of **Figure** or **Output**.

Default Parameter: Determines whether **Figure** or **Output** ([on page 309](#)) is showing by default when the link is not active.

Parameter Trace: Highlights all clips that include the currently selected parameter. You see at a glance where in your arrangement a particular parameter is used.

Edit

Double-click on an outlet to open or close the **Phrase Editor** ([on page 87](#)) or **Progression** ([on page 108](#)) page.

Drag & Drop

Parameter data can be [copied or moved to and from other outlets \(on page 245\)](#) with drag & drop or copy & paste. Parameter data of a different type is [converted automatically \(on page 329\)](#) to fit its destination. Hold down  **Ctrl** while you drag in order to copy a parameter.

Cut, Copy, Paste

Use the respective keyboard commands to edit the parameter as a whole.

Paste Alias

Inserts a symbolic link to the parameter you last copied to the clipboard. The alias is read-only and updated automatically whenever the original is changed (Synfire Pro). Also works with a phrase or clip currently on the clipboard.

Delete

Delete parameter data with the  **Delete** key.

Right-Click Menu

Right-click on an outlet to open the **Parameter** menu with various editing options.

Scrolling

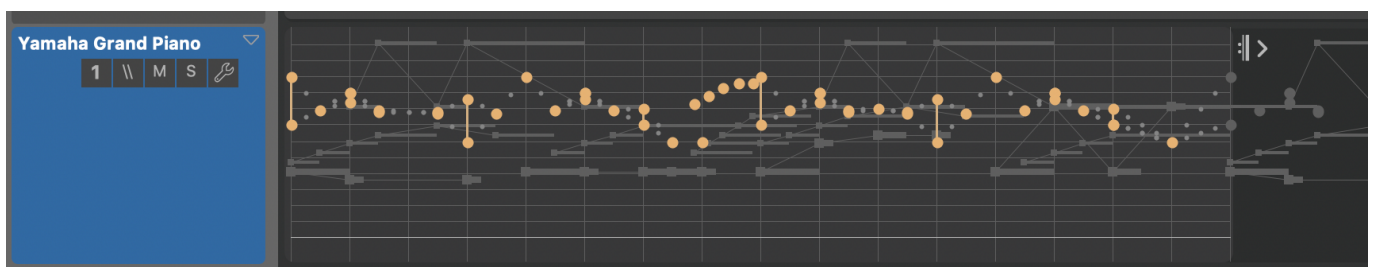
Scroll the block up or down with the mouse wheel to make hidden outlets visible.

Groups

Collapse or expand individual parameter groups to make room or focus on a particular group.

Parameter View

Shows the selected parameter of a phrase or clip. On the **Structure** page, you can immediately edit the parameter in this view.



Open

Full view of the parameter. You can select and edit data right away, or **double-click** to open the more detailed **Phrase Editor** [\(on page 87\)](#).

Collapsed

Read-only summary of the parameter, leaving more space for other instruments.

Minimized

The entire track shrunk to a label, it is merely a placeholder for the instrument, leaving maximum space for other instruments. **Double-click** to open, if you want to edit data. Note that phrases with existing data can't be minimized.

Switch between three presentation modes. Hold down  **Shift** to apply the change to all containers equally.

1. **Open:** Phrases with at least one parameter show a full-size **Parameter View** ([on page 147](#)) and others are minimized.
2. **Collapsed:** All tracks are collapsed to a summary of the same size.
3. **Minimized:** Instruments without a phrase are minimized to make room. Phrases with a phrase show a summary. This is the most compact presentation.

Related information

[Parameter Block \(on page 146\)](#)

[Phrase Editor \(on page 87\)](#)

Display Options

On the **View** and **Playback** menus, you have several options to customize what is displayed on screen.

View Menu

Parameter Trace

Indicates with green rulers in the **Structure View** which containers provide the currently selected parameter for the currently selected instrument. This helps you quickly spot all places where a parameter takes effect and where it is (temporarily) overshadowed by another container.

Parameter Hints

Adds explanatory text to the track sheet that helps understand where a parameter comes from, why it possibly doesn't show up, or why it looks the way it does.

Global Parameter Shadow

Adds a dimmed display of inherited parameter data to the background, so you understand what is happening even when the parameter is not physically present in the current container. This slows down the display a bit but can be very helpful.

Looped Parameter Values

Rolls out looped data until the end of the current container, so you can see how it unfolds along other parameters and the grid. This is always enabled for **Figure**, because segments often overlap and you need to know how the next loop merges into the previous one.

Centered Symbols

Makes **Figure** symbols look more like square note heads rather than flat MIDI notes. If you are used to working with notation programs, this might be more intuitive. Disable this when you need to position and quantize symbols with maximum precision.

Articulations

Adds the names of articulations to a **Figure** display.

Grid

Shows the currently selected grid as an overlay on a **Parameter View**. This is useful when you want to understand the implications of combined or irregular quantization grids.

Playback Menu

Scroll Views With Playhead

Scroll views such that they are following the current playback position.

Follow Parameter Trace

Select the container that provides the currently selected parameter for the currently selected instrument at the moment of playback.

Transport

Transport commands can be customized with [Preferences > User Interface > Edit Keyboard Shortcuts](#) and configured with [Playback > Audio/MIDI Setup > MIDI > Remote Transport Control](#).



Transport Bar



Rewind: Reset playhead to the very beginning.



Stop: Stop all playback.



Pause: Halt playback at current position. Click again to continue playing from there.



Play: Start or restart playback (**Space**). If something is selected on the **Time Ruler** or in a **Parameter View** ([on page 147](#)), playback starts from there. Hold down **Alt** to play only instruments with phrases in the current container.



Solo: Start playback, rendering only the currently selected tracks. This is different from soloing the audio signal with the **S** button.



Preview: Listen to the currently selected object by rendering an example phrase. You can also use this to preview **Harmony** or any other parameter that's currently selected. Enable **Playback > Tie Auto-Chord Notes** to sustain all notes that are already playing in the previous chord.



Record: Record the currently selected phrase from external MIDI input. See: [Recording \(on page 264\)](#).



Record Parameter: Record anything from external MIDI input and convert it to the currently selected Parameter. See: [Recording Parameters \(on page 265\)](#).



Loop: Run next playback in cycles as marked on the **Time Ruler**.



External Sync: Transmit TEMPO, LOCATE, START, STOP commands to external hardware in synchronization with local playback. See: [External Synchronization \(on page 66\)](#).



Overdub: Don't clear the phrase before recording, i.e. add whatever is recorded to the existing phrase.



Bounce to Disk: Save audio output of next playback to a file. The file is placed next to the arrangement document (**File > Show File in Finder**). Requires all instruments to use the same **Audio Engine**.

Select the root container to create an audio file for the entire arrangement. You may optionally select a starting position on the timeline. Recording will stop at the end of the root container, so it is a good idea to leave have a little room at the end for all sounds to settle.

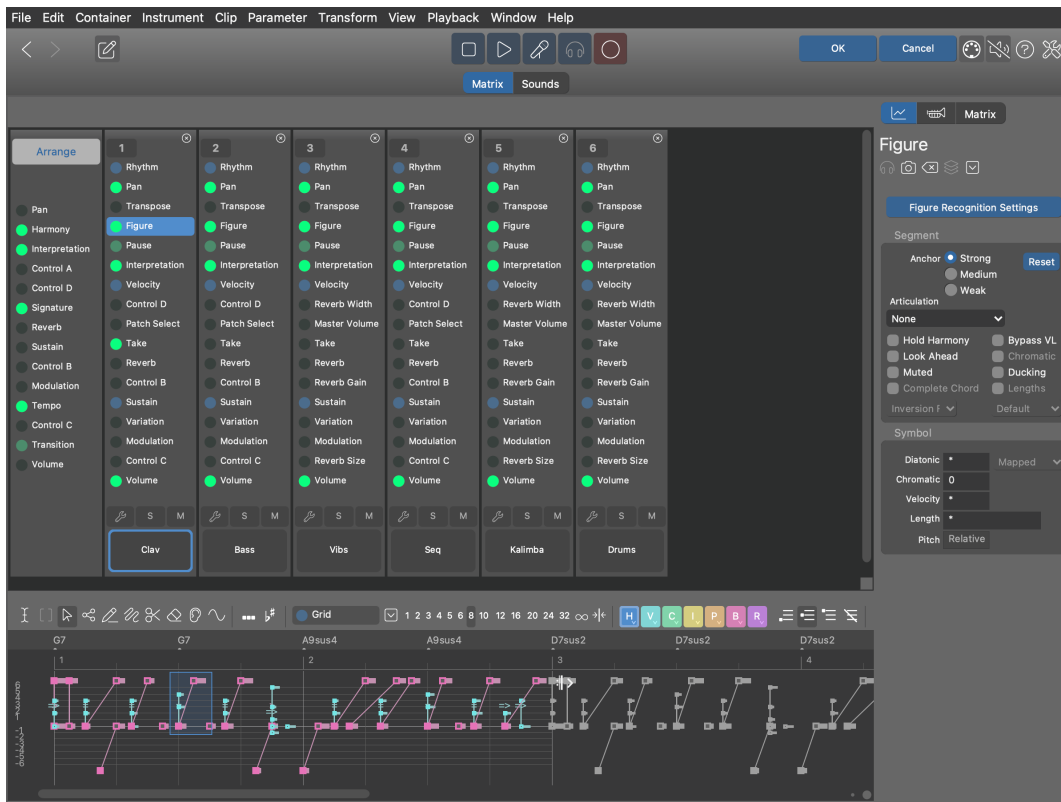
Select one or more child containers to trim the captured audio file exactly to their bounds. Stop playback after all containers have been played.

Press **Play** to begin the recording and **Stop** to end it.

Sketch App

Editing real-time sketches

This is basically a very limited arrangement window for editing a **Sketch** ([on page 32](#)).

**Note:**

This feature is available with the **Express** and **Pro** editions.

Standalone Editor

Open a new Sketch App with **File > New > Sketch** or open any existing Sketch with **File > Open ...**.

Editing The Current Sketch

With **Playback > Edit Current Sketch** a Sketch App opens on the currently active real-time Sketch in dialog mode. Pressing the button **OK** saves the Sketch back to the **Playback** menu.

Adding Sketches To The Playback Menu

Save a Sketch with **File > Save As ...** to the **Sketches** folder inside the **Config** folder. It will automatically appear in the menu after restarting Synfire.

Converting a Sketch To an Arrangement

If you happen to like a particular Sketch and want to use as a starting point to build an arrangement, you can convert it with **File > Convert > Open As Arrangement**.

Related information

[Sketches \(on page 32\)](#)

Song App

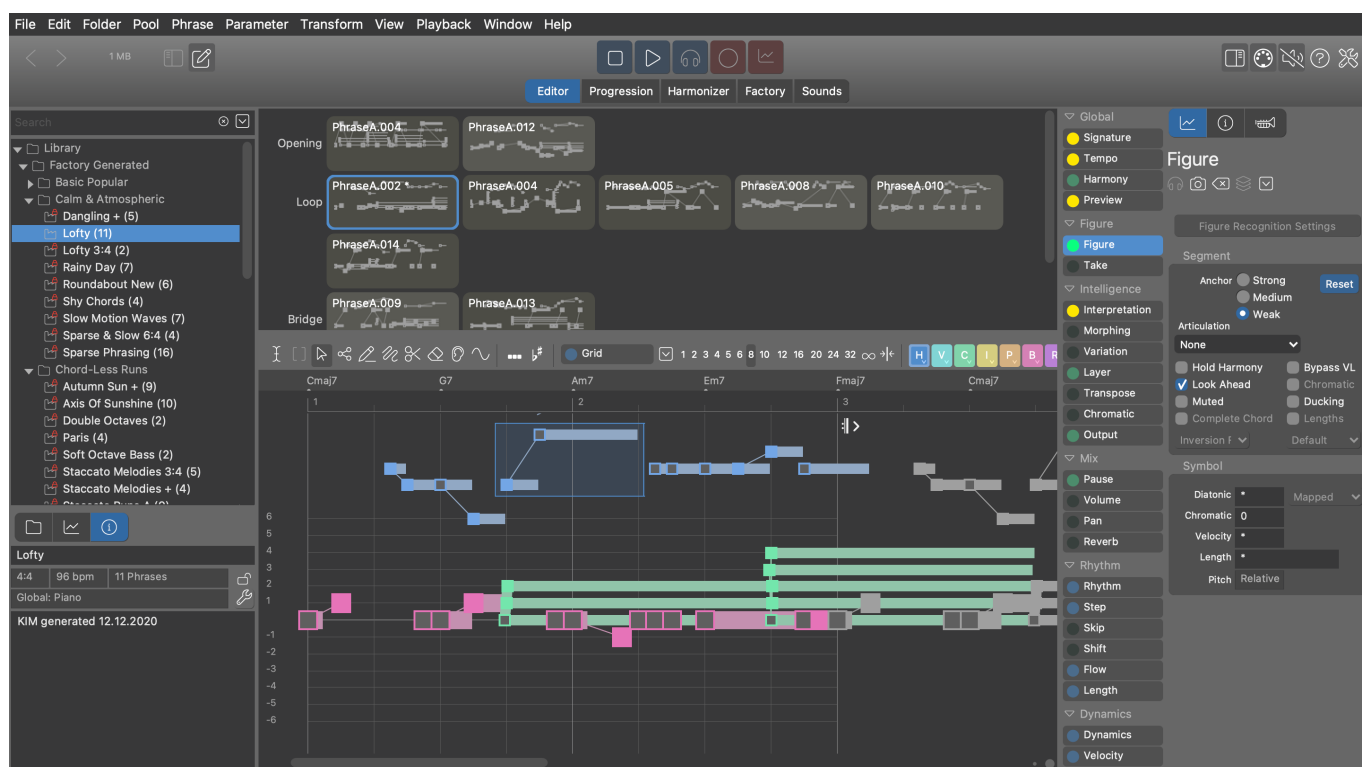
Legacy window from Harmony Navigator 2

This app was retained in order to support migration of files save with **Harmony Navigator 2 (Advanced Edition)**. You should no longer use it and start new projects with the **Arrangement App** instead.

Library App

The standalone editor for libraries

Although the **Arrange Window** ([on page 91](#)) allows for editing any **Library** ([on page 28](#)), embedded or otherwise, you may rather want to use this standalone app to work on one or more libraries simultaneously.



This app is designed to be a workbench for importing, generating, editing and optimizing large collections of phrases, the lifeblood of **Music Prototyping**.



Note:

This feature is available with the **Express** and **Pro** editions.

Browser

On the left sidebar, you can search, browse and organize the **Phrase Pools** in a library.

Open multiple instances of the **Library App** to move data around with **drag & drop** or **copy & paste**.

In its collapsed state with the **Phrase Editor** closed, the app can be **tacked** to the desktop to stay always on top, which eases data exchange between multiple windows.

Phrases

A grid with all phrases in the selected pool shows at the top.

- **Select** a phrase to load in to the editor below.
- **Drag** a phrase to another pool, another library window, or into an arrangement.
- **Drop** a phrase from anywhere to add it to the pool.
- **Cut, Copy, Paste, Delete** or **Duplicate** a phrase with the respective keyboard shortcuts.

Phrase Editor

The bottom right section is a regular **Phrase Editor** for editing the currently selected phrase in the pool. Four pages **Editor**, **Harmonizer**, **Figure Recognition** and **Factory** are dedicated to specific tasks that are involved with this.

Learn more about the [Phrase Editor \(on page 126\)](#) here.

Related information

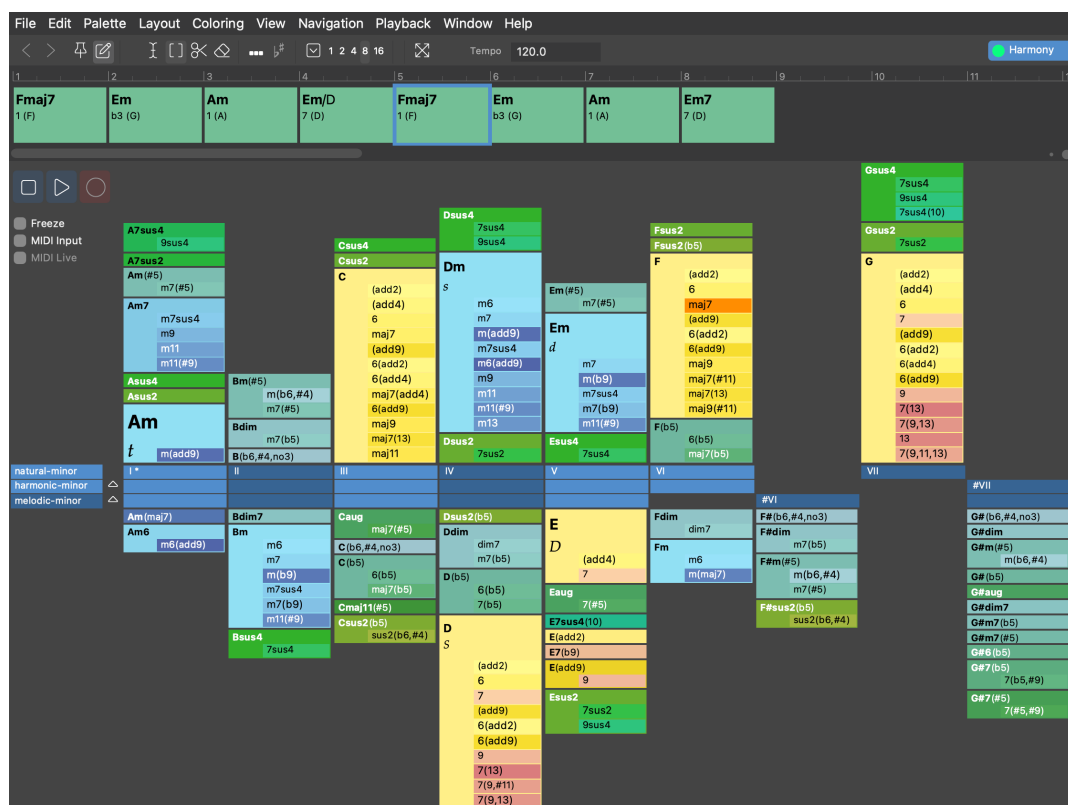
[Libraries \(on page 28\)](#)

Palette App

The standalone editor and panel for multi-palette surfing

[Video Tutorial](#)

Although a **Palette** page is integrated with an arrangement window, you may want to open additional palettes to explore the relationships of multiple keys, or compose a key change.



Open a new standalone Palette window with **File > New > Palette**, or **double-click** on a key in the **Circle Of Fifths**.



Note:

This feature is available with the **Express** and **Pro** editions.

Synfire comes with a collection of example palettes for various purposes. You find them with **File > Open Examples ...**.



Tack the window to the desktop to always stay on top of other windows. This is handy if you want to drag chords to another window.



Open the **Notepad**, which is a small **Harmony Lane** ([on page 97](#)) for collecting chords. This lane is however not linked to any arrangement.

Harmony (Outlet)

Drag the **Notepad** progression off to any destination, or drop a progression from elsewhere.



Record the chords you play on all palettes into the **Notepad**.

Related information[Playing Palettes \(on page 243\)](#)[Editing Palettes \(on page 111\)](#)[Palette Layout & Coloring \(on page 112\)](#)

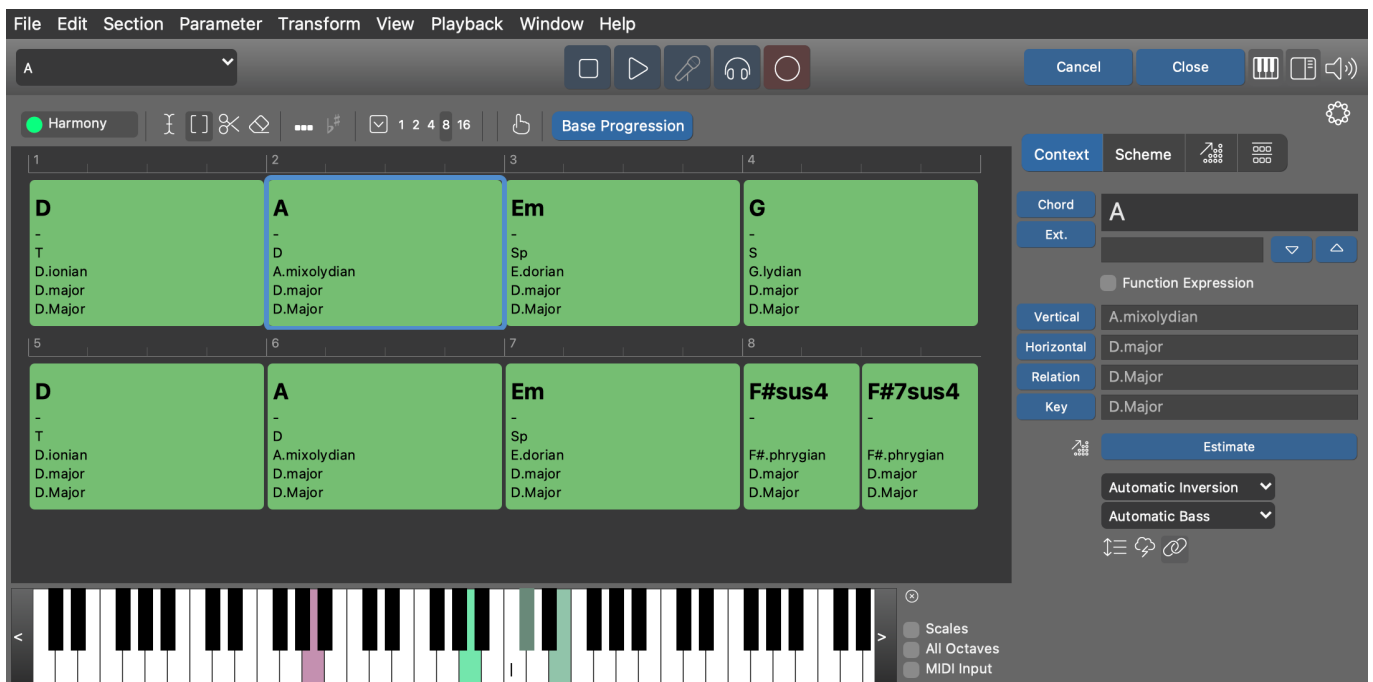
Progression App

The standalone editor for one or more progressions

[Video Tutorial](#)

Outside of an Arrangement or Library, **Progressions** ([on page 14](#)) can be edited with the standalone **Progression App**, too. Open an empty app with **File > New > Progression**, or open a file with the **.cogpro** extension.

You may want to exchange progression files with other users. Larger collections of progressions however are best maintained in a **Library** ([on page 28](#)).

**Note:**

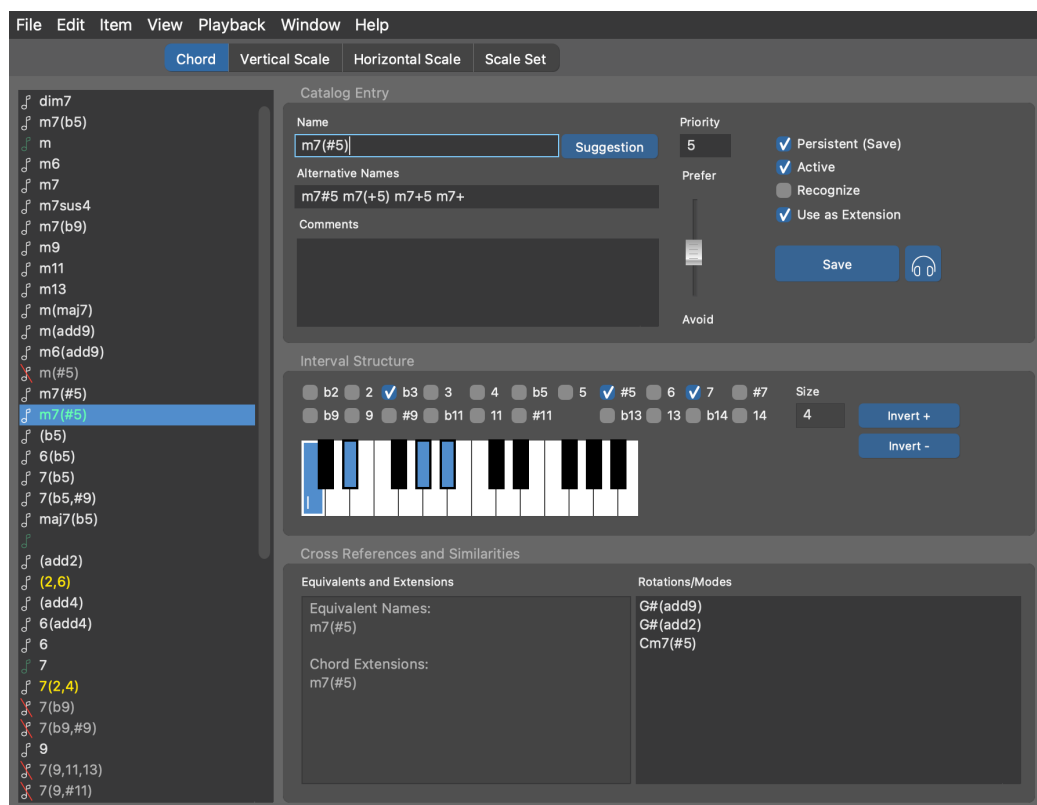
This feature is available with the **Express** and **Pro** editions.

Related information[Editing Harmony \(Progressions\) \(on page 254\)](#)[Controlling Inversion, Voicing and Octave \(on page 257\)](#)[Progressions \(on page 14\)](#)

Catalog App

Edit the fundamental interval structures Synfire is working on

Browse and edit the current **Catalog** ([on page 16](#)) with **Edit > Catalog of Chords And Scales**.



Double-click on a scale or Scale Set to open a new palette on them. You may deactivate or delete chords or scales that you don't want or need. Some basic structures however can't be deleted or modified.

The **interval structures** listed in the Catalog are independent of root pitch. A root pitch is added only when a particular instance is created. For example, the structure **m9** is used by instances of **Am9**, **Gm9**, **Ebm9**, etc and **maj7** is used by instances of **Amaj7**, **Bbmaj7**, etc.

Creating And Modifying Items

Before you begin, please make sure you understand how the **Catalog** ([on page 16](#)) influences the behavior of Synfire.

As soon as you begin editing an item's intervals, a copy is put aside (highlighted in the list with green color) that you can continue to modify until you commit all changes with the **Save** button, or click elsewhere to discard them.

Alternatively you can begin editing a copy with **Item > New Clone** If you want to start a new item from scratch, create an empty item with **Item > New**.



CAUTION:

All open documents, palettes and progressions update their contents automatically according to the changes you make to the Catalog. Thus, if you want to make sure your edits don't meddle with other files, you should close them before you edit the Catalog.

Status Colors

Items may show up in different colors that indicate a certain status.

Yellow

Your custom-defined catalog entries.

Red

The name or alternative names have conflicts with already existing items.

Italic

Temporary items not persistently saved with the catalog.

Item Editor

Name

Desired name of the interval structure *without* a root pitch. Make sure you understand the [naming conventions \(on page 329\)](#). If you have already set all intervals, you can get a suggestion by looking into the menu *Item > Rename*

Suggestion

Click this button to pick from a list of suggested names.

Alternative Names

A list of alternative names separated by spaces. Synfire recognizes these as synonymous with the name when it parses your input on the progression editor.

Priority

Influences scale selection and other internal deliberations where multiple results need to be narrowed down. You can also use the slider to change this value. Use this setting if you want an item to be used more often than another equivalent one. Zero is top priority and nine is for items you want to avoid.

Persistent (Save)

Check this if you want to permanently save the item with the catalog. If disabled, it will be discarded when no longer used.

Active

Disable this if you want to exclude the item from palettes and all harmony calculations. You can use this to hide an item without deleting it.

Recognize

Whether Synfire shall consider this item as a possible candidate for harmonization. You can disable this for chords you don't want to see in the results of the Harmonizer. It should remain disabled for very large interval structures that are too ambiguous to be meaningful as a chord.

Use as Extension

Whether a chord should be considered an extended version of a more simple chord when computing the **Jazz Up** feature. You can exclude some extremely dissonant chords here that should not be used unless you place them somewhere deliberately.

Interval Structure

You can add or remove intervals by ticking the boxes, or by holding down  **Alt** while you click on the MIDI keyboard widget.

While chord structures may span two octaves, scales are only one octave wide.

Rotate intervals around with **Invert +** and **Invert -**.



Note:

Items in the Catalog are pitch-agnostic interval structures written without a preceding note name. A root note is added only when a chord or scale is created from the structure. For example, interval structure **m9** may be used to create the chords **Em9** or **Gm9** and structure **maj7** may be used for **Amaj7** or **Bbmaj7**.

Cross References

Equivalents and Extensions lists structures that are built from the same intervals but bear another name.

Rotations/Modes lists structures that consist of the same pitch classes but have a different interval structure. That is, these structures are equivalent but start at a different root.

Saving Changes

Changes immediately propagate to all open documents and windows, updating palettes and progressions as you edit.

Don't forget to save your changes with the button **Save**. This makes sure the entire catalog is re-calculated to accommodate the modified item. It is also a good idea to save the Catalog file with **File > Save** from time to time, although it will also be saved when you close the window.



Note:

If you want a customized Catalog to be opened and used when Synfire starts, you must save it to the **Config** folder using the name **Tonality.catalog**. You can restore the factory default with **File > New**.



Note:

Note that the chord structure **Major** has an empty name because a major chord is denoted by its uppercase root note only. Make sure you understand the [naming conventions \(on page 329\)](#).

**Note:**

With *Item > Show Temporary Items* you can show chords, scales and scale sets that Synfire generated on the fly for internal calculations.

**Note:**

This feature is available with the **Express** and **Pro** editions.

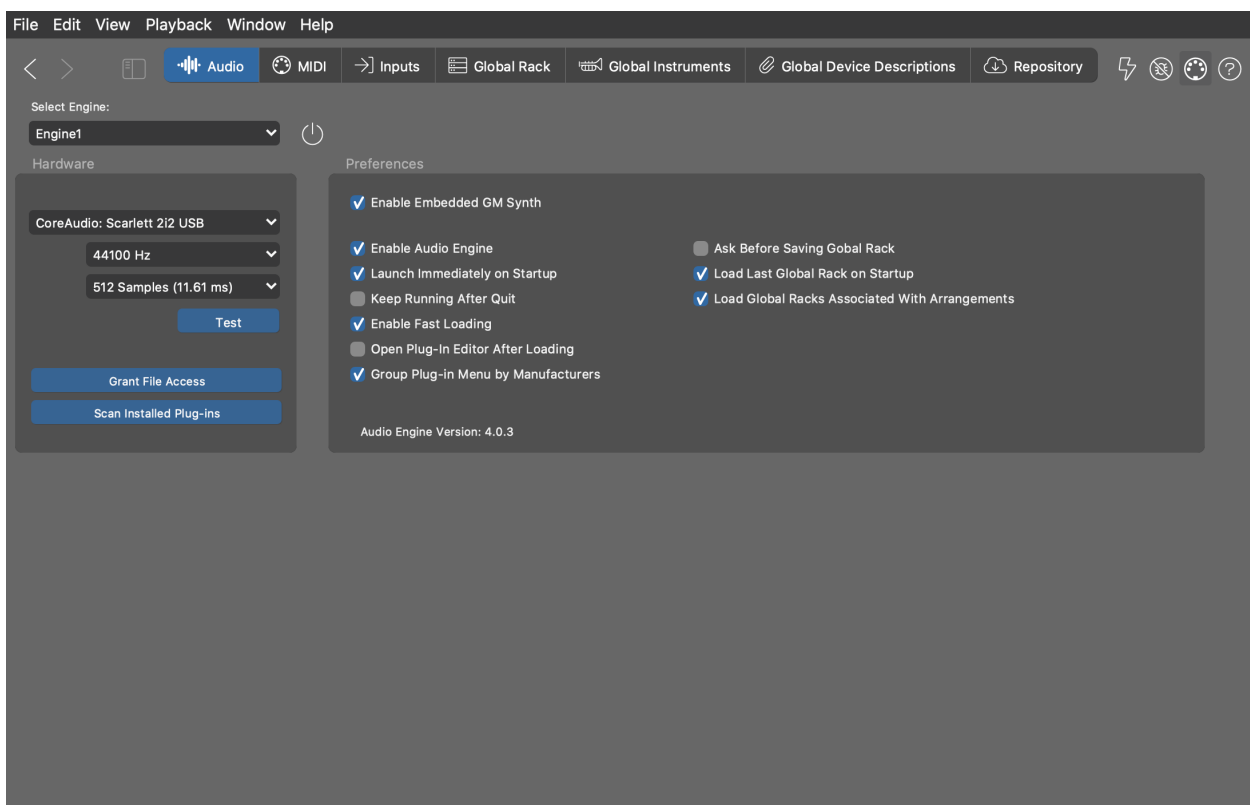
Related information

[Harmony Concept \(on page 7\)](#)

Audio/MIDI Setup App

Configure basic audio communication and edit the current global rack

Manage your audio settings, the **Global Rack** ([on page 39](#)), global **Device Descriptions** ([on page 36](#)) and your **Global Instruments** ([on page 40](#)) in this window. It can be opened from any window, either from the toolbar or via *Playback > Audio/MIDI Setup*.



Toolbar



Reset the Audio/MIDI system. This may help return to a more stable state after things went wrong.



This MIDI input indicator flashes when incoming notes are detected (Controller messages are not currently indicated).



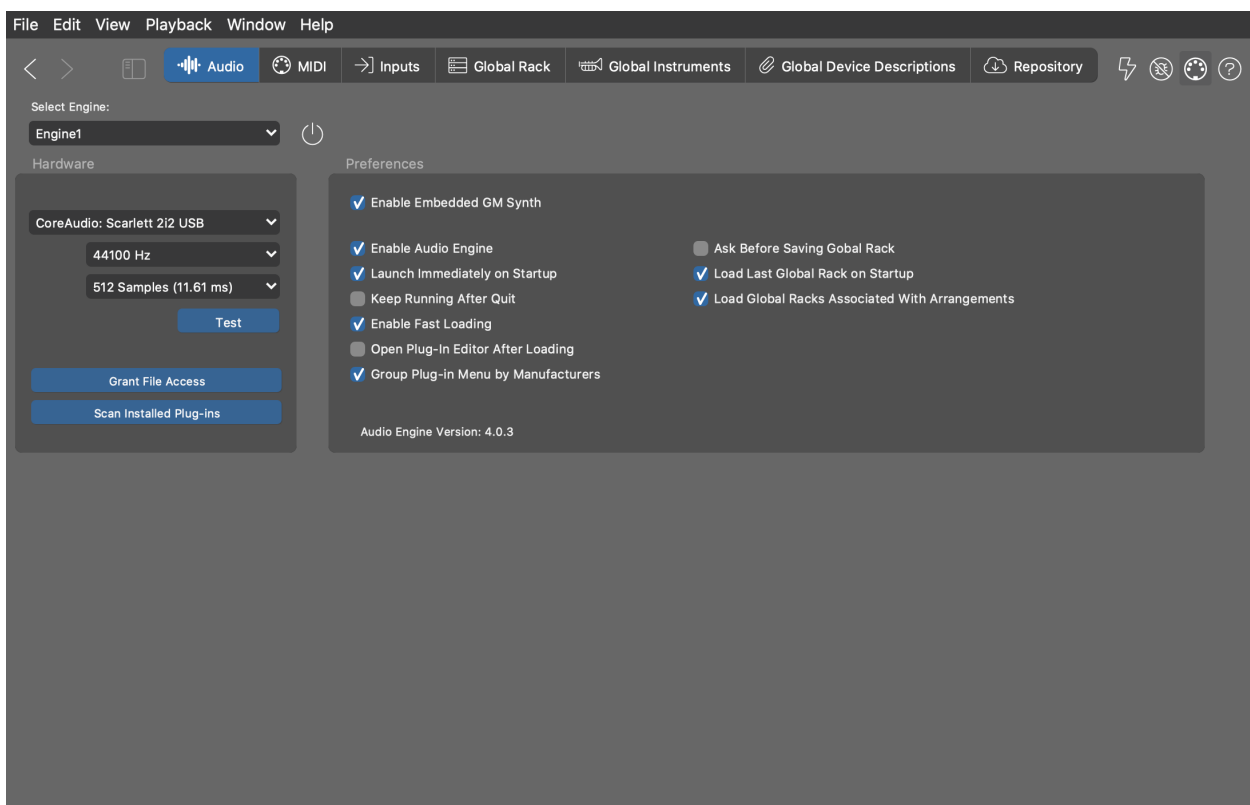
Open the **Embedded Help** browser.

Related information

[Audio System \(on page 32\)](#)

Audio Settings Page

Set your audio output device, sample rate and block size here. You are probably familiar with these terms from your DAW already. Please follow the tool tips for more information on a particular switch.



Selecting an Engine

Select from the menu button the **Audio Engine** or **Embedded GM Synth** the settings of which you want to adjust. You have the option of running multiple engines on different computers in your LAN.

Granting File Access

On macOS, audio plug-ins loaded by the **Audio Engine** may not immediately be able to access an external volume or folder where you are keeping their resources and sounds. If individual plug-ins don't load presets, contents or sounds

as expected, you may need to grant the Audio Engine access permission to the volume or folder where the sounds are stored.

Click on **Grant File Access** to open a file dialog where you open the volume or folder that includes those sounds. This will make macOS grant the Audio Engine access permissions to that location.

Scanning Installed Plug-ins

Pressing on **Scan Installed Plug-ins** will search the hard drive of the selected engine for installed audio plug-ins. When the subsequent dialog pops up, be sure to include all directories containing VST plug-ins on your computer before you run the scan.

Select what kind of scan you want to run.

1. **Update or Continue:** Looks for plug-ins that have changed since the last time a scan was run. If the last scan did not run to completion, this will continue the scan where it was interrupted. This is what Synfire does on start-up.
2. **Scan All:** Rebuild the entire list of plug-ins. Any plug-in that was put aside during a previous run because it is broken or not working will be ignored.
3. **Scan All (Reset):** Rebuild the entire list of plug-ins and also reset the list of broken plug-ins. This will look at every plug-in and try to make it work again.

A scan is usually relatively fast if you have no more than 500 plug-ins installed on your computer. For 1,000 or 2,000 or more plug-ins, it can take quite a while. If you need to interrupt a very long scan, you can resume it at a later time.



Note:

On Microsoft Windows, you may experience problems when multiple programs attempt to access the same ASIO driver. In order to be able to run the engines and a DAW in parallel, you might need to assign them to different audio output drivers. For example, you may want to use the ASIO driver for your DAW and the Windows Audio or DirectX drivers for the engines. On the Mac, running multiple Engines and DAWs at the same time is not a problem.

Preferences

Enable Built-in GM Synth

Synfire comes with a built-in sample player that offers a selection of GM compatible sounds. You should enable this only if you can't run the **Audio Engine** on your computer for some reason. Hosting the **Soundcase** plug-in is equivalent to using the built-in GM synth, however with less impact on performance.

Enable Audio Engine

You have the option to run Synfire without the **Audio Engine**, based on MIDI and external hardware alone. We do not recommend this, though.

Launch Immediately on Start-up

Disabling this will cause the **Audio Engine** to be launched only when it is first used. This does not save much time, but may be useful when working with simple MIDI projects.

Keep Running After Quit

If enabled, Synfire will leave **Audio Engine** running after it quits. When you restart Synfire again, the global rack is already loaded, which can save you time. We do not recommend this.

Fast Loading

Synfire avoids loading a preset, if a plug-in already has the same preset loaded. This can save load time, especially for large sound libraries. Disable this if you encounter any issues with loading plug-in presets.

Open Plug-in Editor After Loading

Disable this if you find it annoying. A few plug-ins also crash if their editor is opened too quickly after the plug-in was loaded.

Ask Before Saving Global Rack

Synfire quietly saves pending changes to disk. If you want to get notified and get a chance to decline, you can enable this option.

Load Last Global Rack on Start-up

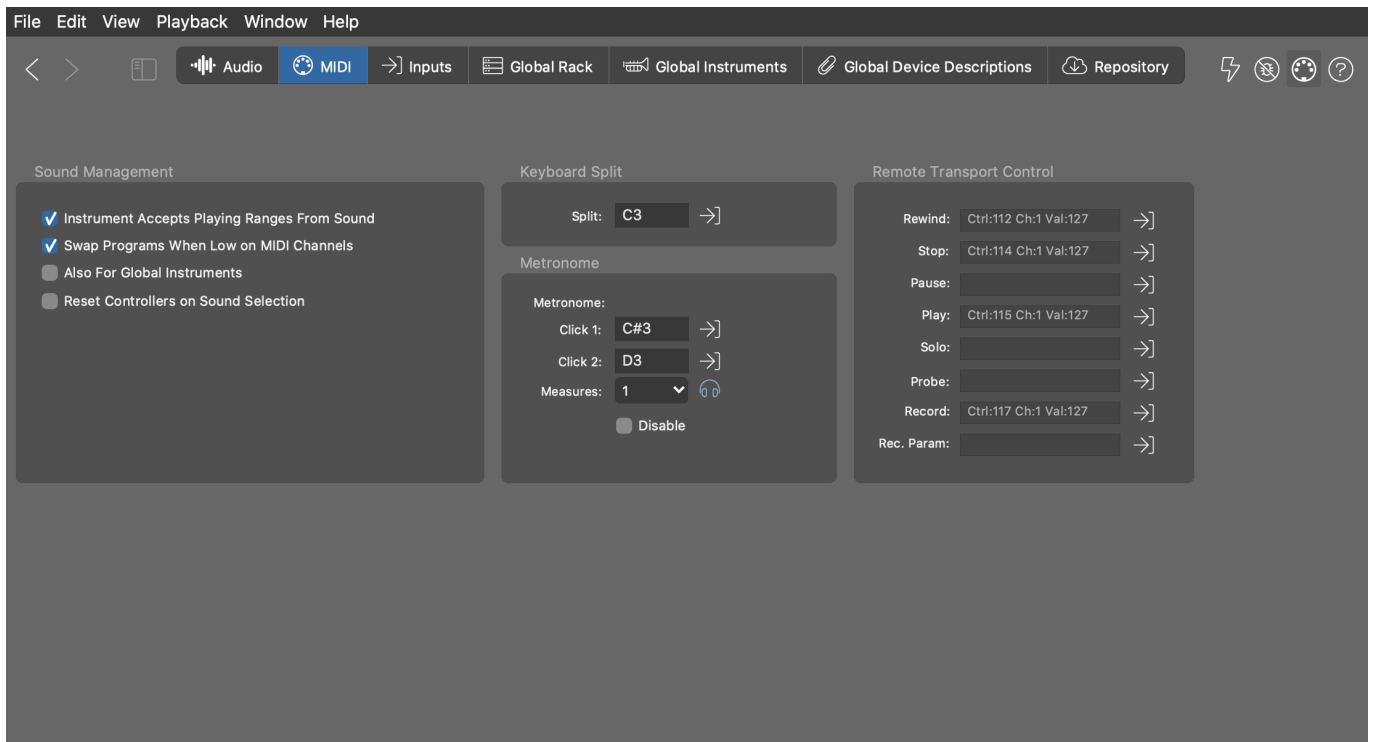
Synfire will load the last used Global Rack on start-up. Disable this if you want otherwise.

Load Global Racks Associated With Arrangements

Arrangements remember the Global Rack that was open when they were last saved and restore it when they are opened again. This is only a global default. You can enable or disable this link in each arrangement individually in the toolbar on its **Sounds Page**.

MIDI Settings Page

Setup dynamic sound allocation, keyboard split, metronome and remote control on this page. This configuration is saved as part of the **Global Rack** file.



Sound Management

Instrument Accepts Playing Ranges From Sound

With this option enabled, Synfire will copy the **Playing Ranges** of a **Sound** to an **Instrument** when you assign one. Be aware though that this will re-render current MIDI output to match the new ranges. You might want disable this, if you are concerned with preserving MIDI current output.

Swap Programs When Low On MIDI Channels

If more sounds are requested than there are channels available, unused sounds will be temporarily swapped out (default setting). This is especially important when you open multiple arrangements at the same time.

Also For Global Instruments

Makes above automatism also apply to **Global Instruments**. We recommend this, unless you have a dedicated plug-in or sound module reserved for Global Instruments exclusively.

Reset Controllers on Sound Selection

Sends a `Reset-All-Controllers` MIDI message after selecting a new sound. This global default can be overridden for each device.



Tip:

If you ever have the feeling that Synfire has messed with your sound assignments, press **Reset** on the window toolbar. This will flush dynamic allocation and request all sounds anew.

Keyboard Split & Metronome

Keyboard Split

When this is set, only keys below the split are considered for **Live Chord Detection** ([on page 266](#)) and higher notes can be played freely as an accompanying melody. Delete this to consider all notes for chord detection.



Click to learn a pitch from MIDI input. Let the listening time out to delete the pitch.

Click 1 & 2

Enter or learn the notes to be played for the metronome.

Lead-in

Number of measures to use for lead-in before a recording starts. Set this to zero, if you don't want the transport to rewind for a pre-roll.

Disable

You can disable the metronome altogether.

Remote Transport Control

Here you can configure MIDI notes or CC for **Start**, **Stop**, **Record** and other transport commands. These controls only work in the Arrange window.

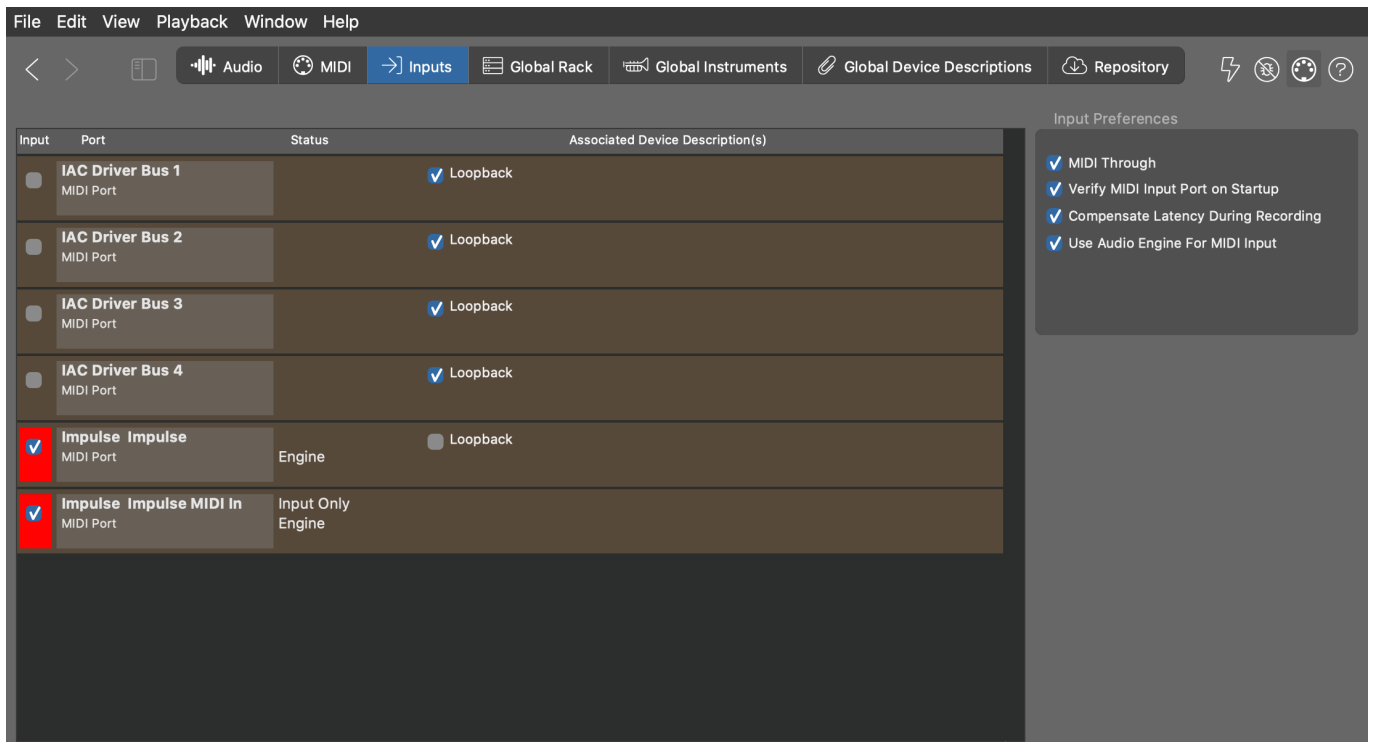
Related information

[Setting Up MIDI Input \(on page 236\)](#)

[Live Chord Detection \(on page 266\)](#)

Inputs Page

All currently known MIDI ports able to receive MIDI data are listed here. This configuration is saved as part of the **Global Rack** file.



Select Input Ports

Select any ports you want to use for recording phrases with Synfire by checking the respective box. It will turn red. Any input received on those ports should make the MIDI connector icon on the top toolbar flicker. Note however, that only incoming note messages are indicated.

If you connected hardware to your computer that does not appear in the list, check your cabling and USB driver setup and press the **Reset** button on the top toolbar to refresh the list.



Tip:

The **Reset** button can be used at any time to put the audio and MIDI setup back into a defined state (for example, if you suspect that something got messed up, or if there is no sound at all anymore). Your settings are not be affected by a reset.

Loopback Drivers

So-called **Virtual MIDI Cables**, or loopback drivers, can be used to route the MIDI output of Synfire to other software on your computer, for example a DAW. It also works the other way around. On the Mac, this is the **IAC Driver** made by Apple. For Microsoft Windows, there is a small selection of drivers available, for example **LoopBe** by nerds.de, or **MIDI Yoke**, and others.

Since these drivers bounce back to Synfire all data they just received from Synfire, there is a high risk of an infinite loop to occur, if at the same time **Midi Through** is enabled (Feedback). This infinite loop puts an extreme load on the Audio Engine. To prevent this, please mark such ports as **Loopback**.

Control Surfaces

With the switch **Control** you may tag any input port as a control surface or other MIDI controller that is not supposed to provide input for recording. Incoming messages can be mapped for remote control only.

Settings



MIDI Through: If enabled, incoming MIDI data is forwarded immediately to the instrument that was last selected. This is helpful when you want to play the currently selected instrument with an external MIDI keyboard.

The icon also indicates incoming MIDI notes by flashing.

Verify MIDI Input on Start-up

If enabled, Synfire will issue a warning on start-up if it can not find any MIDI ports enabled for input.

Compensate Latency During Recording

After a recording finished, Synfire analyzes the [Take \(on page 317\)](#) for timing problems and corrects these automatically. You can disable this, if you feel it leads to undesired results.

Use Audio Engine For MIDI Input

The **Audio Engine** ([on page 41](#)) supports a tighter timing than the user interface application of Synfire. This option makes the Engine receive incoming MIDI data and forward it to Synfire with timestamps already applied. You can disable this, if you experience problems on Windows with sharing USB MIDI drivers among multiple programs.

Snap Input To Harmony

Snaps all MIDI input to the current vertical scale. This mode is active only during recording, live chord detection and palette playback. If a global **Keyboard Split** is set, only notes greater or equal this split are snapped to scale during **Live Chord Detection** ([on page 266](#)). Of course all this only makes sense when a **Harmony** parameter is already present.

Operate Drone in MIDI Mode

A **Drone** ([on page 43](#)) can optionally be operated in MIDI-only mode. If so it will no longer host an audio plug-in, but receive and forward MIDI data only. Consider using a **MIDI Drone** ([on page 44](#)) instead.



CAUTION:

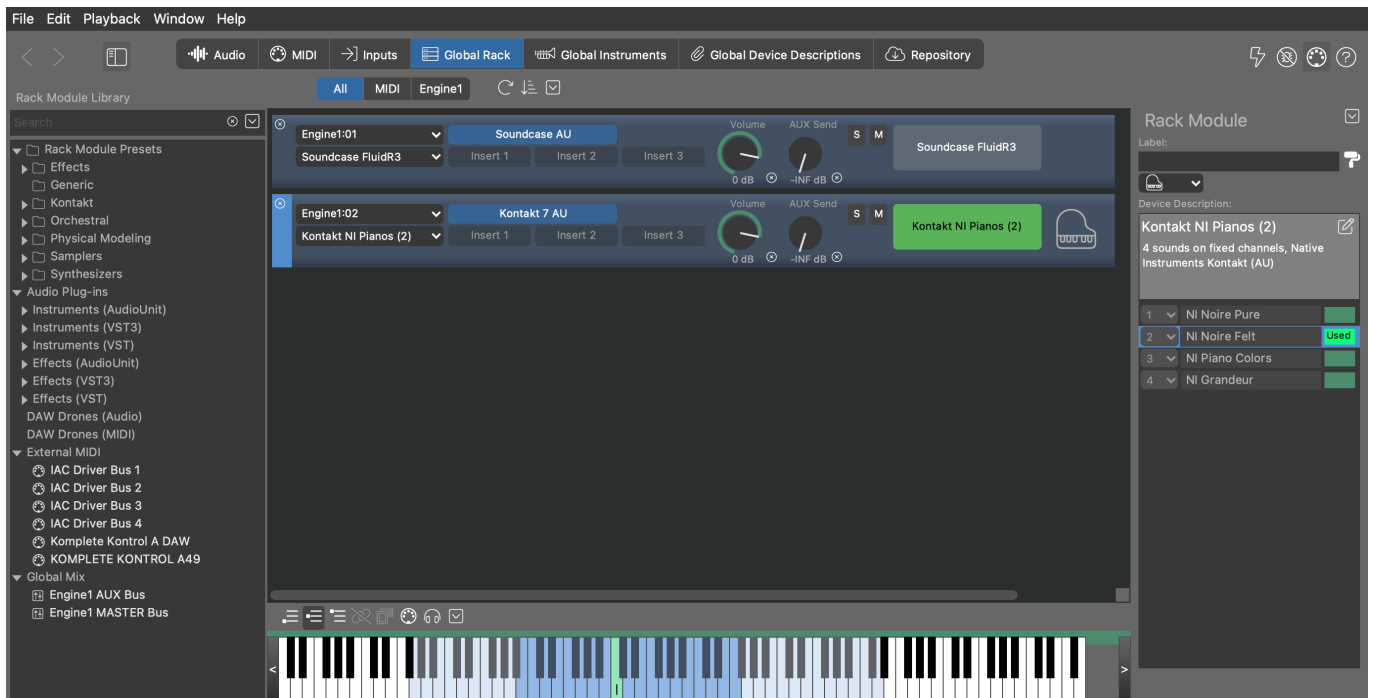
Under Windows, problems may occur if multiple programs attempt to use the same USB MIDI drivers at the same time. Especially prone to this issue are cheap drivers that often accompany very inexpensive MIDI hardware. If you wonder why Synfire is unable to receive data from your hardware, there is probably another program already using the USB driver. In order for Synfire and other software to receive MIDI at the same time, you may need to use separate USB interfaces, or look for a more capable driver, if possible. Since this is a frequent problem, you should visit the user forum for the latest solutions (users.cognitone.com)

Related information

[Setting Up MIDI Input \(on page 236\)](#)

Global Rack Page

On this page you see the **Global Rack** ([on page 39](#)). This rack is hosting sounds that are available to all open arrangements and other files at the same time. Learn more [about editing racks \(on page 131\)](#) here.



Related information

[Rack Editor \(on page 131\)](#)

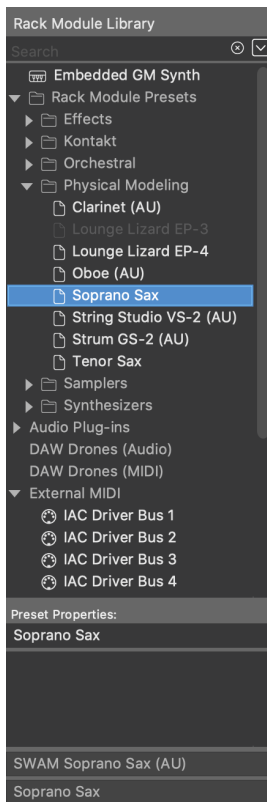
Sidebar: Rack Module Library

[Adding sounds made easy](#)

[Video Tutorial](#)

This browser on the left sidebar shows various items that can be used to create or change a **Rack Module** in order to provide sounds for instruments. Open the browser with  on the window toolbar.

Browse and **search** for items that you can **drop** on an **Instrument**, a **Rack** or a **Rack Module** in order to create or change a rack module and use its sounds for instruments.



Embedded GM Synth: Drag it to an **Instrument** or **Rack** if you want to use a sound of the embedded synthesizer. The advantage being that your arrangement or Sketch will work on any installation of Synfire, not depending on specific plug-ins. This item is grayed out if the embedded synthesizer is disabled.



Rack Module Presets: All presets you have saved so far will appear here for browsing. Create additional folders and organize your presets as you see fit. In the panel below, you can edit names and comments.

Drag to an **Instrument** or **Rack** to use the sounds of this preset.

Drag a preset with an effects plug-in to a **Rack Module** to load the plug-in as the module's insert effect.



Audio Plug-Ins: Find all scanned AudioUnits, VST and VST3 listed here. A matching device description will be looked for and suggested when you drop a plug-in on an **Instrument** or **Rack**. Dropping an effects plug-in on a **Rack Module** will load it as the module's insert effect.



DAW Drones (Audio, MIDI): If the DAW is open and has **Drones** loaded, these will be listed here. Drag one to an **Instrument** or **Rack** to claim it for your arrangement and populate it with a plug-in and device description.



External MIDI: Find all MIDI ports known to the system listed here. **Drag** one to the empty area of a **Rack**, or to an **Instrument**, if you want to send rendered MIDI output to this external hardware or software.

A port is disabled when it is already in use. You can edit the device description using the **Parameter Inspector** on the **Sound** tab to add more channels to the device.



Global Rack Modules: Find all rack modules of the current **Global Rack** here. **Drag** one to an **Instrument** or into a **Rack** to use a copy of it in your arrangement.



Global Instruments: **Drag** one to an **Instrument** to use it in your arrangement. The advantage being that your arrangement or Sketch will work on any installation of Synfire, not depending on specific plug-ins.



Global Mix: These are placeholders for a global MASTER and AUX rack module. **Drag** one to the empty area of your **Global Rack** to add it to the final mix.

Reclaiming a Drone

When you open a DAW project with **Drones** loaded, these will connect to Synfire and appear listed in the rack module library. Those that are still available can be used by your arrangement, but some Drones may be disabled (grayed out) because they are already in use or belong to a different arrangement.

If a Drone belongs to an arrangement that you no longer have access to, or that happens to be broken for other reasons, you have the option to reclaim the Drone and add it to the current arrangement. Select it in the browser and click on **Lock** icon to unlock it and add it to your arrangement.



DANGER:

You should do this only to repair a broken setup, or when the link between DAW project and arrangement somehow got lost. Once a Drone has been reclaimed, the original arrangement that owned the Drone will no longer find it.

Related information

[Rack Module Preset \(on page 38\)](#)

[Rack Module \(on page 133\)](#)

Rack Editor

There are three types of racks. **Arrangement Racks** ([on page 24](#)), **Library Racks** ([on page 152](#)) or the **Global Rack** ([on page 39](#)). Their **Rack Modules** ([on page 38](#)) (aka Modules) appear listed in this view.



Window Toolbar



Opens the **Rack Module Library** ([on page 47](#)) on the left sidebar where you can search for **Rack Module Presets** and other items and drop them on the rack to add a new **Rack Module** ([on page 38](#)) or load a plug-in and device into an already existing module.

Rack Toolbar

All, MIDI, Embedded, Engine1

Select one of these to focus on the modules hosted on that type of port. This selection also determines which host a new module is added to when you **double-click** in the empty area of the rack.



When active, the arrangement remembers the **Global Rack** ([on page 39](#)) that is currently open. Next time you open the arrangement, you will be asked whether to also load that global rack.



Loads the **Global Rack** ([on page 39](#)) that was open at the time this arrangement was last saved.



Open the current **Global Rack** ([on page 39](#)) in the **Audio/MIDI Setup** ([on page 159](#)) app.



Reload all rack modules. This may help to restore a more stable state if something went wrong.



Sort all rack modules by type and port.



Opens a pop-up menu to control the **Audio Engine** ([on page 41](#)) and purge unused modules, devices or ports.

Selection, Drag & Drop

- **Select** a module to see its [contents on the right sidebar \(on page 135\)](#). Select a channel on the sidebar to open a **Keyboard Widget** where you can play a sound and examine its **Playing Ranges**.
- **Drag** a module to another rack to copy it.
- **Drop** an item from the **Rack Module Library** ([on page 47](#)) to insert a new module or load a plug-in and device into an already existing module. You can drop items between the modules.
- **Drop** an effects plug-in or effects preset from the **Rack Module Library** ([on page 47](#)) on an existing module to load it as the insert effect.
- **Move** modules up or down to change their order.

Related information

[Rack Module \(on page 133\)](#)

[Sidebar: Rack Module Library \(on page 47\)](#)

[Device Inspector \(on page 135\)](#)

Rack Module

Setup a **Rack Module** ([on page 38](#)) to provide the **Sounds** ([on page 37](#)) you need.



Audio Port

Moves the module to another host or port. Select an **Audio Engine Port** or **Drone** as the target where you want the module to be moved. Learn how to move a module to a Drone in a DAW [here \(on page 242\)](#).

Output Port

Pick an external MIDI port for the module to send its output to (MIDI modules only). Any port may receive output only from a single module.

Device Description

Select a known **Device Description** that matches the plug-in or external hardware, or perform one of these actions:

Detect

Matches the current state of the plug-in with previously saved **Rack Module Presets** and select the device description associated with those.

Unknown Device

Go without a device description for now.

Create New

[Create a new device description \(on page 237\)](#) for use with this module.

Extract From Plug-in ...

Attempt to [extract a device description \(on page 239\)](#) from the plug-in.

Download From Repository ...

Search the **Online Repository** [\(on page 185\)](#) for a device description that matches the current plug-in.

Show Device Layout

Opens an inspector showing the channel layout of the device you selected for the module.

3-Way Plug-in Button

This button allows for three tasks to be performed:

1. Load or save a **Rack Module Preset** [\(on page 38\)](#). New presets are listed in the **Rack Module Library** [\(on page 47\)](#) automatically.
2. Open the current **Plug-in Editor**.
3. Load an **Audio Plug-in**.

Insert FX Slots

Up to three slots are available for effects plug-ins (Express and Pro).

AUX Send

Controls the amount of post-effects signal sent to the [AUX Module \(on page 39\)](#) (If the **Global Rack** has one).

Volume

Overall output level for the module. Don't use this for mixing. Keep at 0 dB unless you need to compensate for grossly unequal audio levels.

Solo

Temporarily mutes all other rack modules.

Mute

Temporarily mutes only this rack module.

Colors, Icons

You can customize a rack module to improve your oversight.

Label

Enter a name for your rack module.

**Note:**

Keep in mind that audio controls are for a whole plug-in. If a plug-in hosts multiple instruments on different MIDI channels, all of them are affected equally.

Option Menu

Exclude From Rack

Detaches the rack module from the current rack, so you can attach it to another. Makes it a **Transient Rack Module** ([on page 39](#)) that is no longer saved with the current rack.

Include With Rack

Attaches a **Transient Rack Module** ([on page 39](#)) to the current rack, making it a permanent part of it.

Commands

- **Drag** a rack module to another rack to copy it.
- Keyboard shortcuts for **Cut**, **Copy**, **Paste** or **Duplicate** also work on a rack module.

Related information

[Special Rack Modules \(on page 39\)](#)

[Rack Module Preset \(on page 38\)](#)

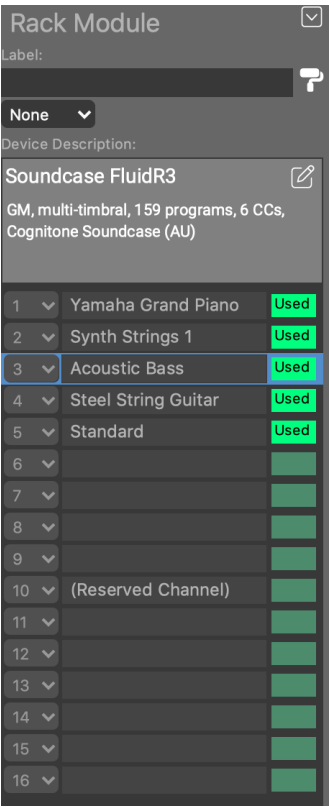
[Sidebar: Rack Module Library \(on page 47\)](#)

[Relocating From Engine to DAW \(on page 242\)](#)

Device Inspector

Shows a brief overview of the **Device** used in a **Rack Module**, listing its channels and which sounds are selected and used at this time.

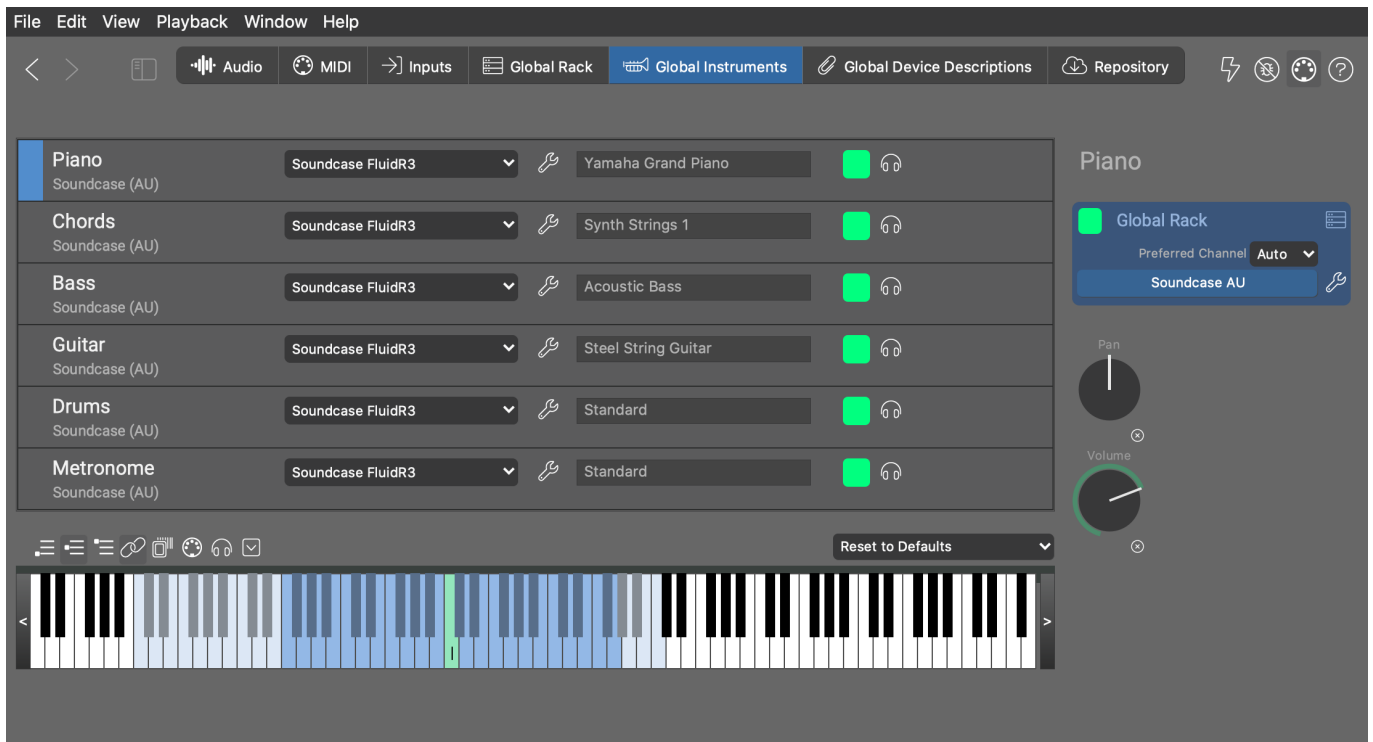
Select a channel to make a keyboard controller appear, allowing you to play or preview the sound.



Jump to the device editor for more details, or in-depth editing of the **Device Description**.

Global Instruments Page

On this page you configure the six **Global Instruments** ([on page 40](#)). This configuration is saved as part of the **Global Rack** file.



Selection & Configuration

Select an instrument and edit its configuration on the front panel and on the sidebar. Hit the **space bar** to render a preview phrase with the selected instrument.

Rack Module Menu

Select the global rack module that provides the sound for the instrument.



Open the **Sound Wizard** ([on page 196](#)) to search for or create a rack module, device and sound for the instrument.

Status Indicator

The square is lit to indicate the instrument's current status.

1. **Green:** Sound is online and ready.
2. **Orange:** Desired sound could not be found. A replacement is currently used.
3. **Red:** Desired sound could not be found and neither a replacement.



Preview the instrument with a phrase suitable for its **Category** ([on page 34](#)).

Volume, Pan

These are defaults when the instrument is used for global tasks. If an arrangement references a global instrument, the arrangement may have its own [Volume \(on page 323\)](#) or [Pan \(on page 296\)](#) parameters in place. Click on the small X to clear the assignment.

Playing Ranges

Reset to Defaults

Open this pop-up menu and select a preferred device to provide default sounds for all instruments. This works best with GM compatible devices or devices that have categories assigned to all sounds.

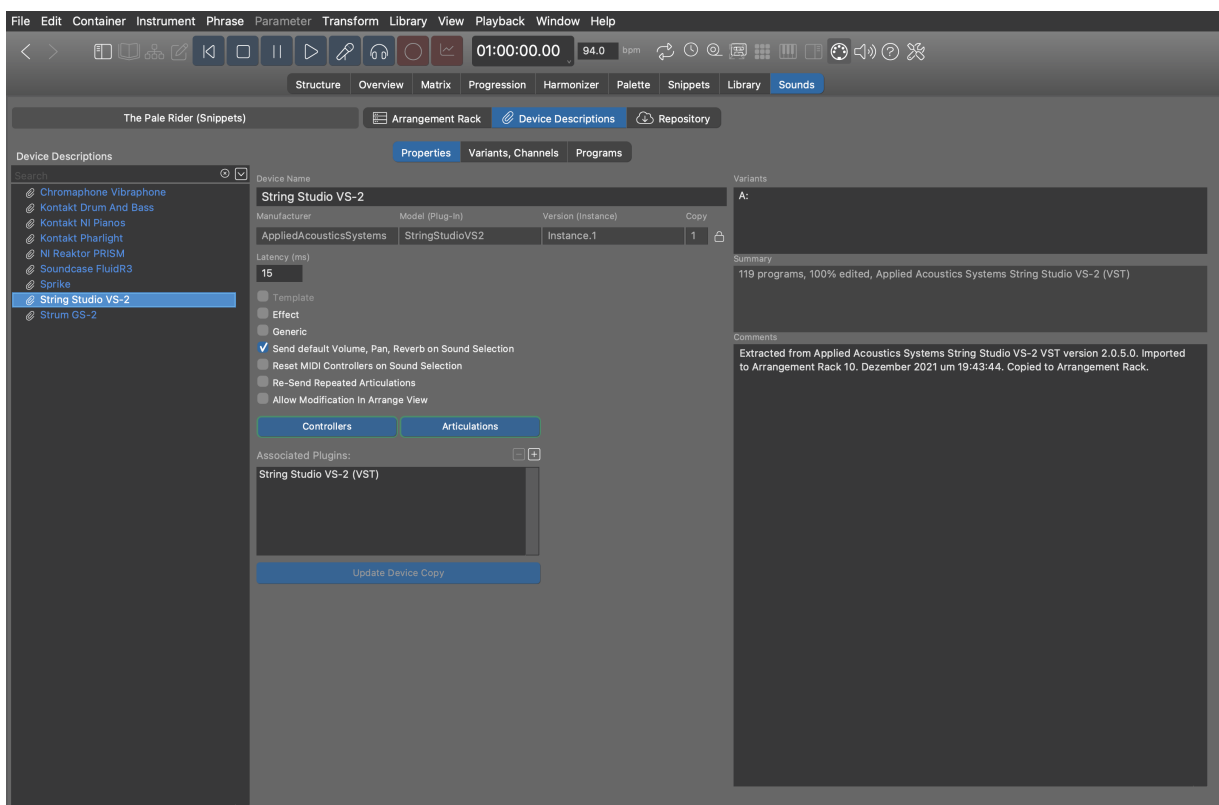
Toolbar

Select and adjust **Playing Ranges** [\(on page 58\)](#) as explained here.

Devices Page

Under the tab **Device Descriptions** you manage your collection of **Devices** [\(on page 36\)](#). Devices managed inside an **Arrangement** [\(on page 19\)](#) are a part of that arrangement. They can't be used by other arrangements unless you copy them with **Device > Save to Global Rack**.

Devices managed by **Audio/MIDI Setup** are global. They can be used by all **Global Racks** and copied into **Arrangements, Sketches** or **Libraries**.



Saving Devices

Synfire automatically saves pending changes of all devices to disk. With the **Audio/MIDI Setup** window, you can also save a device manually with **File > Save As ...** to a different place.

Device Browser

This browser helps you organize all your **Device Descriptions** in folders. Global devices are maintained by the **Global Rack**. The folder structure is mirrored in the file system, so every device is an actual file on disk.

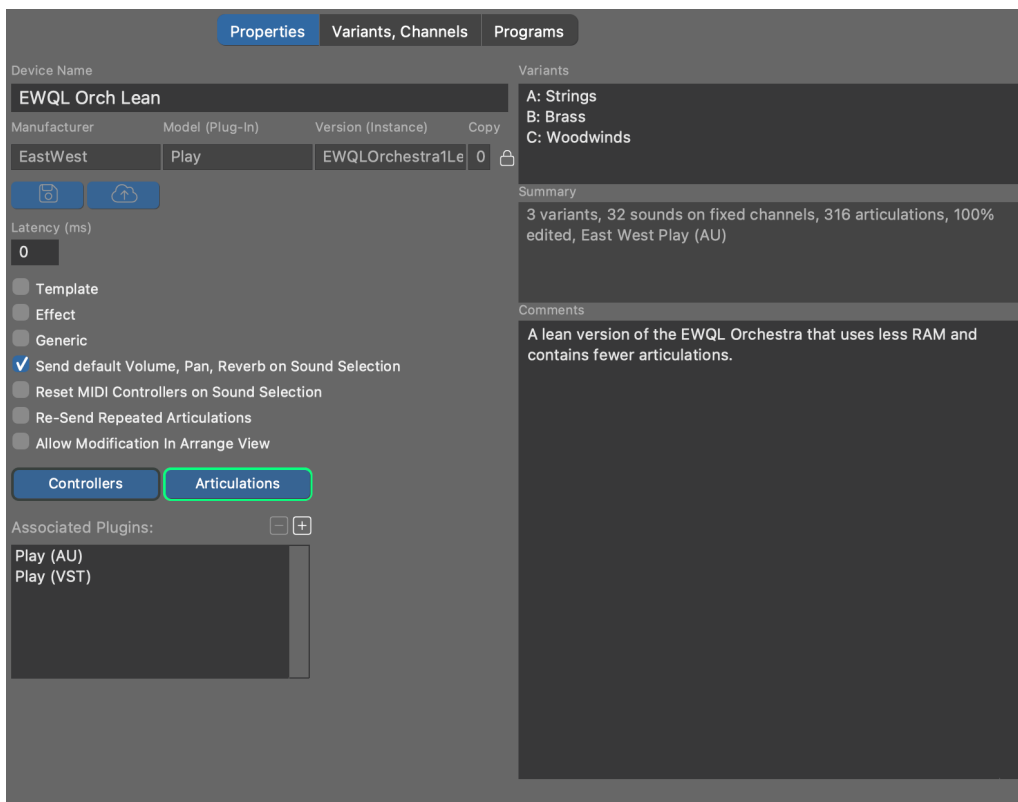
The devices that were copied into an **Arrangement Rack** however are stored internally with the arrangement. You won't find them on your hard disk as separate files.

Related information

[Devices \(on page 36\)](#)

Device Properties

On the tab **Properties** you can edit general settings of a device.



Device Name

The name of the device is used to display it on the list and elsewhere in the software. You can change this name at any time.

Manufacturer

This designation should contain a short name for the manufacturer, e.g. **NI** for Native Instruments, or **YAMAHA**. Please always use exactly the same name for the same manufacturer.

Model (Plug-in)

Name of the hardware model or plug-in: **JV2080**, **MU90R**, **EWQLPlay**, **Kontakt6**, etc.

Version (Instance)

In case it's a plug-in, put a designation for the loaded preset here that is described by the device description: **My Orchestra Kit**, or **Misc Basses**. You can leave this empty for hardware synthesizers.

Copy

This number is incremented every time a device is copied or cloned. It is for your information only, so you can determine which of multiple copies of a device is probably the most current.



CAUTION:

Manufacturer, Plug-in/Model and Version are used to create a unique file name the device is saved to. Where possible, you should not change this identifier anymore after you began using it in your projects. In order to change the identifier, you need to unlock the input fields first. Synfire will propagate the change to all currently open files to ensure that instruments still point to the same device.

Latency

Enter a value in milliseconds by which MIDI data shall be sent ahead of time in order to compensate for the device's latency.

Template

Check this box, if this device description is supposed to be a **Device Template** ([on page 37](#)).

Effect

Check this box if the plug-in or hardware is an effects processor.

Generic

Indicates this device was created automatically when one was needed, in order to serve as a starting point. You may remove this box and edit the device to fully suit your needs.

Send Default Volume, Pan, Reverb on Sound Selection

Whether to automatically send **Volume** ([on page 323](#)), **Pan** ([on page 296](#)), **Reverb** and other mixing-related CC whenever a sound is selected. Disable this if Synfire shall not interfere with a mix you manually set up in your DAW or with external hardware.

Reset MIDI Controllers On Sound Selection

Some devices require that MIDI CC be reset to default values after a new program/patch was selected. If you notice that your device is behaving strangely with respect to sustain pedals, pitch bend or modulation, you may need to check this option.

Re-Send Repeated Articulations

Send **Articulations** ([on page 204](#)) every time, regardless whether the previously sent articulation has not changed.

Allow Modification In Arrangement

Whether you want the **Instrument Inspector** of an arrangement to show the full details of the sound you selected for an instrument. Although this spares you a visit to the device editor on the **Sounds** page, it adds a lot of information that might distract you. This option is always disabled for global (shared) devices.

Custom Controllers, Articulations

Edit the **Custom Controllers** ([on page 202](#)) or **Custom Articulations** ([on page 204](#)) available for this device.

Updating an Embedded Device

If a device was originally copied into the arrangement, you can update it to the current version of the **Global Device Description** ([on page 39](#)). This imports a new copy into the arrangement.

Device Variants & Channels

The MIDI ports and channels of a **Device** are configured on the **Variants, Channels** tab. One device may support more than one port and channel layout, called **Variants**.

The screenshot shows the 'Variants, Channels' tab in the Synfire software. The top bar has three tabs: 'Properties', 'Variants, Channels', and 'Programs'. Below the tabs, a dropdown menu shows 'EWQL Orch Lean:A Strings'. The main area is titled 'Device not currently used by global rack'. It contains a table with 9 rows, each representing a variant. Each row has a number, a dropdown menu, a green bar, a stack icon, a checkbox, and a dropdown menu for selecting an instrument. The 5th row, '18V KS Master', is selected and highlighted in blue. To the right of the table is the 'Fixed Sound' panel. It has a 'Sound Name' dropdown set to '18V KS Master', a 'Category' dropdown set to 'Violin', and a 'Method of Selection' dropdown set to 'Program Only'. Below these are 'MSB' and 'LSB' fields, both set to 0. There is a 'Program' dropdown set to 'None' and a 'GM' checkbox. Below the 'Fixed Sound' panel are buttons for 'Controllers' and 'Articulations'. At the bottom, there is a section for 'Velocity' (90), 'Latency (ms)' (50), and 'Volume'. A piano roll keyboard is visible at the very bottom.

For most devices a single port with 16 MIDI channels is sufficient. For comprehensive sound libraries, you may want to add up to four **Variants** A, B, C, D. Each variant represents a different configuration, operation mode, or preset of the same device and supports up to 16 MIDI channels. The advantage of using variants versus creating multiple devices is that **Custom Controllers** ([on page 202](#)), **Articulations** ([on page 204](#)) and **device properties** ([on page 137](#)) need only be defined once for all variants.

Every MIDI channel can be set to one of three types:

Fixed Sound

A single sound is permanently addressed on this channel. Its properties can be set using the inspector on the sidebar.

Dynamic Program Selection

An arbitrary program or patch of the device is selected by sending a MIDI bank and program selection message. The list of available sounds is managed on the tab **Programs** ([on page 141](#)).

Reserved Channel

On this channel only those sounds can be selected that have the same channel number set as their **reserved channel** (for example, this is the case for GM drum kits that require channel 10). These sounds are also managed on the tab **Programs** ([on page 141](#)).

Multiple channel types can be mixed in the same variant. If a device has multiple variants with dynamic channels, Synfire considers all of them for sound assignments equally.

A green indicator labeled **Used** indicates whether a channel is currently in use by one or more instruments, which are listed on the sidebar for your information.



Tip:

You can use this page to edit a sound's properties, controllers and articulations while the plug-in is loaded and then call **Copy Sound To User Bank** from the options menu to save it permanently to the **Programs** page. This is handy when you have many sounds to add for a large library.



Tip:

For General MIDI (GM) synths and sound generators, we recommend you always exclude channel 10 from dynamic allocation. The standard requires it be reserved for drum kits.



Note:

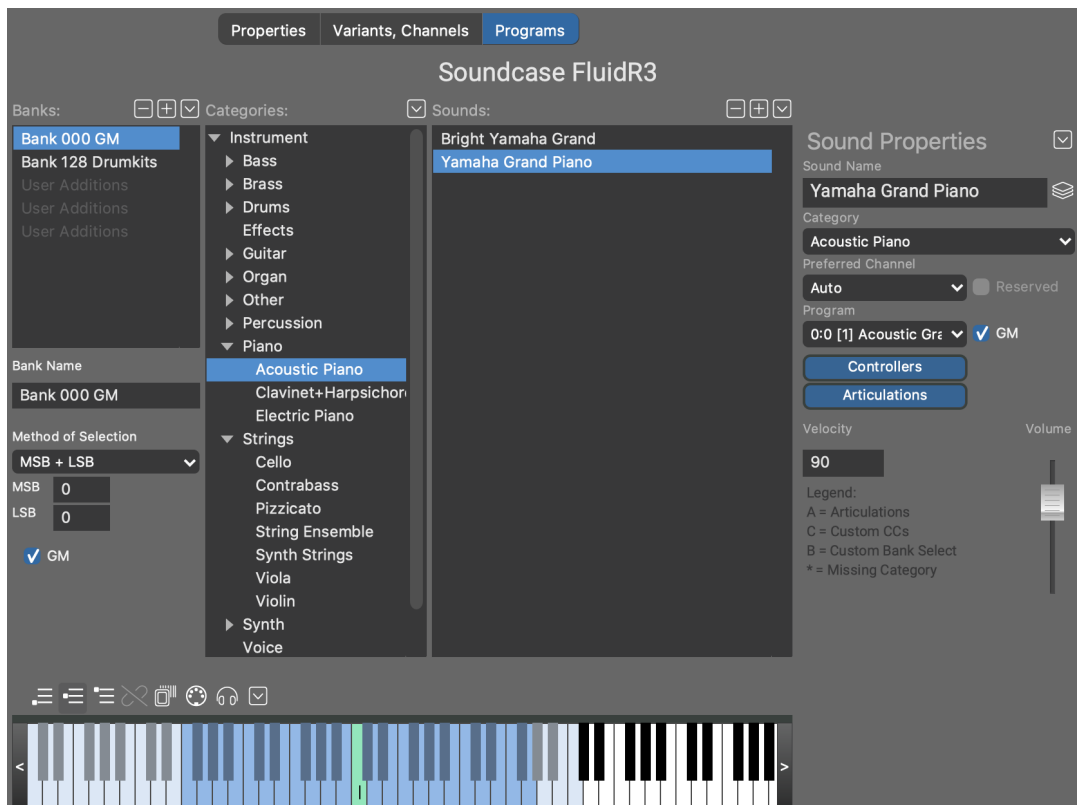
Dynamic channels are managed by Synfire automatically. When multiple arrangements are open at the same time, the current foreground window may temporarily put the sounds of a background window aside in order to ensure all sounds of the foreground window are ready to play.

Related information

[Dynamic Sound Allocation \(on page 42\)](#)

Device Programs

Programs or patches that are selected by sending a MIDI message are managed on the tab **Programs**. Sounds are organized in Banks and classified by **Category** (on page 34).



Sound Banks

The MIDI standard allows a maximum of 128 sounds per bank. Sound banks are most common for hardware synthesizers and their software emulations. If your device doesn't support sound banks, create a single bank that takes all sounds.

Use the **+** and **-** buttons of the banks list to add or remove banks.

Name

Be sure to name each bank.

Method of Bank Selection

For audio plug-ins, the method **Plug-in Preset Selection** usually does the trick. Please consult the MIDI documentation of your device about the MIDI messages sent to select a particular bank and patch/program. Pick that type of message from the drop-down menu. The variables **MSB** and **LSB** are placeholders filled in by the particular sound.

GM (General MIDI)

Check this box if all sounds in the bank conform to the **General MIDI Standard** (GM). The standard defines a set of program change numbers, names and categories, sparing you the effort of setting up

the sounds yourself. Use the list's options menu (right-click) **Initialize General MIDI** to populate an entire bank with sounds according to the standard. Already existing programs will be preserved.

Categories

This tree shows a hierarchy of **Instrument Categories** ([on page 34](#)). They are basically like folders.

Drop one or more sounds on a category to assign that category to them.

With **Option > Preview Phrase** on the list, you can cut, copy or paste any **Phrase** ([on page 17](#)) you want to use to preview sounds of that category.

Sounds

The list of sounds can be sorted by **Name, Program, Category**. You may select one or more sounds to edit their properties on the sidebar inspector.

- **Select** one or more sounds to edit them as a group together.
- **Drag** one or more sounds to a different **Sound Bank** to move them. Hold down  **Ctrl** to copy them.
- Use keyboard commands **Cut, Copy, Paste** to copy or move one or more sounds to and from other **Devices** or **Sound Banks**.

Creating New Sounds

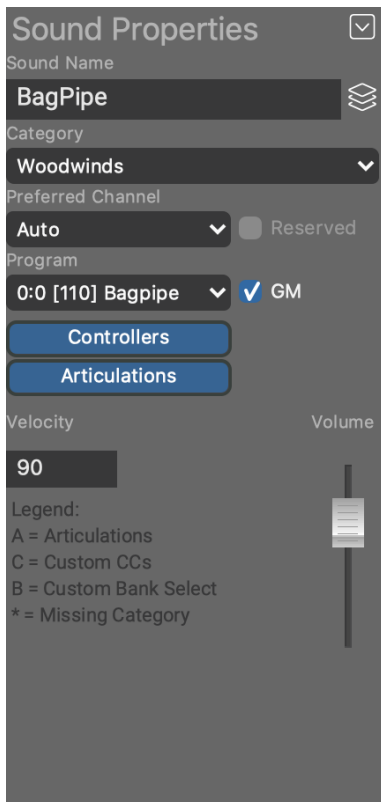
Do the following to add a new sound to the list from scratch.

1. Select the bank it should be added to.
2. Select an appropriate category in the tree.
3. Click on  in the list toolbar.

Now fill in the form to configure the sound.

Sound Properties

Edit the properties (meta-data) of a **Sound** ([on page 37](#)) on the **Parameter Inspector** ([on page 54](#)) or the **Sounds** page.



The screenshot shows the 'Sound Properties' dialog box. At the top, there's a title bar with a checkmark icon. Below it, the 'Sound Name' field contains 'BagPipe'. The 'Category' dropdown is set to 'Woodwinds'. The 'Preferred Channel' dropdown is set to 'Auto', and there's a 'Reserved' checkbox which is unchecked. The 'Program' dropdown is set to '0:0 [110] Bagpipe', and there's a 'GM' checkbox which is checked. Below these are two buttons: 'Controllers' and 'Articulations'. At the bottom, there's a 'Velocity' field set to '90' and a 'Volume' slider. A legend at the bottom left explains the abbreviations: A = Articulations, C = Custom CCs, B = Custom Bank Select, and * = Missing Category.



Browse **Template Devices** ([on page 37](#)) for already known sound properties in order to copy them into this sound.

Sound Name

The name that shows up next to your **Instrument** ([on page 33](#)) and when you browse for sounds.

Category

Pick a **Category** ([on page 34](#)) from the menu, or drop one or more sounds on the desired category found on the tree.

Method of Selection

How the program/patch represented by this sound is [selected \(on page 141\)](#) (optional).

Preferred Channel

Set only if the sound requires or prefers a specific channel. If this is a reserved channel, also tick the box **Reserved**. If the sound is always found on the same channel, you must edit the channel on the [Variants, Channels \(on page 140\)](#) tab, not here!

Program

The number used to select the sound with a MIDI program change message (1 - 128). Check the **GM** box, if program change and instrument category conform to the **General MIDI** standard.

Controllers, Articulations

Setup optional **Custom Controllers** ([on page 202](#)) and **Articulations** ([on page 204](#)) for the sound.

Those defined for the device already need not be redefined.

Velocity, Volume

These are optional preferences used only for previewing phrases when no such values are available otherwise.

Latency

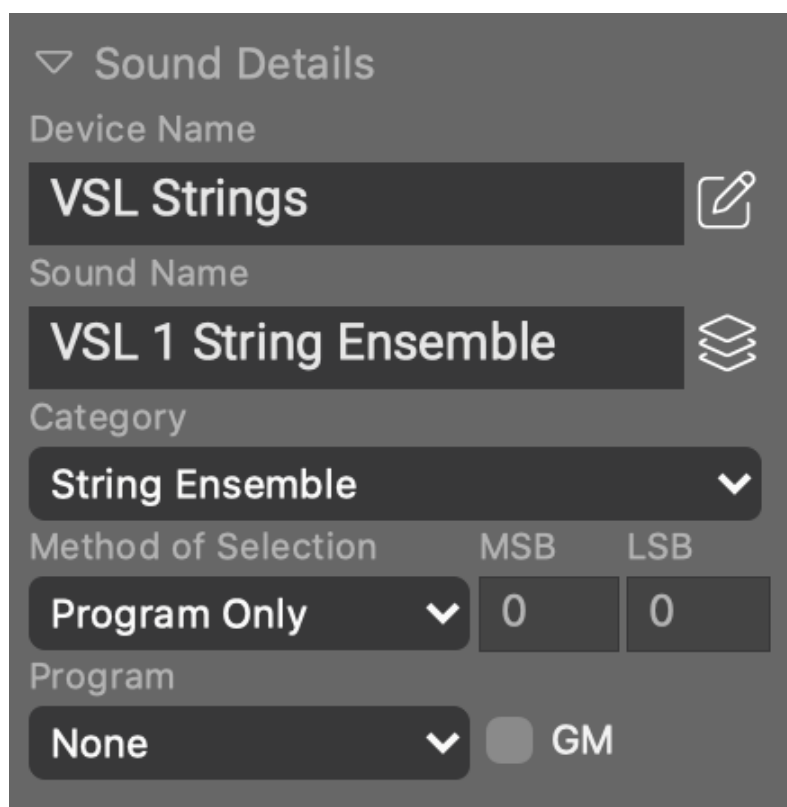
Sound latency (milliseconds). Added to the device latency.

Additional Information

Explains why a sound is not currently audible. Be aware that if you edit a device description, it is not necessarily "online", i.e. currently used by a **Rack Module**. If so, you can't hear the sounds you are editing, of course.

Sound Details In Arrangement

Some properties of a sound can be made visible and edited on the **Parameter Inspector**. This form is usually read-only (grayed out) unless you enabled **Allow For Modification in the Arrange View** with the device description. Device descriptions created by the **Sound Wizard** for convenience do allow this by default, so you can easily alter a sound's properties without visiting the device editor.



The screenshot shows a 'Sound Details' panel with the following fields and controls:

- Device Name:** A text field containing 'VSL Strings' with an edit icon (pencil) to its right.
- Sound Name:** A text field containing 'VSL 1 String Ensemble' with a stack icon to its right.
- Category:** A dropdown menu showing 'String Ensemble' with a downward arrow.
- Method of Selection:** A dropdown menu showing 'Program Only' with a downward arrow.
- MSB:** A numeric input field containing '0'.
- LSB:** A numeric input field containing '0'.
- Program:** A dropdown menu showing 'None' with a downward arrow.
- GM:** A toggle switch that is currently turned off.



Jump to the device editor where you can edit the sound and all other sounds of the device in context.

Related information

[Instrument Properties \(on page 55\)](#)

Repository

Cognitone provides a collection of **Device Descriptions** that you can download from inside Synfire. On the tab

Repository, you have access to this database.

The screenshot displays the Synfire Repository interface. At the top, there's a search bar and filters for 'Search Results' and 'Any Plug-in'. Below this is a table listing various device descriptions. The table has columns for the device name, manufacturer, type, rating (stars), and the number of users who have edited the device. The 'Korg MonoPoly' device is highlighted in blue.

Device Name	Manufacturer	Type	Rating	Users (edited)
Garritan: GPO5	Garritan PO 5 Template	PT	★★★★★	542 (80% edited)
Garritan: JABB	Garritan Jazz and Big Band	T	★★★★	68 (85% edited)
GreenOakSoftware: Crystal	Crystal	P	★★★★	114 (79% edited)
IKMultimedia: MODOBASS	MODO BASS	P	★★★	1 (20% edited)
Internal: ExternalGlobals	External Global Instruments		★★★★★	6 (80% edited)
Internal: ExternalGlobals	External Global Instruments			6 (100% edited)
Internal: ExternalGlobals	External Global Instruments (GM)	GM		129 (80% edited)
Internal: ExternalGlobals	External Global Instruments (GM)...	GM	★★★★	128 (100% edited)
Internal: SoftwareGMSynth	Internal GM Synth	GM	★★★★★	129 (80% edited)
Internal: SoftwareGMSynth	Internal GM Synth	GM		127 (80% edited)
Internal: SoftwareGMSynth	Internal GM Synth	GM	★★★★	129 (80% edited)
KAWAI: K1	Kawai K1	M		64 (20% edited)
KAWAI: K11	Kawai K11	M		135 (20% edited)
Korg: Karma	Korg KARMA	GM		905 (29% edited)
Korg: Kronos	Korg Kronos GM	GM	★★★★★	128 (100% edited)
Korg: KronosV3	Korg Kronos v3	M		5757 (50% edited)
Korg: LegacyCell	Korg Legacy Cell (VST)	P		128 (80% edited)
Korg: M1	Korg M1	P	★★★★	1533 (20% edited)
Korg: M164	M1	P	★★★★★	50 (80% edited)
Korg: M164	M1-64	P	★★★★★	1633 (80% edited)
Korg: MonoPoly	Korg MonoPoly	P	★★★★★	256 (100% edited)
Korg: MS20	Korg MS-20	P	★★★★★	32 (20% edited)

Below the table, the details for the 'Korg MonoPoly' device are shown. The title is 'Korg Korg MonoPoly, Preset: "FactoryPresets"'. The date is '29.07.2017' and the status is '100%'. The 'Uploader Comments' section contains the text 'KORG MonoPoly factory presets.'. The 'Summary' section contains the text '256 programs, 1 CCs, 100% edited, KORG MonoPoly (AudioUnit). Filename: Korg_MonoPoly_FactoryPresets.device created 29. Juli 2017 um 15:02:41 (56 KB)'. The 'Please Vote' section has four radio buttons: 'Excellent', 'Very Useful', 'Ok' (selected), 'Insufficient', and 'Useless Or Broken'. A 'Download Device' button is at the bottom right.

The database allows all users to upload their devices and share them. Ask others if they possibly have a device description you need and whether they would upload it. Upload descriptions yourself that you think could be useful for others. Doing so will grow the collection quickly to benefit all users.

Search And Download

You can browse the repository by different criteria. Use the drop-down menus on top of the list for this. Enter the name of a plug-in, manufacturer or model into the search field to look for matching descriptions. After downloading a description, it is saved to your list of global device descriptions.

This is how you quickly find a description for a particular plug-in:

1. On the **Rack** tab, select the rack module that is loaded with the plug-in you need a description for.
2. Now switch to the **Repository** tab. A search for the plug-in is run and potentially suitable descriptions will show up on the list.

Uploading

First check if the description is labeled correctly and populated with sounds to an extent that makes it useful. It need not be finished, but should at least include enough information for others to eventually complete it. If necessary, Synfire will show you a warning message with potential sources of errors before you upload.

Use the comments fields of the description to tell others which data is already included and what's still missing. Others may want to complete your description and upload an updated version.

If you are uploading a description for a plug-in, you should associate it with a plug-in instance with [Options > Associate With Plug-in....](#) This is not necessary, if the description was originally extracted from a plug-in. Without this association, others users will have problems finding the description. Manufacturer and Model are critical for a successful search.

Finally, with [Options > Upload to Repository](#) you can submit the description to the database.

If you upload the same description again later on, it will replace your previous upload. Other users will see an indicator showing them there is a newer version available for a description they already downloaded.



Tip:

If you see descriptions that are seemingly incomplete, do not hesitate to download and edit them. If you have a better or more complete description, upload it. You will never overwrite an already existing description in the database. Multiple versions of the same device can coexist.

Panels

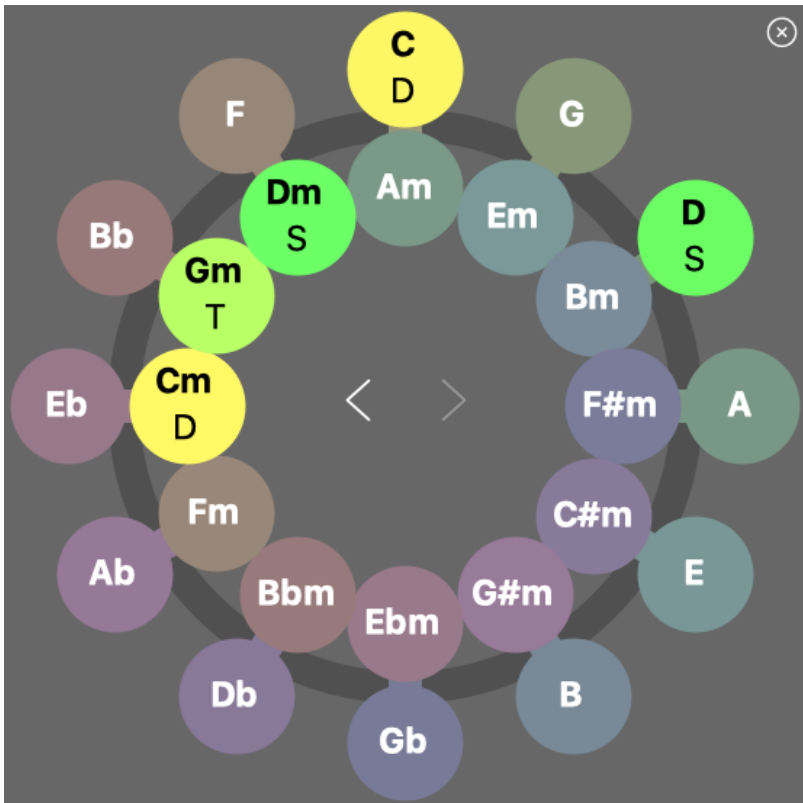
Standalone widgets floating on your desktop

Some views included with Synfire can also be opened as separate panels tacked to the desktop, so you can observe them while you play and work.

Circle Of Fifth

This widget shows all traditional keys arranged in a circle. The major keys are on the outside, and their parallel minor keys are on the inside. Their root notes are a 5th apart, hence the name.

You find this widget on the sidebar of the **Progression** or **Palette** tabs. Alternatively, open a standalone widget with [Window > Circle Of Fifth](#).



The letters T, D, S denote the functions Tonic, Dominant, Sub-dominant respectively. They indicate which function the currently playing chord has in that key. This way you can spot at a glance in which keys the current chord has a primary function. This is relevant when you want to change keys.

- Click on a key to navigate to it.
- Click on a key while holding down  **Alt** to keep the current (alternative) scales.
- Double-click on a key to open a **Palette** on it.
- Use the   buttons to navigate back and forth along recently visited keys.
- Hold down  **Shift** while you select a key in order to highlight all chords it has in common with the previous key. This is helpful for a [key change \(on page 10\)](#).
- Hold down  **Control** while you click in order to stay in the current key and highlight all chords it has in common with the key you clicked on. Moreover, this highlights the chords of that key in all currently open **Palette** windows.



Tip:

All temporary highlights can be locked in place with the **Freeze** switch, so you can play the palette without resetting the current display.



Tip:

If you have difficulties reading multiple chord highlights, use the black and white coloring preset for **Printing**.

**Note:**

In traditional major/minor tonality, these are all the relevant keys you should care about. Although there exist more remote keys with additional accidentals, those don't matter for **12 Tone Equal Temperament** tuning. You can't play them on a regularly tuned piano or MIDI keyboard anyway, without re-tuning all your equipment, which is a mess.

Related information

[Keys \(on page 10\)](#)

[Harmonic Functions \(on page 324\)](#)

Keyboard Widget



This keyboard highlights the currently playing **Chord**, bass and **Vertical Scale**. Open additional panels with [Window > Keyboard](#) at any size.

Scales

Show **Vertical Scale** instead of **Chord**.

All Octaves

Extend scale highlighting to all octaves.

MIDI Input

Display live MIDI input. If you want a palette to respond to keys presses here, also check **MIDI Input** with the palette.

Mouse Wheel

Scroll octave range.

⌘Click

Control-Click

Set or unset keyboard split for live input.

**Tip:**

For playing along on a piano or synthesizer, you can change the size to make fingerings easily readable from a distance.

Related information

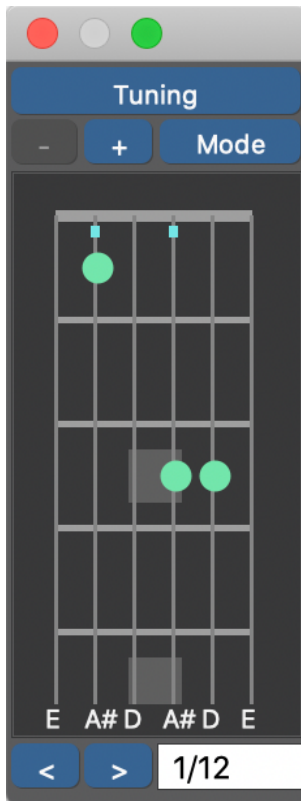
[Setting Up MIDI Input \(on page 236\)](#)

Scale Board

With this special keyboard, you can add segments to a [Figure \(on page 298\)](#) incrementally. Select the desired position in the [Figure \(on page 298\)](#) and click the keys to add symbols. It takes some getting used to.

String Instrument Panel

Open as many instances you want and configure them in different ways. To play along on an instrument, you can change the size to make the fingerings easily readable from a distance.



Tuning

Pick a preset tuning for your instrument.



Add or remove additional frets.

Mode

Switch between **Chord** and **Vertical Scale**.



Browse a variety of fingerings that exists for the chord.



Tip:

Open several panels and use them to play along with other musicians.

Legend

Open String

A string without a green dot is meant to be played open.

X

String should be muted. It is not meant to be played as an open string.

Blue Square

This string plays the **Root** note of the chord.

Barré

Green bar with a number next to it which indicates the fret position.



Note:

Some chords have more notes than there are strings. Synfire attempts to preserve especially characteristic intervals of a chord.

Preferences

Synfire remembers your last selection for each chord. You can also save and load these manually with [Preferences > Defaults > Personal Fretboard Preferences](#).

Supported Instruments

Instrument	Tuning
Guitar	E A D G B E
Left-handed Guitar (lefty guitar)	E B G D A E
Bass Guitar	E A D G
Ukulele	G C E A
Viola da Gamba	D G C E A D
Cello, Banjo, Tenor Guitar, Viola	C G D A
Cello, Violin, Mandolin, Irish Banjo	G D A E
Tenor, Bass or G Violin (Lute)	G C F A D G



Note:

You can add your own tunings to the configuration folder **Tunings** (simple XML files).

Harmonic Context Panel

Detailed information on the **Harmonic Context** ([on page 12](#)) that is currently playing. In addition to the properties of the harmonic context, this panel also lists the chord extensions that can be played without disrupting harmony.

⌵

⚡

🔗

C9 > Gm(add9)

Automatic Bass

Automatic Inversion

Chord	Gm(add9)
Vertical	G.dorian
Horizontal	F.major
Bass	-
Key	C.Major
Relation	F.Major-minor
Numeral	v
Function	d
Extensions	m6(add9) m9 m11 m13

Drag this panel to any **Progression** ([on page 14](#)) to insert the chord and all its context.

Open a floating panel with **Window > Harmonic Context**.

Related information

[Harmonic Context \(on page 12\)](#)

[Progressions \(on page 14\)](#)

Dialogs

Dialog windows that pop up to accomplish a certain task

The topics under this section are all entry points for the embedded **Help Browser** where they show up when you hover over or select objects in the application. We therefore suggest you open Synfire and do just that, instead of reading these sections like chapters in a user manual.

Preferences

License

This page contains information on your license. The information you provide on copyright, editors and claims is added securely to the documents you save.

User Interface

Some of these settings take effect only after re-opening a window.

Language

Select your language or the language you are able to sufficiently understand. This preference is read from the operating system at installation, but can be altered at any time.

Colors

Choose among several color themes.

Tool Tips

Brief pop-up help that shows up when you move the mouse over a control or area of the user interface. For more comprehensive help, open the **Embedded Help** browser.

Local Menu Bars

On macOS the main menu bar appears at the top of the screen. Enable this if you want it to appear at the top of each window, which is common on Microsoft Windows and has some advantages when you have many windows open at the same time.

Native File Dialogs

If you experience issues with file dialogs provided by the operating system, you can disable this to use custom dialogs provided by Synfire.

Disable Widgets in Background

On macOS it is common to gray out widgets when a window isn't in the foreground. Disable this if you can do without this visual feedback and get a faster response.

Reset Dismissed Warnings

Show all warnings again, even if you have dismissed them in the past.

Reset Playhead on Container Selection

Move the playhead to the beginning of a container when it is selected.

Reset Playhead on Parameter Data Selection

Move the playhead to the last selection established in a **Parameter View** ([on page 147](#)) (with a little pre-roll).

Select New Container After Creation

Immediately select a newly created container.

Don't merge Adjacent Equal Chords

Allow repeated instances of the same **Harmonic Context** to appear in a progression.

Edit Keyboard Shortcuts

Open a dialog for [editing keyboard commands \(on page 213\)](#).

Files

The installation and configuration folders can't be changed retroactively.

Configuration

Synfire saves your preferences, setup, templates and racks in this folder. The original settings are kept in the installation folder where they are protected from being accidentally overwritten.

Projects

This where your racks, settings, arrangements, progressions, palettes and other documents go by default.

Number Of Backups

The number of recent saves to keep, in case you need to revert to an earlier version.

Automatic Backup

Save a backup of the currently open arrangement every couple minutes that you can recover from in case of a crash.

LilyPond Engraver

Installation path and command line options for invoking LilyPond notation export.

Notation

Configure three command lines for processing exported notation files.

1. **Convert:** This command runs a program on the file exported by Synfire. This may be a command line utility that renders a PDF, JPG or other format from the exported file.
2. **View:** This starts a program to display the output generated by the conversion program or the exported file directly. For example, this may be a PDF viewer or a notation software that can open the exported file directly. This command is only run when you enable it.
3. **Debug:** This starts a program that can be used to examine the exported file, for example with an XML editor. This command is only run when you enable it.

The following variables are defined as placeholders for the command line templates.

{filename}

The absolute file name of the exported file with directory and file extension.

{name}

The name of the file without the file extension and directory path, e.g. `Lullaby`.

{ext}

The file extension of the file, e.g. `.ly` or `.xml` including the dot.

{folder}

The directory of the exported file, without a trailing slash.

{options}

A series of command line options specific to the format, e.g. `--dvi --backend=tex`. These are provided automatically depending on your output format selection. If you need different options, you can add them to the command line template directly (LilyPond only).

{format}

The file extension of the output format, e.g. `.pdf`, including the dot (LilyPond only).

{output}

Full absolute file name of the file created by the conversion program, i.e. the PDF, JPG or whatever is being compiled (LilyPond only).

{log}

Full absolute file name of the log file created by the conversion program (LilyPond only).

**CAUTION:**

The **Convert** command blocks Synfire until it has completed. If you open an application with a user interface rather than a command line utility, you should do that with the **View** command.

Defaults

Constants

Several values to use when they are not available from context. They are mostly used to render previews for chords, scales and other basic objects.

Preview (Outlet)

A global preview progression used to render phrases that don't provide their own [Harmony \(on page 304\)](#).

Tolerate Triple Sharps/Flats

Allow three accidentals to occur with notation export and with internal calculations. Default is disabled.

Use German H for B and B for Bb

Enable only if you need to comply to German notation traditions. Read [more on this here \(on page 330\)](#).

Personal Fretboard Preferences

Synfire remembers the last used fingering patterns for every chord you selected on the **String Instruments** panels for guitar, bass, violin, etc.

Scale Selection

Global **Scale Selection Preferences** ([on page 195](#)) that are copied into every new document by default.

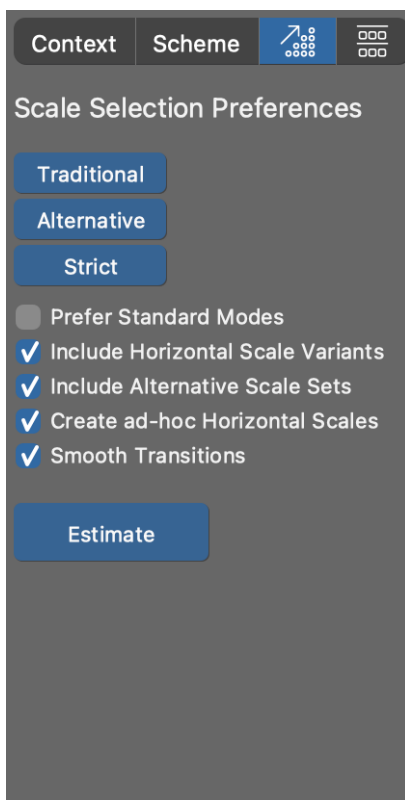
Related information

[Scale Selection Preferences \(on page 195\)](#)

Scale Selection Preferences

Synfire automatically selects suitable scales for a **Harmonic Context** ([on page 12](#)) if only a chord is known so far, or when a new estimation of keys and scales is requested. This selection is guided by the built-in knowledge base and your **Scale Selection Preferences**.

The global defaults for these settings can be found at [Edit > Preferences ... > Scale Selection](#). These are copied into new documents (Arrangements, Palettes, Progressions) where you can edit them on the **Scale Selection** tab on the **Parameter Inspector** for **Harmony**.



Prefer Standard Modes

Favor traditional major and minor [modes \(on page 9\)](#) over other scales. Facilitates a more customary sound even with [alternative palettes \(on page 27\)](#). If you want to exploit the full tonal richness of an alternative palette, you should turn this off.

Include Horizontal Scale Variants

Allow Synfire to extend a **Scale Set** [\(on page 11\)](#) with known variants of a scale dynamically as needed. For example, `hungarian-minor` is considered a member of a standard minor palette in this operating mode.

Include Alternative Scale Sets

Consider dynamically generated **Scale Sets** [\(on page 11\)](#) as alternatives for traditional Scale Sets (keys). This augments the number of available scales.

Create ad-hoc Horizontal Scales

Enable Synfire to dynamically generate new [horizontal scales \(on page 8\)](#) as needed. Disable only if you want to stick to traditional harmony rather strictly.

Smooth Transitions

Minimize pitch leaps when moving from one scale to the next. Scales with many tones in common are then favored. When disabled, you will get more contrasting changes.

Related information

[Harmony Concept \(on page 7\)](#)

Sound Assignment

There are multiple ways of assigning a sound to an instrument.

Related information

[Assigning Sounds \(on page 235\)](#)

Sound Wizard

This dialog guides you through the steps of selecting a **Sound** for an **Instrument**. It assists you with creating new **Rack Modules** [\(on page 38\)](#) and **Device Descriptions** [\(on page 36\)](#) if needed. Depending on context, a hint may show up under the title, suggesting a specific sound to select by default.

Home Page

Sound Selection Wizard
Step 1 / 3

Suggestion: Rack Module Preset **Kontakt NI Pianos** provides sound **NI Noire Felt** and device **Kontakt NI Pianos**

☐ Yamaha Grand Piano
☐ Browse Available Sounds
☒ New Rack Module

☒ Audio Plug-In
☐ Drone in DAW (Audio)
☐ Drone in DAW (MIDI)
☐ External MIDI Instrument
☐ Copy Global Rack
☐ Embedded GM Synth

☐ New Channel On Rack Module
☐ Global Instrument

Engine1 Kontakt NI Pianos

Embedded GM Synth

Soundcase FluidR3

Piano

Cancel Next

Browse Available Sounds

Opens the [Sound Browser \(on page 200\)](#) page where you can select any of the sounds provided by device descriptions on your racks. If you want to add a new sound that is not yet listed, select one of the options below.

New Rack Module

Adds a new **Rack Module** [\(on page 38\)](#) to your rack.

Audio Plug-In

Load a **VST**, **VST3** or **AudioUnit** plug-in into the **Audio Engine**. Select a plug-in or **Rack Module Preset** [\(on page 38\)](#) to load before you proceed.

Drone in DAW (Audio)

Load a VST or AudioUnit plug-in into a **Drone** [\(on page 43\)](#) inside your DAW. Select a plug-in or **Rack Module Preset** [\(on page 38\)](#) to load before you proceed. This is only enabled if Synfire finds at least one unused (reserved) Audio Drone in your DAW.

Drone in DAW (MIDI)

Use a **MIDI Drone** [\(on page 44\)](#) to feed rendered music into your DAW with accurate timing. This is only enabled if Synfire finds at least one unused (reserved) MIDI Drone in your DAW.

Copy Global Rack

Copy a global rack module into your arrangement where you may customize it as you need.

External MIDI Instrument

Select a MIDI port if you want to send the rendered music to an external hardware or software.

Embedded GM Synth

Send rendered music to the [built-in synthesizer \(on page 161\)](#). It needs to be enabled in **Audio & MIDI Setup**. Only a single module with the Embedded GM Synth can exist on any rack. Once such a module was added, all of its sounds are available to browse and select for up to 16 different instruments.

New Channel On Existing Module

Configure a new MIDI channel for an already existing rack module. Enabled only if a module uses a device that provides fixed channels.

Global Instrument

Use a reference to a **Global Instrument**. Recommended for Sketches, so they will work with any user's setup.

Proceed to the next page with the **Next** button.

Device Description

Configure the meta-data required for Synfire to render music that works with your sound. Open the plug-in editor with the **Plug-in Button**, if you want to compare your settings against the actual state and contents of the plug-in.

Device Description

Step 2 / 3

?

MonoPoly VST

Suggestion: Open the plug-in editor and make sure its contents match the device description and provide the desired sound.

☒ New

- ☐ Fixed Channels (Sampler)
- ☐ 1-Channel Multiple Programs (Synth)
- ☐ 16-Channel Multiple Programs (Multi-Timbral)

Device Name

MonoPoly Device

☒ Detected

Korg MonoPoly

☐ Copy

Absynth 5 Pads

☐ Available

Cancel

Back

Next

Detected

If the content of a plug-in hints at one or more already known **Rack Module Presets** ([on page 38](#)), their devices will appear on this menu. Select one that matches your plug-in before you proceed.

Available

Devices already present in your arrangement can be reused for new modules.

Copy

If the plug-in or external instrument matches one of your **Global Device Descriptions** ([on page 136](#)), you can copy it into your Arrangement and customize it there, if needed.

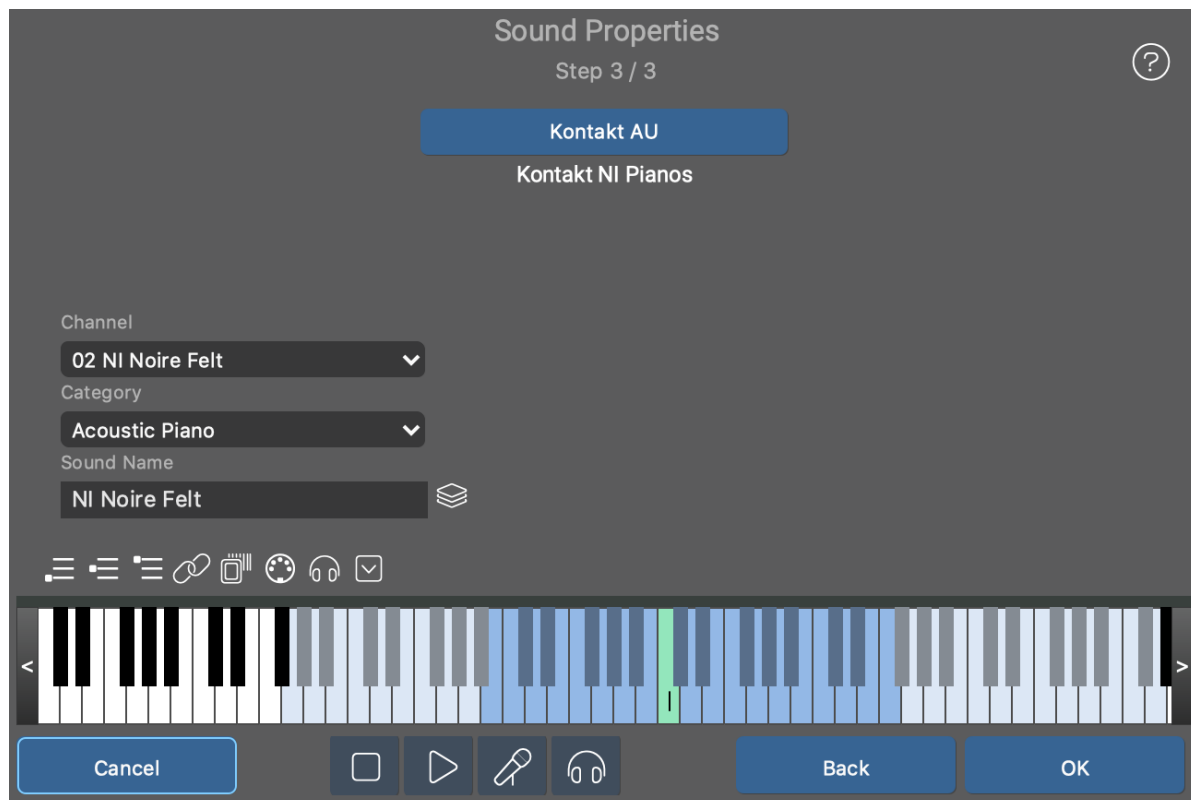
New

If there is no ready-to-use **Device Description** ([on page 36](#)) for the plug-in or external instrument you want to use, just create one on the fly with this option. Enter a name for that device (e.g. the plug-in name) and [select its type \(on page 237\)](#) before you proceed.

Proceed to the next page with the **Next** button.

Sound Properties

On the last page you configure the properties of the sound you are about to use. Open the plug-in editor with the **Plug-in Button**, if you want to check your settings against the actual state of the plug-in.



Sound Name

Enter a name you will best recognize on lists and menus going forward.

Channel

Select the MIDI channel your sound is listening on. If the device uses dynamically allocated channels, this menu is disabled.

Category

Select an instrument Category, so Synfire can render music that works best for the sound. If none of the categories match, select one that comes close in terms of its role in the arrangement.

Program

Set a program/patch number that selects the desired sound on the device. This is hidden if there are no such sounds on the device.



Browse all **Template Devices** ([on page 37](#)) for sound properties to copy and insert here. With large sound libraries, this saves you a lot of manual work.

Playing Ranges

Use this keyboard controller to adjust the **Playing Ranges** ([on page 35](#)) for the instrument you are setting up. If the device was created specifically for your arrangement, the ranges are also saved with the sound for subsequent reuse.



Select this if you want the instrument to use the playing ranges of this sound once you press **OK**.

Transport Bar

Use the transport bar to test the current sound in the context of a full or solo playback, or preview it with a generic phrase that suits its category.

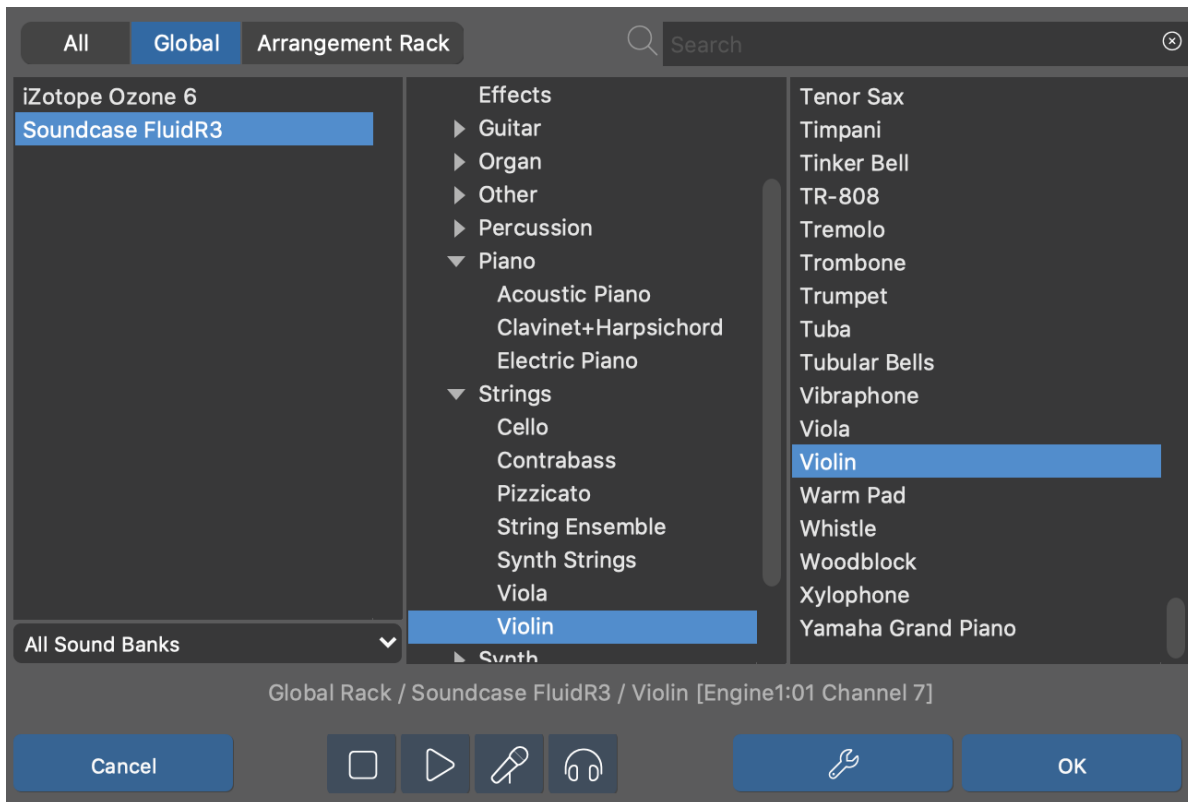
Finally accept the sound for the instrument with the **OK** button.

Browsing Available Sounds

This page of the **Sound Wizard** ([on page 196](#)) lists all sounds currently provided by either the **Global Rack** ([on page 39](#)) or the local **Arrangement Rack** ([on page 24](#)). Using the tabs **All**, **Global** and **Arrangement Rack** you can filter the list's contents selectively.

The browser can only list sounds that are provided by the **Device Descriptions** you have selected for each **Rack Module**. It is not possible at this point to look into a plug-in and provide a list of all sounds it potentially has to offer. This page is therefore most useful for selecting sounds from devices that are already fully covered by a device description.

If you want to setup a new sound on the fly, please use the guided procedure of the **Sound Wizard** ([on page 196](#)) starting from its home page.



Devices

List of devices to browse for sounds, filtered according to the tab selected on top.

Banks

Narrow down your search to a particular sound bank of the currently selected device (optional).

Categories

Select to narrow down your search (optional).

Sounds

Shows your current search result. Select a sound to preview it and assign it to the instrument.

OK

Accept the selected sound.



If you know at least some of the name of the sound you are looking for, just type it into the search box.



Switch to the home page of the **Sound Wizard** ([on page 196](#)) in order to interactively create or extend a rack module that provides a new sound.

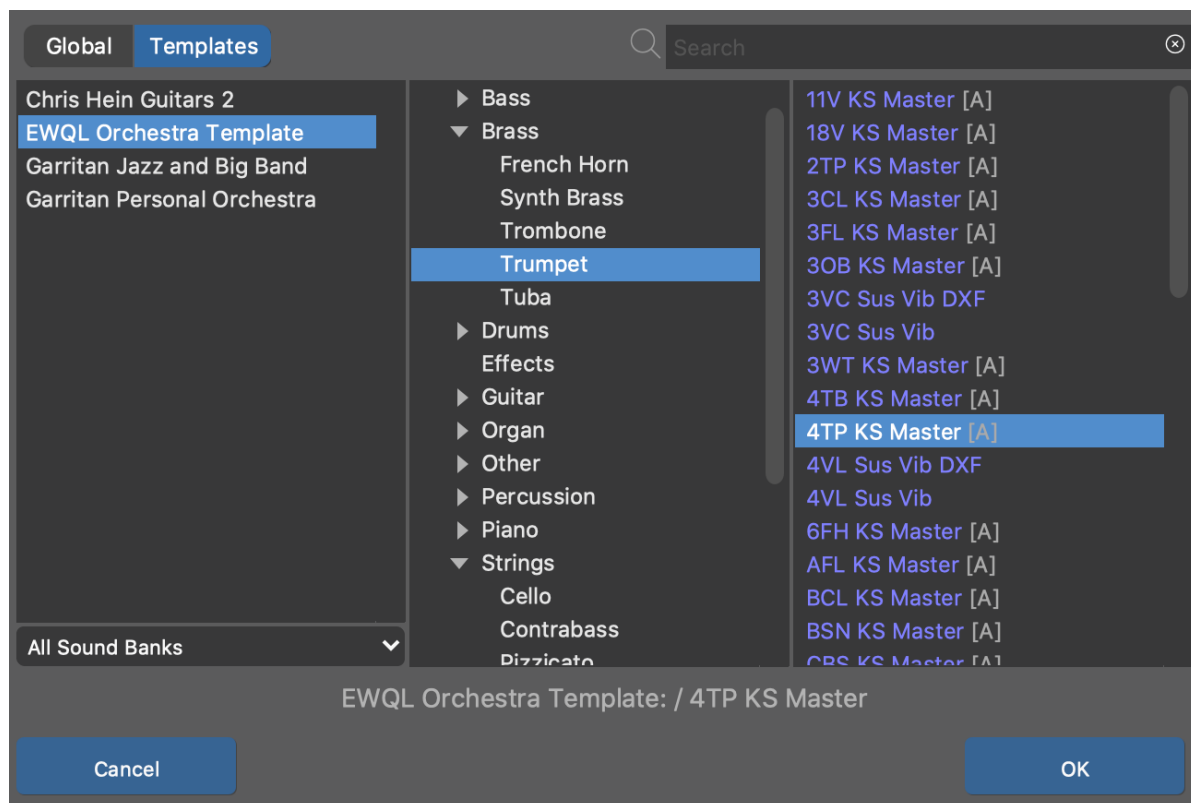
Transport Bar

Use the transport bar to test the current sound in the context of a full or solo playback, or preview it with a generic phrase that suits its category.

Browsing Sound Templates

This browser pops up so you can lookup the properties of a sound provided by **Template Devices** ([on page 37](#)). Select a template from the list in order to copy its properties to the sound you are currently editing.

The properties stored in a template include **Category** ([on page 34](#)), **Playing Ranges** ([on page 35](#)), **Custom Controllers** ([on page 202](#)), **Articulations** ([on page 204](#)) and program change selection methods and patch numbers.



This browser works exactly like the other [Sound Browser \(on page 200\)](#), except you can't preview the sound templates.



Everywhere you find this **Templates** icon next to a sound, you can call up the browser to insert sound properties copied from a **Template Devices** ([on page 37](#)).

Related information

[Device Templates \(on page 37\)](#)

Custom Controllers

Synfire allows for up to eight user-defined MIDI controllers (CC) to be defined. Custom Controllers show up in the user interface as **Parameters** [\(on page 2\)](#).

Device Description

VSL Prime Edition: Strings

	Name	Controller Number	Default Value (optional)		
Controller A	Timbre	8 Balance	127	☒ Use	Test
Controller B	Dynamic Range	30 -	127	☒ Use	Test
Controller C	Attack	22 -	0	☒ Use	Test
Controller D	Release	23 -	64	☒ Use	Test
Controller E	Filter	24 -	127	☒ Use	Test
Controller F	Hum. Delay	25 -	0	☒ Use	Test
Controller G	Hum. Tuning	26 -	0	☒ Use	Test
Controller H	Hum. Amount	27 -	127	☒ Use	Test
	Volume		100	☒ Use	Test
	Pan		64	☐ Use	Test
	Reverb		0	☐ Use	Test
	Modulation		100	☒ Use	Test
	Expression		0	☐ Use	Test
	Breath		0	☐ Use	Test

☐ Copy To Sound

OK

Copy

Paste

Clear

Cancel

Name

Label of the controller as it shows up in **Parameter Outlets**. Leave this blank to inherit the parent controller definition (see: Inheritance) or disable the controller.

Controller Number

Pick any of the 127 MIDI CC numbers.

Default Value

The associated parameter will use this value by default if you don't set it in an arrangement. The value is also sent when an instrument is selected (if the device has this option enabled).

Use

Enables the default value to be used. Disable this if you don't want Synfire to send zero (or whatever value is currently entered here).

Test

Transmit a series of controller values to the currently edited instrument. Watch the instrument for incoming MIDI data to verify your settings.

Enable

Some standard controllers can also get a default value assigned. For this they need to be enabled.

Copy To Sound

See section below.

Inheritance

Custom Controllers can be defined per **Device** ([on page 36](#)), per **Sound** ([on page 37](#)) and per **Instrument** ([on page 33](#)). And they are inherited in that order: A controller defined for a **Device** is automatically available to all its **Sounds**, which in turn is available to all **Instruments** that are using the sound. An individual sound or instrument may add to or override the inherited definitions.

This inheritance is accessible through tabs on the configuration dialog.

Copy To Sound

When this switch is enabled while you are editing the settings of an **Instrument**, the settings will also be written through to the **Sound** where they are saved permanently along with the Device Description. This is useful if you want to preserve your incremental edits for later reuse by saving a **Rack Module Preset** later on.

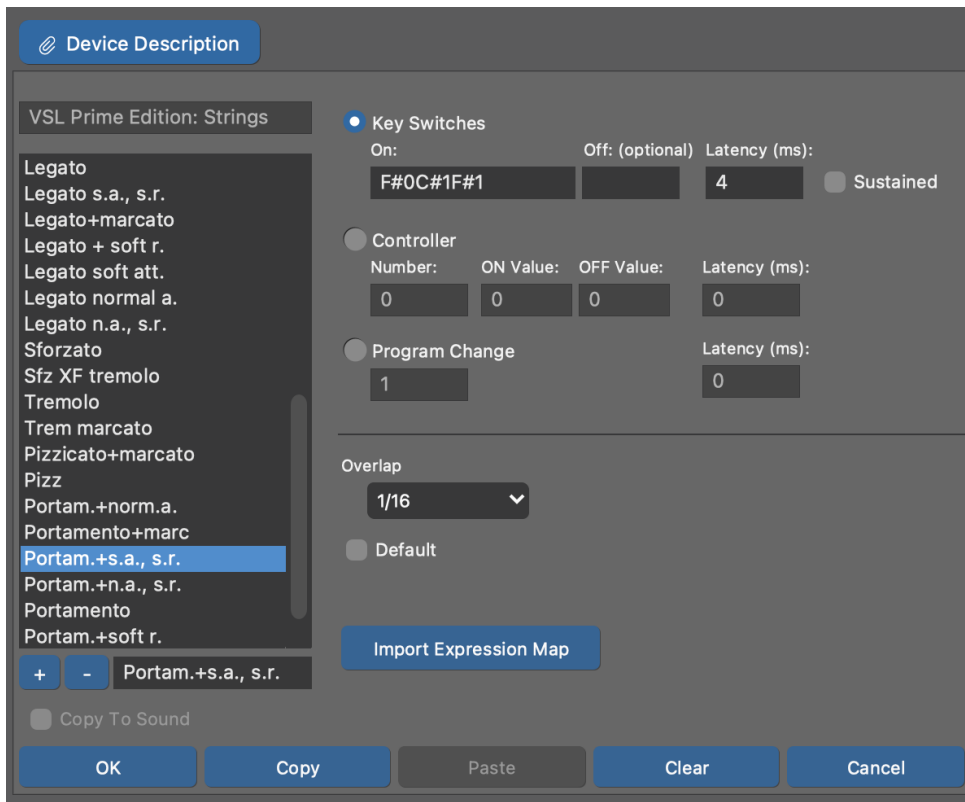
**Note:**

This feature is available with the **Express** and **Pro** editions.

Custom Articulations

Synfire allows for any number of user-defined sound articulations to be defined. Articulations are used to switch between different variants of a sound (e.g. Legato, Pizzicato, Staccato). They are specific to a particular sound library, synthesizer or plug-in.

Articulations are assigned to individual **Figure** ([on page 298](#)) segments by picking one from a **pop-up menu** on the **Parameter Inspector** ([on page 54](#)).



An articulation is transmitted as a **Key Switch** (KS), **MIDI Controller** (CC) or program change message. Please consult the documentation of the sound library, plug-in or hardware for details.

During playback, an articulation is turned on shortly before the start of the **Figure** segment or symbol. With the **Latency** setting you can determine how much ahead of time an articulation is sent. The default is a few milliseconds but your sound library may require more headroom for a sound to switch. Note that this setting is equal for all articulations of the same type.

An active articulation is sustained until a subsequent Figure segment either requests a different articulation, or has no articulation assigned to it at all, in which case Synfire switches back to the **Default** articulation. It is thus important to define one articulation as **Default**.

If a sound requires that every articulation be turned off immediately after use, you can set an optional **Off** value.

Articulations such as portamento and legato can be provided with an **Overlap**. The notes of a **Figure** segment are then output overlapping so that the instrument can generate a corresponding transition. This has the advantage that you do not have to adjust the lengths by hand and they still correspond to the notated notes.



CAUTION:

If different articulations for the same sound on the same MIDI channel overlap in time, they may interfere with each other. The same holds for multiple voices within the same **Figure**.

Inheritance

Custom Articulations can be defined per **Device** ([on page 36](#)), per **Sound** ([on page 37](#)) and per **Instrument** ([on page 33](#)). And they are inherited in that order: An articulation defined for a **Device** is automatically available to all its **Sounds**,

which in turn is available to all **Instruments** that are using the sound. An individual sound or instrument may add to or override the inherited definitions.

This inheritance is accessible through tabs on the configuration window.

Import Expression Maps

Synfire can import **Cubase Expression Maps** and thus save you the effort of adding individual articulations manually.

It is important to keep in mind that articulations are identified by name when you assign them to a **Figure** segment or symbol. Changing an articulation's name in a device description does not automatically update the Figures in all your arrangements. We recommend you don't change any imported names. This will also keep your arrangements compatible with those of other users that use the same sound library.

Copy To Sound

When this switch is enabled while you are editing the settings of an **Instrument**, the settings will also be written through to the **Sound** where they are saved permanently along with the Device Description. This is useful if you want to preserve your incremental edits for later reuse by saving a **Rack Module Preset** later on.



Note:

This feature is available with the **Pro** edition.

Online Updates

Synfire will show you a notice when an update is available on our website. With [Help > Online Updates](#) you can examine the type of update that is available. There are two types of updates.

Updates

Updates always include a full program installer. At this time Synfire cannot yet update itself, so you need to [login](#) to your user account and download it from there. Future versions of Synfire might make this procedure more convenient and integrated.

Patches

When a release is basically stable, minor bug fixes and improvements can be deployed as patches. Many patches can load into Synfire while it is running. So most of the time you can continue working without restarting the program. With patches, the turnaround is much faster, because there is no need to upload, download and install full updates.

[Double-click](#) on the update package to select it for download and then [click](#) on [Download and Install](#) .

Crash Reports

A complex software like Synfire is never really finished. It is constantly being worked on, be it to fix bugs, improve performance or add new features. You can help facilitate and speed up this process by submitting occasional crash reports to us.

If you experience an **Unhandled Exception** error, the current state of the program at the moment of the crash and the text of the Synfire console are collected in a file on your computer (`runtime-errors.dump`).

Open the dialog [Help > Online Updates](#) and click the button **Submit Crash Reports**. All reports collected so far will be sent to Cognitone and then deleted from your computer. Our developers work through the list of reports to understand the crashes and provide fixes for the next update or patch.



Note:

We value your privacy. A crash report does not collect information about you, your music or your computer, except basic parameters like operating system version and CPU architecture. Unlike the system reports and crash reports you may know from Apple or Microsoft, no detailed information about your hardware or other installed software is included. The dumps are encrypted merely to prevent hackers from learning about potential security vulnerabilities of the program. Reports are deleted when they are no longer needed or their version of Synfire became outdated.

Downloading Patches On Other Computers

In case your music computer doesn't have access to the Internet, you can download patches on another computer and move the file to your music computer for installation. Save the downloaded files to a portable medium with [File > Export Updates](#). Then install them on your music computer with [File > Import Updates](#).



Important:

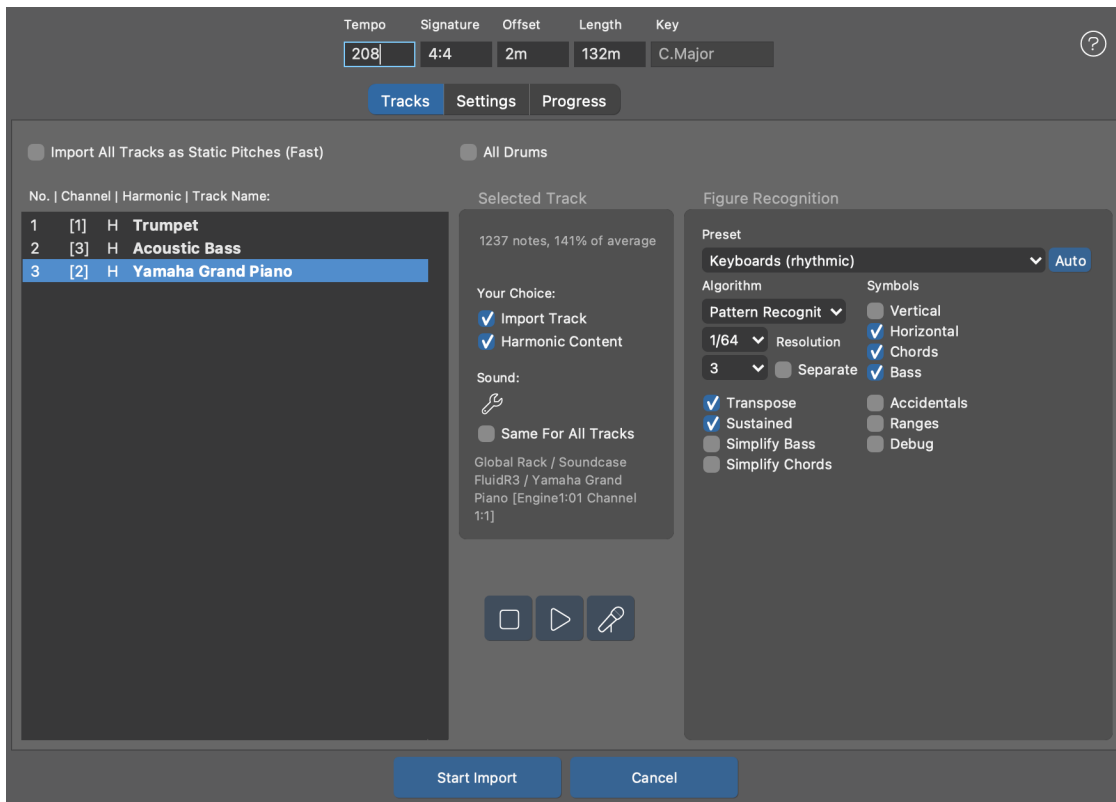
You can only install patches you have downloaded from your own user account.

Import MIDI File Dialog

Before you begin, make sure you understand the [limitations of MIDI import \(on page 268\)](#).

Tracks

Select and configure the tracks you want import on the **Tracks** tab. The number in square brackets indicates the MIDI channel. Tracks that should be imported appear in bold. An **H** means the track will be considered for harmonic analysis.



Import All Tracks As Static Pitches (Fast)

Configures all tracks to skip **Figure Recognition**. This is the fastest way to import a file. After the import has finished, you can go through each imported track or phrase and run the **Harmonizer** and **Figure Recognition** more selectively as needed on the [Take \(on page 317\)](#) parameter.

All Drums

Force all instruments to use a drum kit sound. By default this uses the global **Drums** instrument, but you may assign a different drum kit to any track, which will then be used instead. This is especially useful for batch import.

Import Track

Check this for each track you want to import.

Harmonic Content

Check this for each track that contains tonal music (pitched instruments). The more the better. Leave unchecked for drums and percussion.

Sound

Select a sound for the track to use after import. This influences the selection of a default [Interpretation \(on page 305\)](#) and suggests **Playing Ranges** the MIDI track should be transposed to in order to match. If the desired sound its not yet available, you can use the **Sound Wizard** [\(on page 196\)](#) as usual to create one.

Same For All Tracks

Use the selected sound for all tracks and all MIDI files. This makes sense if you import a batch of files with phrases for a single known instrument.

Figure Recognition Settings

Configure this for each track the same way you would to for [recording \(on page 74\)](#).



Preview one or all tracks before import.

Settings

Configure pre-processing and post-processing on the **Settings** tab.

Import Entire Directory

In addition to the file you are currently setting up, Synfire will also import all other MIDI files it can find in the same directory.



Note:

Please regard our notes on [Batch Import Of Folders \(on page 212\)](#) below.

Include Subfolders

Whether to include all subfolders recursively with a batch import.

Merge All Tracks Into One

Merged all tracks into a single track before import. Good for drum patterns.

Identical Track Layout

All files contain the same instruments in the same order. Your settings per track are adopted as far as possible. Files with a different number of tracks are skipped.

Create a Library Folder Per File

Adds a folder to the library for each file that contains more than a single track with content. This groups imported tracks per file. You should keep this checked unless you want to merge all imported tracks in the same folder.

Labeling Of Phrase Pools

Select the components to use for labeling each imported phrase pool.

General MIDI Standard

If enabled, this will interpret the program change numbers found in the file according to the GM Standard and assume the instrument category and sounds associated with that.

Retain MIDI Channels

If enabled, an attempt is made to allocate the imported sounds on the very same MIDI channels that were found in the file. This will probably not work with the default sounds on the global rack, because many channels are already blocked by **Global Instruments**. You should therefore create a dedicated multi-timbral rack module with the **Sound Wizard** ([on page 196](#)) and assign the MIDI tracks exclusively to sounds provided by it.

Separate Channels For Equal Sounds

If the same sound is used on multiple MIDI channels (tracks), the sounds are probably supposed to be separate of each other for independent control and mixing. This separation may demand more dynamic channels than available. If your are importing MIDI files with more than 16 tracks, you may need to disable this.

Import Controllers

Import MIDI controllers to the corresponding parameters, if supported.

Tempo Changes

Import tempo changes to the **Tempo** ([on page 318](#)) parameter.

Disable Automatic Transposition

Tracks are transposed by octaves to ensure they meet the destination instrument's total playing range. This is vital for proper figure recognition. If you disable this, the playing range of the instrument is transposed instead.

Create Figures

Disable this if you want to import [Harmony \(on page 304\)](#) and [Take \(on page 317\)](#) only and do the **Figure Recognition** [\(on page 6\)](#) later when sifting through the phrases.

Create Phrase Pools

(Library only) Create a **Phrase Pool** [\(on page 28\)](#) for every track with multiple phrases extracted automatically based on content. Duplicate phrases are dropped.

Average Phrase Length (Menu)

Select a desired length you want the average phrase to have. Actual lengths depend on the content found on each track though.

Simple

Divide all tracks into sections of this length without paying attention to the content.

Keep Takes

Disable this if the file is huge and you want to save memory in the target arrangement. It is a good idea however, to always keep the [Take \(on page 317\)](#), as you can re-run **Figure Recognition** and **Harmonizer** on it at any time.

Keep Master Take

The take that includes an entire track's worth of MIDI data is called the Master Take. If you already keep individual takes per phrase, you can drop the Master Take to save a lot of memory in the library.

Detect Keys, Chords, and Scales

Whether to create a [Harmony \(on page 304\)](#) parameter from all tracks with tonal content. Disable only for drum patterns.

Use Key Read From MIDI File

If the file contains key signature information, it will be considered (not all MIDI files contain this information)

Allow Key Changes

Recognize and import key changes. Importing files with only a single key is somewhat more robust.

Confirm Detected Key

Ask the user to confirm the detected key. You will have the option to select among the most likely keys yourself. Knowing the key is vital to harmonization.

Complete Chords

If the MIDI file contains sustained chords in root position, you can use this option to import the chords directly and unchanged as progressions. All intelligent algorithms for analyzing non-quantized recordings are then deactivated.

Prefer Orchestral Interpretations

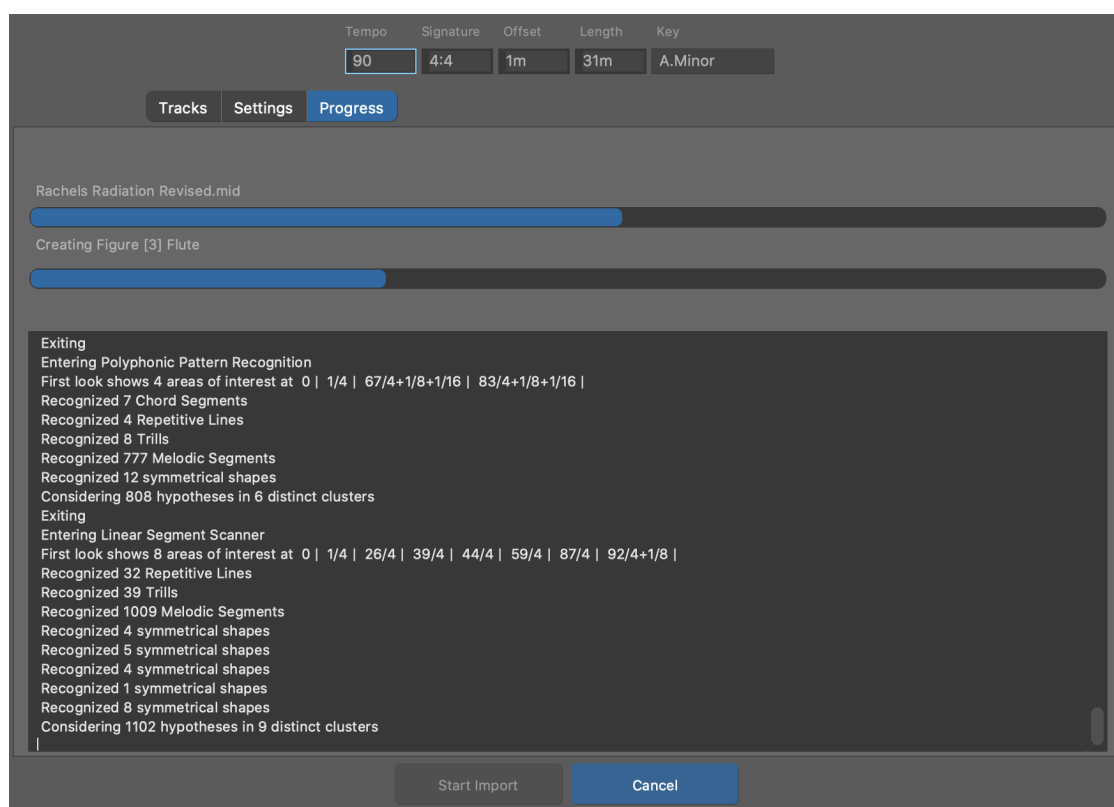
Where multiple Interpretation settings may apply, Synfire will prefer an orchestral Interpretation over equivalent others. Enable this if you are importing classical music files.

Starting The Import

Press **Start Import** to start the process. Depending on the complexity of the file, this process can last for a long time. After import has finished, a new arrangement or library will open with the result.

Progress

On this tab you can follow the import process, which may take quite a while. You may terminate the process at any time with **Cancel**.



Batch Import Of Folders

You have two options to import multiple MIDI files as a batch.

1. Import a single MIDI file with **File > Import > Standard MIDI File**
2. Import a folder with multiple files with **File > Import > Standard MIDI Files (Folder)**

Since you can only adjust settings for a single file, the same settings will be used for all files. Although figure recognition settings need to be auto-detected for each individual track, because it is unlikely that all files share the same ordering of instruments and types of content. Batch import therefore works best for drum patterns and high-quality MIDI files that respond well to auto-detection.

Reset to Default

Reset all commands to the system default mappings.

Load

Load mappings from disk.

HTML

Save a HTML page documenting all mappings that you can view or print with your web browser.

Cancel

Changes are not saved to disk.

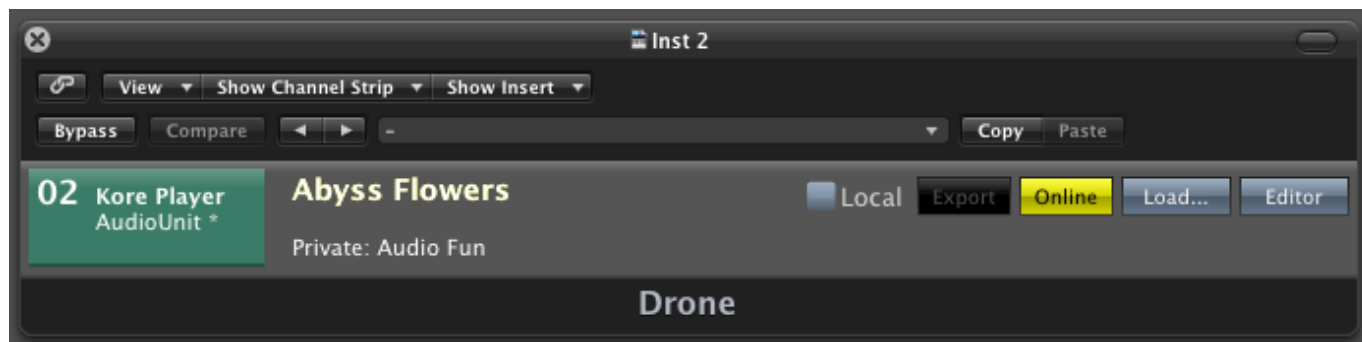
OK

Changes are saved to disk.

Drone

The Cognitone Drone audio plug-in

The **Cognitone Drone** is a **VST**, **VST3** or **AudioUnit** plug-in that you can load into a DAW. It should appear in the plug-in browsers and menus of you DAW, unless you have installed it to a directory the DAW is not looking into when it scans for plug-ins (Windows).



A **Drone** hosts audio plug-ins on behalf of Synfire and feeds them with a MIDI stream ahead of time.

Numbered Colored Area

The number of the drone, which is also part of its port name. This number is assigned automatically. Next to the number you see the name and type and edit status of the guest plug-in that is currently loaded (asterisk = has been changed). The color indicates the status of the drone (see Error: Reference source not found on page Error: Reference source not found).

Big Title

Name of the device description you have connected to the port of the drone. By choosing a suitable name for the device, you can easily recognize which instruments of your arrangement are hosted in this drone.

Small Text

Shows the name of the arrangement this drone belongs to, as well as additional information as needed.

Playback Mode (Menu)

Play DAW: The Drone plays local MIDI data from the track in the DAW only. It ignores any music streamed from Synfire. This is useful when you already exported MIDI to your DAW and want to keep the guest plug-in inside the Drone.

Play Synfire: Only MIDI streamed from Synfire is played. Data on the DAW track is ignored.

Play Both: Both data received from Synfire and the DAW track will be merged and played together.

Export

Indicates that the entire MIDI content rendered by Synfire is present in the drone. You can drag it off at the colored area and drop it into a DAW track to export the generated music.

Online

The drone is connected to Synfire.

Load

Load a VST/AU instrument into the drone manually. You should avoid this and load plug-ins from the menus and browsers in Synfire instead.

Editor

Open the guest plug-in editor. When making changes to the guest plug-in, please note that saving the DAW project alone is not sufficient. All changes also need to be saved by Synfire. This is automatically done each time you save a Synfire project or the global rack.



Troubleshooting:

Should a particular plug-in cause problems with the editor, you can try opening it in a separate window: Hold down the **SHIFT** key while pressing the **Editor** button. The drone retains this setting until you undo it by making the selection again.



Note:

This feature is available with the **Express** and **Pro** editions.

Chapter 3. Factory Documentation

Documentation of KIM Factories

This section lists all currently available factories and explains their purpose and usage.



Note:

This feature is available with the **Pro** edition.

Related information

[Factories \(on page 29\)](#)

Elements

List of common elements

There are a few elements that occur as a part of many factories. These are explained here in detail.

Related information

[Factories \(on page 29\)](#)

Metrics

Set the metric **Signature** (time signature), **Tempo** and number of measures to generate. These are global per phrase and influence all factories involved with generating it.

Metrics

Global

Signature	4:4	▼
Measures	2m	▼
Speed	Original	▼
Tempo	96.0	

**Note:**

If you generate a phrase with a different time signature, this will start a new phrase pool.

Related information

[Factories \(on page 29\)](#)

Similarity

These sliders control how similar something is expected to be to something generated earlier in the phrase. On the extreme, the **Identical** setting will repeat previous output. On the other extreme, the **None** setting leads to distinct and unique output without any repetition.

**Intra Measure**

How similar things are supposed to be within the same measure (short range).

Beyond

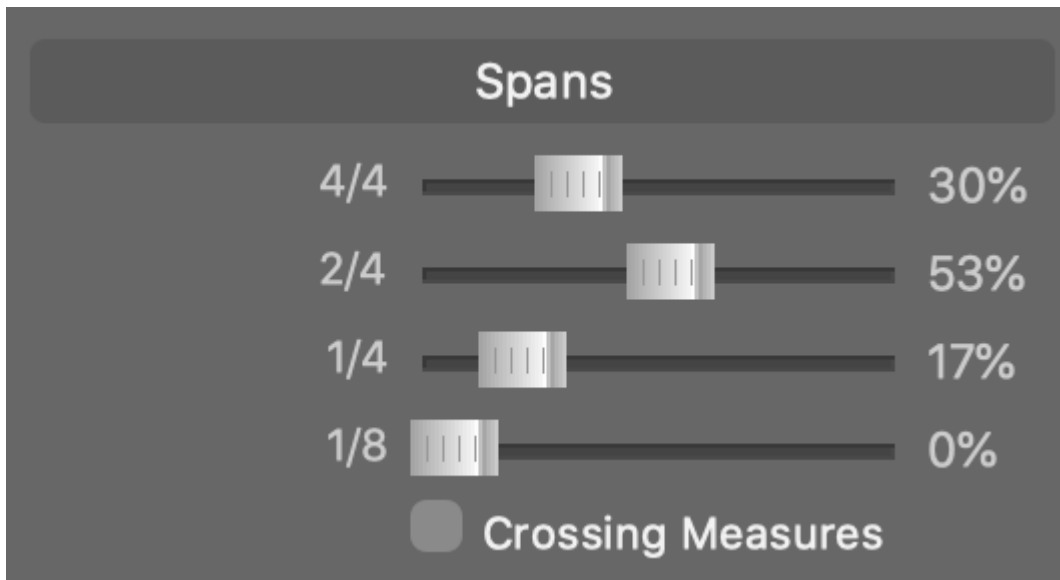
How similar things are supposed to be in subsequent measures to what has already happened in previous measures (long range).

Related information

[Factories \(on page 29\)](#)

Spans

Using these probabilities as a guideline, a factory first generates empty spans according to its internal rules. After spans have been generated, they are assigned a **Type** ([on page 218](#)) of **Figure** segment and filled accordingly. Longer spans allow **Figure** segments to run and develop, while very short spans may clip them to a blip.



The setting **Crossing Measures** allows spans to overlap measure bounds, which is good for melodies and weakens the pronunciation of beat.

**Note:**

The lengths shown here are merely an example for 4:4 (common time). Lengths for other time signatures may vary.

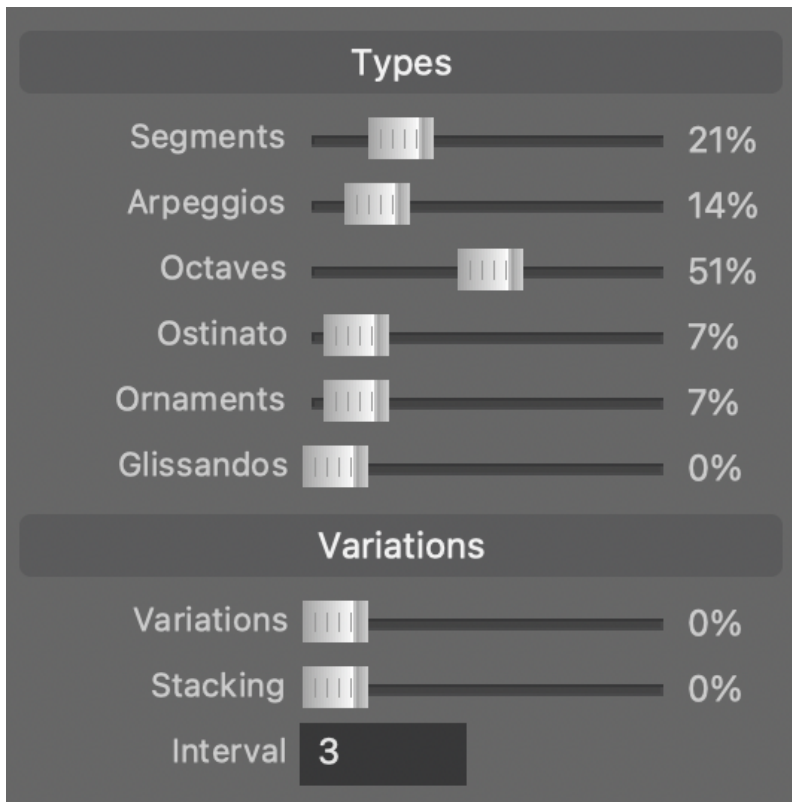
Related information

[Types \(on page 218\)](#)

[Factories \(on page 29\)](#)

Types

The [spans \(on page 217\)](#) generated by a Factory are filled with [Figure Segments \(on page 298\)](#). These probabilities control which types of segments are supposed to occur.



Segments

Segments that are controlled by the settings you make on the [Segments \(on page 220\)](#) tab. These are mostly melodic runs.

Arpeggio

Segments running up and down the line grid in a triangle-like shape. Depending on the symbol type, you get an arpeggio for chord symbols or a melodic run for vertical or horizontal symbols.

Octaves

Segments alternating between 0 and 7, which however is not necessarily always an octave, depending on the current scale.

Ostinato

Segments repeating the same symbol multiple times.

Ornaments

Grace notes or trills.

Glissandos

Segments gliding up or down the grid very quickly.

Variations

Variations

Controls how likely individual segments are transformed, e.g. flipped upside down or reversed.

Stacking

Controls how likely two copies of a segment are stacked above each other.

Interval

The scale steps between stacked segments.



Important:

How many symbols are actually filled into a span depends on the **Step** parameter generated internally by the Factory and the length of the span. There may be spans that come up empty, because none of the steps happen to fall into that span. Likewise, there may be spans too short to contain enough of a segment type to make it recognizable as such. That is, you might get only one or two symbols where an arpeggio or melodic run is supposed to appear.

Related information

[Spans \(on page 217\)](#)

[Step Distribution \(on page 223\)](#)

[Factories \(on page 29\)](#)

Segments

Control the **Symbol Type**, **Playing Range** and shape of **Figure** segments to be generated. Configurable number sequences control how a segment is drawn incrementally. The optional breakdown of a segment into **Head** and **Tail** allows the beginning and the further course of a segment to be based on different number sequences.

Some settings only affect [spans \(on page 217\)](#) of the type **Segments**.

Symbol

Horizontal

Playing Range

Default

☐

Enable Triplets

☒

Tails

☐

Start Heads From Anchor Backwards

Starts

0 2 4 6

Keep

Per 1m

Heads

A

2 -1

Keep

:|| Last 1

B

-2 1

Rotate

:||

C

3 -2 1

Rotate

:|| Last 2

Tails

A

-1 0 1

Rotate

:||

B

0 0 1 -1 2 -2

Read 3

:|| Last 1

C

0 0 1 -1 2 -2 3 -3

Permute

:|| Last 2

Symbol

The type of **Figure Symbol** to use.

Playing Range

The **Playing Range** to assign to the segment being drawn.

Enable Triplets

Allow individual segments to advance in triplets as a random variation. If you need more triplets or other tuples, paste the desired rhythm into the **Parameter Outlet** of the **Step** factory.

Start Heads From Anchor Backwards

If enabled, the current value of **Starts** controls on which grid line the anchor is drawn and the **Heads** sequence is glued to it on the left side in backwards direction.

Starts

Determines the position on the line grid where the drawing of a new segment starts.

Heads

The beginning of a segment is called the **Head**. It is drawn first. These numbers determine by how many steps the writing head is transposed up or down **after** a new symbol has been drawn. If **Tails** are activated, the heads are drawn in the reverse direction, starting from the anchor to the left..

Tails

The further course of a segment is referred to as the **Tail**. If tails are not activated, segments only consist of a **Head**.

Number Sequences

All numbers denote vertical moves up or down the current scale, while horizontal movement is exclusively controlled by the [Step \(on page 223\)](#) parameter. That is, you have a rhythm beforehand and the sequences make a melody move up or down while the current position advances to the next step with each new number.

Every number sequence can be configured to deliver a random variation of itself and how it is looped. The input field takes a list of one or more numbers separated by space or comma. The two menus to the right of it control **Transformation** and **Streaming** of the sequence.

Transformation

Depending on this setting the sequence delivers a random variation every time it is used by the factory. The randomness is controlled by the following settings.

Keep

Takes the elements unchanged as they are (no randomness).

Permute

Delivers a random reordering of all elements.

Rotate

Scrolls around the sequence of elements by a random number of steps.

Read 2, 3, 4

Selects 2, 3 or 4 successive elements starting from a random position, while keeping their order.

Pick 1, 2, 3, 4

Picks 1, 2, 3 or 4 elements randomly in a random order.

Streaming

Controls how a sequence is looped or stretched and interpolated evenly to cover a certain span of time.

Once

Streams all elements once and stops at the end.

:||

Repeats the sequence of elements indefinitely.

:|| Last 1, 2, 3, 4

Streams all elements and then repeats the last 1, 2, 3 or 4 elements indefinitely.

Per Phrase

Evenly distributes all elements over the entire span of the phrase.

Per 1m

Evenly distributes all elements over each new measure that is generated.

Interpolated

Inserts interpolated values between the evenly distributed elements. For example, the sequence 0 9 with *Per Phrase* streaming and *Interpolated* will stream 0 1 2 3 4 5 6 7 8 9 evenly distributed across the phrase.



Tip:

A vast range of melodic shapes can be generated from these configurable sequences. You should keep in mind though, that this is for a single line of one phrase only. Nothing stops you from generating many similar variations using the same factory and then drop them on a phrase in your arrangement at different positions in order to glue together a slowly evolving theme.



Tip:

If you want only a single sequence, simply configure A, B and C identically.

Related information

[Step Distribution \(on page 223\)](#)

[Spans \(on page 217\)](#)

[Factories \(on page 29\)](#)

Step Distribution

A Factory generates a **Step** parameter internally that is used to determine the onsets and lengths of all generated **Figure** symbols. It is the rhythmic grid for all output. Symbols always sound until the next step in the grid (no gaps). The only way to modulate symbol lengths is the **Flow** parameter.

These probabilities are used by a Factory's rules, which take into account a lot more than simple random distributions in order to build a musically meaningful rhythm. Pulling either slider to 100% will give you a constant step.

Step distribution may also be used by Factories that generate parameters other than **Figure**.



The **Dotted** slider controls how likely these note lengths are extended by half their duration.



Note:

The lengths shown here are merely an example for 4:4 (common time). Lengths for other time signatures may vary. The meaning of 1/1 may be synonymous with 1_m where time signature is not a multiple of 4:4.



Note:

Triplets and quintuplets only make sense as multiple steps in a row. They can't be arbitrarily inserted anywhere. Hence they are taken care of by the settings that control the generation of [Figure Segments \(on page 220\)](#) and must be enabled on that tab.



Note:

Lengths shorter than 1/32 are used by specific segments types internally only, like **Glissando** and **Ornaments**.

Related information

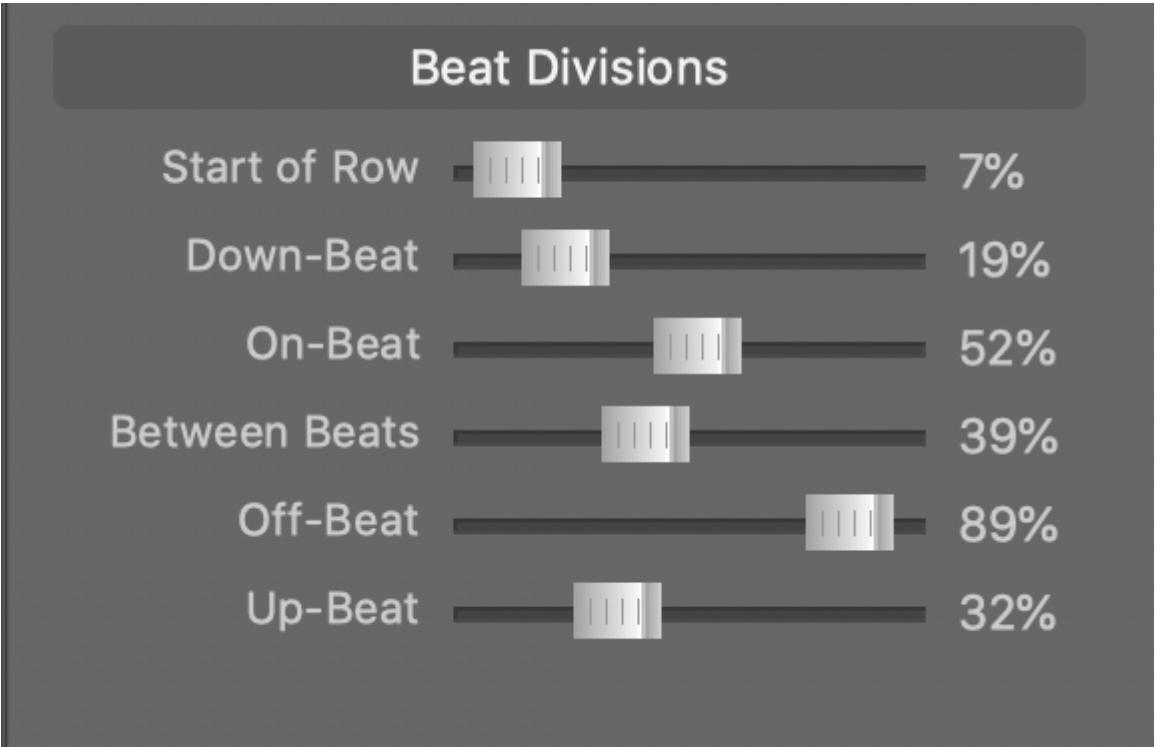
[Spans \(on page 217\)](#)

[Types \(on page 218\)](#)

[Factories \(on page 29\)](#)

Beat Divisions

Control how likely a value is expected to be set for a parameter in different zones of a metric scheme.



Start of Row

The very first beat of a phrase or progression.

Down-Beat

The first beat of every measure (bar).

On-Beat

Every heavy beat.

Between Beats

Any position that is not close to a beat.

Off-Beat

Every light beat.

Up-Beat

The last light beat of a measure, before a new measure starts.

Related information

[Factories \(on page 29\)](#)

Parameter Factories

List of parameter factories

Related information

[Factories \(on page 29\)](#)

Rhythmic Bass

Flow: [Generate articulations typical for acoustic bass](#)

Generates a [Flow \(on page 302\)](#) parameter that stops notes at rhythmical positions as is typical for acoustic bass.

Note that this parameter is used only while data is being generated. It is not added to the generated phrase as a visible parameter.

Metric Stops

Flow: [Generate stops and other flow values based on beat zones](#)

Generates a [Flow \(on page 302\)](#) parameter that shortens note lengths for a stop effect at rhythmical positions based on probabilities.

Off Value

Default where no value is applied.

On Value

Value to apply at beat positions as determined by the probabilities below.

On Span

Span to fill with the On Value, starting from a beat.

Invert On vs. Off

Flips entire parameter upside down.

Rotate Left

How much to shift the span in order to take effect earlier.

Period

Loop length of the parameter.

Rhythmic Chords

Flow: [Modulates note length based on time signature](#)

Factory that modulates note length based on time signature, best for rhythmic chords.

Static

Flow: [Provides a constant flow value](#)

This factory forces a constant flow setting on all notes.

Functional

Harmony: Generate random chord progressions based on functional relationships and popular cadences.

Factory for random chord progressions based on functional relationships and popular cadences.

Chord Machine

Harmony: Generate random progressions unfolding along a probabilistic chord network

Factory for random progressions unfolding along a probabilistic chord network.

The screenshot shows a settings panel for the 'Harmony' factory. It features several sections with adjustable parameters:

- Harmony**: A section header.
- Metrics**: A section header.
- Chords**: A dropdown menu set to '4'.
- Signature**: A dropdown menu set to '4:4'.
- Progress**: A dropdown menu set to 'Slow (1m)'.
- Material**: A section header.
- Key**: A dropdown menu set to 'A.Major'.
- Richness**: A dropdown menu set to 'Medium'.
- Re-Assess Key, Scales**: An unchecked checkbox.
- Options**: A section header.
- V-I Ending**: An unchecked checkbox.
- Sec. Dominants**: A dropdown menu set to 'None'.

Stray Chords

Harmony: Extensive factory for chord progressions

Generate otherworldly and unique progressions with up to two selectable keys and predefined start or end chords to match. This is an experimental, yet very powerful factory that will provide you with an endless supply of inspiring chord progressions. Here are a few tips for adjusting the settings.

The screenshot shows the 'Harmony' tab selected. The interface is divided into three main sections: Harmony, Constraints, and Preferences.

- Harmony Section:**
 - Metrics:** Chords: 8, Signature: 4:4, Progress: Slow (1m), Looped: ☒.
 - Material:** Key-less: ☐, Key 1: A.Major, Key 2: F.Major, Richness: Open, Catalog Priority: 5, Re-Assess Key, Scales: ☐.
- Constraints Section:**
 - First Chord: (empty input)
 - Last Chord: V7
 - A Fixed Notes: i
 - Moves: -7
 - Move Along Scale: ☐
 - B Fixed Notes: iv
 - Moves: -1 5 -7
 - Move Along Scale: ☐
 - Carry Notes: 2
 - Carry Steps: 1
- Preferences Section:**
 - Key Membership: 6%
 - Harmonic Functions: 6%
 - Similar Size: 37%
 - Avoid Repetition: 35%
 - Known Changes: 100%
 - Strong Changes: 2%
 - Chromatic Moves: 28%

Looped

The transition between last and first chord is optimized for loops.

Key-less

Disables the focus on any key signature for free roaming chord progressions.

Key 1, Key 2

The first key is considered the main key, while an optional second key provides additional chord material. Set both to the same key if you don't need a secondary key.

Richness

- **Simple:** Up to four notes and favors triads.
- **Medium:** Up to five notes and includes diminished chords.
- **Complex:** Up to five notes and includes diminished and augmented chords.
- **Open:** Up to six notes of all chord types and relaxed constraint checking.

Catalog Priority

Prefer chord structures with a priority in the **Catalog** equal to or lower than this.

Re-Asses Keys, Scales

After generating the whole progression, apply the keys and scales estimation algorithm. Disable this if you want to keep the keys assigned by the factory.

First, Last Chord

You can predefine a first and/or last chord to have the factory fill everything in between. Input may be chord names or **Roman Numeral** expressions.

Fixed Notes A, B with Moves

You can specify that each chord must contain one or more fixed notes. Enter them with names or **Roman Numerals**. If you enter a sequence of numbers in the "Moves" field, the respective next chord will be transposed accordingly. Transposition is chromatic by default, but can be switched so that it occurs along scale steps.

Carry Notes, Steps

You can require a number of notes to be carried (sustained) across chord changes for a minimum number of steps.

Preferences

Multiple sliders allow for adjusting the priority of various properties the chords and transitions between them are supposed to have.



DANGER:

This factory is experimental. Some settings may lead to constraints that are impossible to meet and that may possibly hang the algorithm.

Metric Pauses

Pause: Drop notes based on rhythmical positions

Generates a [Pause \(on page 310\)](#) parameter that drops notes based on rhythmical positions. Anywhere this parameter has an "Off" value, figure symbols or parameter data is filtered out.

Pause Span

How long, starting with the beat, a pause will last.

Invert On vs. Off

Flips the resulting parameter upside down.

Rotate Left

How much the pause span will be shifted early to the beat.

Period

Loop length of the parameter.

Note that this parameter is used only while data is being generated. It is not added to the generated phrase as a visible parameter.

Alternating

Skip: Skip positions of the **Step** parameter based on rhythmical positions

Factory for skipping steps for multiple melodic lines

Coordinated

Skip: Provides three coordinated parameters

Factory provides three coordinated Skip parameters

Bass One

Step: Generate steps based on patterns typical for acoustic bass

Generates a [Step \(on page 315\)](#) parameter based on patterns that are typical for acoustic bass. Also very good for other instruments that take on a bass role.

Random (Flat)

Step: Generate random steps

Populates a loop with random steps.

Period

Loop length of the parameter. Longer periods will make the resulting rhythm appear more random and chaotic, as there is probably no discernible pattern.

Preserve Down-Beats

Make sure there is a step at every down-beat at the beginning of a new measure.

Sequencer

Step: Provide a sequence of incremental steps manually

Generates a [Step \(on page 315\)](#) parameter allowing you to input your own steps and loop length. For details on sequence entry please [look here \(on page 222\)](#).

Random (Structured)

Step: Generate steps with structure and self-similarity

Generates a [Step \(on page 315\)](#) parameter with deep structure and adjustable self-similarity for natural sounding rhythms.

Syncopes

Step: Generate steps with all on-beats removed

Generates a [Step \(on page 315\)](#) parameter for rhythm patterns that have all on-beats removed for a syncopated feel.

Metric Velocities

Velocity: Generate curves based on time signature

Generates velocity curves based on time signature.

Invert (Emphasize Off-beat)

The selected waveform emphasizes on-beats by default. This inverts the waveform to emphasize off-beats.

Half-Measure Dip

Makes the curve less pronounced in the middle of a measure, putting more emphasis at the beginning.

Double Speed

Doubles the frequency of the waveform.

Push

Adds extra emphasis early to the beat to make it more pronounced.

Rotate

Shifts the wave by a set amount, making dynamics feel early or late to the beat.

Humanize

Adds random variation in dynamics.

Polyphony

Generates multiple velocity curves, so chords can obtain a different value for each note.

Static Velocity

Velocity: [Provide a constant velocity](#)

Factory that forces a constant velocity on all notes.

Line Factories

[List of line factories](#)

Related information

[Factories \(on page 29\)](#)

Bass (Multi)

[Bass lines based on three separate sets of heads and tails](#)

This bass factory is based on three separate sets of heads and tails for additional variation.

Bass (Single)

[Bass lines based on a single set of heads and tails](#)

Configurable bass factory based on a single set of heads and tails.

Piano Bass

Bass lines typical for piano left hand

Bass factory for what is typically played by a piano left hand. Also very good for other bass instruments.

Arpeggio Chords

Generate broken-up arpeggio chords

Useful as a replacement for a chords part. Also great for other symbol types.

Guitar Chords

Strummed guitar chords

Configurable factory for strumming guitar chords.

Piano Chords

Chord stabs for piano and other keyboards

Configurable factory for chord patterns. Useful for piano and other keyboard instruments

Arp One

Configurable arpeggiator with many options for rhythm, pauses and dynamics

Configurable arpeggio factory with many options to control rhythm, pauses and dynamics

Chained Elements

Sequentially chained melodic elements

Factory for sequentially chained melodic elements. Good for solo and improvisation

Generic Melody (Single)

Melodies based on a single set of heads and tails

Configurable melody factory with a single set of heads and tails.

Generic Melody (Multi)

Melodies based on multiple sets of heads and tails

Configurable melody factory with extra variety offered by multiple sets of heads and tails.

Piano Right Hand

Melodies typical for piano right hand

Melody factory typical for piano right hand, but also great for other purposes.

Question + Answer

Interleaved melodies following the question and answer idiom

Melody factory with two separate sets of parameters, interleaved for a question and answer feel.

Develop A

Generates longer melodies that evolve over time.

Generates a melodic line that develops variations and changes over time. It uses two steps. A slow **Anchor Step** is used to place anchors, while a faster **Melody Step** is used to place individual notes. Two variations of the latter are generated internally and you can decide how frequently they will alternate.

Vocals

Generates melodies useful for vocals.

Generates a melodic line that resembles characteristics of lead vocals. It uses two steps. A **Slow Step** is used for long notes, while a **Fast Step** is used for shorter notes.

Phrase Factories

List of phrase factories

Related information

[Factories \(on page 29\)](#)

Counterpoint Melodies

Three freely configurable lines

Factory for three configurable lines that follow individual step rhythms. Useful for splitting across multiple instruments.



Tip:

Like most factories, this one can be used for [much more \(on page 32\)](#) than its name suggests.

Counterpoint (Skipped)

Three lines based on a common **Step**, each using a different **Skip**

Factory for three configurable melodic lines, each using a different Skip parameter for rhythmic effects.



Tip:

Like most factories, this one can be used for [much more \(on page 32\)](#) than its name suggests.

Piano Parts

Left hand, right hand and chords, great also as three lines for different instruments

Factory for three parts: Left hand, right hand and chords. While this was originally designed for piano, its is great for any keyboards instrument, or for splitting the three parts across multiple instruments.



Tip:

Like most factories, this one can be used for [much more \(on page 32\)](#) than its name suggests.

ExperimentalKit1

Experimental drums factory based on a configurable line per instrument

Experimental factory based on a configurable line per instrument. Good for break beats and a starting point for manual refinement and inspiration.

Chapter 4. Tasks

Step-by-step instructions of common tasks

Audio Setup

Setting up audio drivers, devices, sounds, racks and drones

[Video Tutorial](#)

Assigning Sounds

[Video Tutorial](#)

There are multiple ways to select a **Sound** ([on page 37](#)) for an **Instrument** ([on page 33](#)).

Rack Module Library

Search and browse the **Rack Module Library** ([on page 47](#)) on the left sidebar that contains rack module presets, plug-ins, MIDI ports, Drones and global instruments.

Drop any available item on a **Track** ([on page 20](#)) to create a **Rack Module** and select one of its sounds.

Drop items below the bottom track to append a new track.



Anywhere you see this icon, you can open the **Sound Wizard** ([on page 196](#)). Alternatively you can open it from the menu with **Instrument > Assign Sound ...**. It guides you through the process of setting up or extending a **Rack Module** and creates a **Device Description** where one is needed, so you don't have to. This method is best when you need to add new sounds to an arrangement.



This icon shows up on tabs related to sound assignment, for example the **Parameter Inspector** on the right sidebar. There you can select an existing **Rack Module** ([on page 38](#)) and channel from pop-up menus to use a sound provided by that module. This method is convenient for selecting fixed-channel sounds you have already added to an arrangement.

Copy From Other Arrangements

Drop any **Rack Module** ([on page 38](#)) from another arrangement's rack on your **Arrangement Rack** ([on page 24](#)). Sounds are then available for the **Sound Wizard** ([on page 196](#)) to browse.

Manual Setup

Visit the **Arrangement Rack** ([on page 24](#)) and add a new **Rack Module** ([on page 38](#)) and set it up as [explained here](#) ([on page 235](#)). Sounds are then available for the **Sound Wizard** ([on page 196](#)) to browse.

**Important:**

When you select a different sound for an instrument, it adopts the sound's **Playing Ranges** ([on page 35](#)) by default. This will likely also change its current MIDI output. You can disable this by deactivating the chain link on the wizard's last page, or globally with **Playback > Audio/MIDI Setup > MIDI > Sound Management**. If you do so, you must verify yourself that your instrument's ranges don't violate the capabilities of the sound.

Multiple Instruments Using The Same Sound

Assigning the same sound to multiple instruments will make them play on the same MIDI channel. If you want one or more of them to play on different channels, you need to multi-select the desired instruments and do **Instrument > Demand Separate Channel**.

**Note:**

This only works for devices that select sounds via MIDI program change messages on more than one dynamic channel. Sounds on fixed channels, as the name implies, are always tied to the same channel.

Related information

[Dynamic Sound Allocation \(on page 42\)](#)

Setting Up MIDI Input

How to make sure Synfire receives MIDI input from your external keyboard or remote software.

1. Open **Playback > Audio/MIDI Setup** and visit the **Inputs** page.
2. Find the port of your MIDI keyboard or external interface.
3. Check the **Input** box for it.
4. Play notes on the keyboard. The MIDI icon on the window toolbar should flash.
5. Also verify the other Input Preferences match your current preference.

**Troubleshooting:**

You may need to do **Playback > Reset Audio/MIDI System** to make recently connected MIDI equipment appear in the list.

**Troubleshooting:**

On Microsoft Windows, problems may occur if multiple programs attempt to use the same USB MIDI driver at the same time. Especially prone to this are cheap drivers that often accompany inexpensive MIDI hardware. If you wonder why Synfire is unable to receive data from your hardware, there is probably another program already using the USB driver. In order for Synfire and other software to receive MIDI at the same time, you may need to use separate USB interfaces, or look for a more capable driver, if possible. Since this is a frequent problem, you should visit the user forum for the latest solutions (users.cognitone.com)

**Troubleshooting:**

On Microsoft Windows, you may experience problems when multiple programs attempt to access the same ASIO driver. In order to be able to run the engines and a DAW in parallel, you might need to assign them to different audio output drivers. For example, you may want to use the ASIO driver for your DAW and the Windows Audio or DirectX drivers for the engines. On the Mac, running multiple Engines and DAWs at the same time is not a problem.

Related information

[MIDI Routing \(on page 41\)](#)

Creating Device Descriptions

Creating a **Device Description** ([on page 36](#)) for your most frequently used sounds is a one-time effort that quickly pays off. Having a device ready to browse for sounds (with all meta-data already set up) will save you a lot of distraction in those moments when your best ideas are coming up.

To obtain a device descriptions for your plug-in or external hardware, you basically have the following options:

Migrate

If you already have a description you created with an earlier version of a Cognitone software, you can add it to your list with **File > Open And Add ...**.

Download From The Online Repository

On the tab **Repository** ([on page 185](#)) you can browse descriptions other users have uploaded.

Extract From Plug-In

Some plug-ins support this. [It is worth a try \(on page 239\)](#).

Import from a MIDNAM (XML) File

The user community of Avid ProTools® and Digital Performer® created a collection of MIDNAM files for many synthesizers some time ago. Synfire can [import these \(on page 238\)](#).

Create One Yourself

Explained in [this section \(on page 237\)](#) in detail.

For synthesizers you tweak on an individual basis per each project anew, you can also do without a device description altogether. Instead you would enter all required meta-data as you go, guided by the **Sound Wizard**, or in the **Instrument Inspector**.

New Device Description From Scratch

[Video Tutorial](#)

Before you start, please consult the documentation that came with your hardware or sound library and make sure you understand the **four types of devices** and which one you need:

Fixed Channels (Sampler)

Sounds each listen to a fixed MIDI channel. For example, an instance of NI Kontakt™ with assorted sounds loaded that you often use for songwriting. Each sound is told which MIDI channel to listen on. The entire setup is saved as a preset to get you started quickly with new projects.

1-Channel Multiple Programs (Synth)

The device listens to a single MIDI channel. Different programs/patches are selected by sending MIDI messages or preset selection commands. Sometimes multiple sound banks can be selected. Such a device description typically represents a synthesizer's factory presets or a sound bank loaded into the device.

16-Channel Multiple Programs (Multi-Timbral)

Same as above, only there are 16 MIDI channels, each of which is able to select a different program/patch to be played at the same time. Typically these devices are **General MIDI** sound modules or classical synthesizer emulations.

Template

This device is not an actual device. It merely provides a list of sound names associated with their meta-data that you can lookup and insert when you need them (**Category, Playing Ranges, Custom Controllers, Articulations** and program numbers and selection methods). Setting up a **Fixed Channel** type device from a **Device Template** is especially fast and convenient.

After deciding for a device type, open the pop-up menu with  from the device list or call up its **right-click menu** to add a new device.

Now you setup its

1. [Properties \(on page 137\)](#)
2. [Variants & Channels \(on page 140\)](#)
3. [Programs \(on page 141\)](#).

Related information

[Dynamic Sound Allocation \(on page 42\)](#)

Importing Device Descriptions

You may save some effort by starting a new device description not from scratch, but based on an import of similar meta-data in other file formats.

MIDI XML (MIDNAM)

Cognitone supports the **MIDI XML** standard format adopted by Apple and the MMA (Midi Manufacturers Association) for the labeling of "patch names" (files extension is **midnam**). Among other things, these files describe the MIDI commands for bank selection and the sounds that are available on a particular sound generator.

On the Internet, **midnam** files are available for many classical synthesizers. You can import those with **Option > Import XML (midnam)**. You'll find currently known download links on the [Cognitone](#) website.

Conversely, with **Option > Export XML** it is also possible to export devices in XML format and thus share them with other applications. Note however that between import and export, some information not used by Synfire is lost.

Text Files (Sound Banks Only)

On the Programs tab, with **Option > Import Text File ...** you can import the program numbers and sound names of a single **Sound Bank**. In the text file each line must begin with the program change number, followed by the sound name separated by a tab or space. Of course, you can not import a bank this way before you created a device.

Cubase Parse Files

This is still experimental and not yet available. If you need this, feel free to ask our support for assistance.

Extracting Plug-ins

[Video Tutorial](#)

Some audio plug-ins support automated extraction of their list of programs/patches. Although this capability is part of the VST and AudioUnit specs, many developers do not bother implementing it. In general, it is more likely supported by synthesizer type plug-ins than samplers or sound libraries.

After you started **Extract From Plug-in ...** from a rack module's device menu, Synfire will ask you for a name for the device description about to be extracted.

If for example the plug-in **NI Reaktor** has a patch **Lazerbass** loaded, you would enter **Lazerbass** here and the device will contain all programs/patches available for **Lazerbass**.

You also can leave the name empty. Synfire will then guess a name based on what it finds in the plug-in.

After successful extraction, you need to assign a **Category** ([on page 34](#)) to each sound and check their **Playing Ranges** ([on page 35](#)).



Important:

Work like this should be done globally in **Audio/MIDI Setup**, rather than in an **Arrangement Rack**. This makes sure your extracted device will not be confined to a single arrangement.

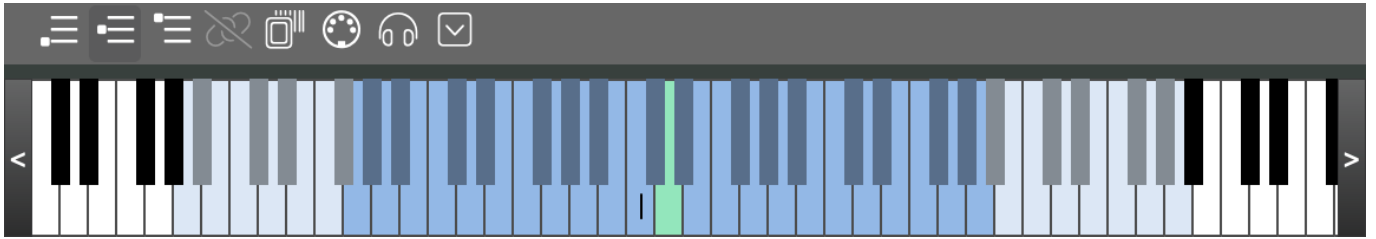


Tip:

In case your plug-in does not support this function, you may want to request this feature from the developers. Usually it is relatively easy to implement. The more users are requesting this feature, the more likely the developers will follow your suggestion.

Scanning Playing Ranges

If a sound is hosted by the **Audio Engine** or a **Drone**, Synfire can scan its **Playing Ranges** ([on page 35](#)) automatically by listening to its sound output.



Before you start, make sure a **Category** ([on page 34](#)) is assigned to the **Sound** ([on page 37](#)) or **Instrument** ([on page 33](#)).



Probe the plug-in for its pitch range estimate all three playing ranges. This may take while.



Option menu that allows you to copy and paste ranges, or distribute them equally or in proportion to known physical instruments.

Configuring Rack Modules Manually

Using the **Sound Wizard** ([on page 196](#)), or dropping items from the **Rack Module Library** are certainly the most convenient ways to add a new module to a rack. Still, you might find yourself in a situation where you need to configure a module manually from scratch.

Add Empty Module

Double-click in the empty area of the rack to add an empty module based on the currently selected host. By default this is the preferred **Audio Engine**, unless some other host is selected on the tabs over the rack area.

If you want to use a **Drone**, **Drop** a yet unused one from the **Rack Module Library**, which will also add an empty module.

Load Plug-in

Hover over the **Plug-in Button** and **click** on the double-arrow icon to select an audio plug-in to load. The editor of the plug-in will open, unless you are using a Drone. In the latter case you need to switch to the DAW and open the plug-in editor there. Synfire can't force the DAW to do that for you, unfortunately.

Configure the plug-in's sounds to your liking.

Select Device Description

Unless the module is for an audio effect, it needs a **Device Description**, so Synfire can know what kind of sound the plug-in is providing. **Pick** one from the menu or [create a new one as explained here \(on page 237\)](#).

Save a Preset

Once you have set up a rack module that is likely useful on other occasions, you should save it as a preset. This will make it appear in the **Rack Module Library** on the sidebar, from where you can conveniently drop it on future racks and instruments, so you won't have to configure it again.

Synchronizing With a DAW

Be sure you understand the [general implications \(on page 287\)](#) of this.

Preparation

1. Load as many **Drone** plug-ins into the DAW as you need. Don't mix VST, VST3 and AudioUnit Drones. Settle for one format and stick to it for the project. Guest plug-ins may use any format, though.
2. The **Sound Wizard** ([on page 196](#)) can now see the Drones. They also show up in the **Rack Module Library** from where you can drop them on instruments or into racks. Follow the wizard's instructions.

Alternatively, you can visit the **Sounds** tab and drop Drones from the **Rack Module Library** to the rack and load the desired plug-ins and device descriptions manually.

3. Switch to the DAW and configure the guest plug-ins of each Drone as needed.
4. Switch to Synfire and save your project.



Important:

Always save the Synfire arrangement first and then the DAW project. When opening, do it the other way around: Always open the DAW project first and wait 10 seconds until all drones are online. Only then do you open the corresponding Synfire arrangement.

Synchronize Using MIDI

This works just as fine, although tempo changes can't be transmitted to the DAW.

1. Call **Playback > External Synchronization** and visit the **MIDI** tab on the **Parameter Inspector** ([on page 66](#)).
2. Check **Enable External Sync** and **Enable MIDI Sync**.
3. Make sure tempo in the DAW is the same as in Synfire.
4. Select a MIDI port for sending synchronization messages.
5. Select a protocol:
 - **MIDI Clock**: Transmits MIDI clock ticks and MIDI transport control messages (START, STOP, CONTINUE) and Song Position Pointers (SPP).
 - **MIDI Time Code**: Transmits SMPTE messages (full position pointers and quarter frame messages). Be sure to verify SMPTE offset and frame rate on the **Timing** tab.
 - **Open Sound Control (OSC)**: This is still experimental.
6. Customize the protocol only if the default doesn't work. You may select different protocols for specific messages to ensure best compatibility with your external synchronization target.



Note:

Every DAW might need different settings to work with Synfire. Please look up the required settings in the appendix [Synchronization Settings For DAWs \(on page 335\)](#).

Synchronize Using ReWire

If your DAW supports ReWire, synchronization is easy to set up. In order to start a new project immediately on a DAW instead of using an Engine first, you need to proceed as follows.

1. Load the ReWire module **Cognitone Transport** into the DAW. It does not generate audio signals. Make sure it is allowed to change tempo of the DAW.
2. Call **Playback > External Synchronization** and visit the **Transport** tab on the **Parameter Inspector** ([on page 66](#)).
3. Check the **ReWire** switch. If the name of your DAW transport shows up, both programs are synchronized.

Testing The Setup

Verify that synchronization is working by selecting random containers or locations on the time ruler. The playhead of the DAW should follow your selection. Pressing start and stop should make the DAW follow suit.



Important:

Remember that, depending on the synchronization method, you may need to set the tempo in the DAW manually in order to match that of Synfire. This is extremely important for proper synchronization.

Related information

[Synchronization Settings For DAWs \(on page 335\)](#)

[Audio Engine vs. DAW \(on page 287\)](#)

Relocating From Engine to DAW

Situation

You have a self-contained arrangement with all sounds based on the **Audio Engine**. You want to continue composing in a DAW using the same sounds and synchronize both programs. The task is to move the sounds over to the DAW (where they are hosted by [Drones \(on page 43\)](#)) and make it a synchronized Synfire + DAW project from now on.

How to Relocate

Step-by-step instructions how to accomplish the task.

1. Create a new project in your DAW using the same name as the arrangement.
2. Synchronize your DAW with Synfire as [explained here \(on page 241\)](#).
3. For each module on the **Arrangement Rack** ([on page 24](#)), load a [Drone \(on page 43\)](#) plug-in into the DAW. Don't mix VST, VST3 and AudioUnit Drones. Settle for one format and stick to it for the project. Guest plug-ins may use any format, though.
4. Visit the **Sounds** page and for each rack module **pick** the desired target Drone from the port menu. Synfire will move the plug-in and its current contents over to the Drone and update all affected instruments accordingly.
5. Repeat the last step until all plug-ins have moved to Drones in the DAW.

6. Save your Synfire project first, then save the new DAW project. Preferably keep both files in the same folder.

Now you have a synchronized Synfire + DAW project.



Tip:

If you can not hear the Drones playing, you may need to check if the DAW requires tracks to be armed for monitoring in order to render sound output while the transport is idle.



Tip:

You can also relocate a project from a DAW back to an Audio Engine. Or from one Audio Engine to another, provided the same plug-ins are available on both computers.



Tip:

Always move all plug-ins of an arrangement to the same host, or you will experience timing problems.

Related information

[Drones \(on page 43\)](#)

[External Synchronization \(on page 66\)](#)

Inspecting The Audio Engine

Besides visual feedback on audio output and checking which otherwise invisible plug-ins are currently loaded, opening the Engine user interface is of little use. Still, in the event you need to, here's how to do it.

1. **Windows:** Find the **Engine** icon on the Windows task bar and double-click it. This will open the user interface of the engine.
2. **Mac:** Find the **Engine** icon on the dock and bring it to front. You can then access all functions through the main menu bar.

Editing

[Common tasks while you are developing a project](#)

Playing Palettes

[How to navigate and make sense of a palette](#)

[Video Tutorial](#)

Simply **click** on a chord in a **Palette** to schedule it for live playback. **Drag** any chord to a progression to insert it. Better yet, review, edit and drag off the **Harmonic Context** ([on page 191](#)) panel of the right sidebar.

There are two playback modes you can choose from.

Chords-Only Mode

- Enable **Playback > Chords-Only Mode** to hear chords played with the **Global Instrument** 'Chords'.
- Disable **Playback > Sustain Palette Chords** if you want the chord to stop once you release the mouse button. Otherwise it will be sustained until you schedule the next.
- Enable **Playback > Play Bass Instrument** to hear the bass played with the **Global Instrument** 'Bass'.

Sketch Mode

Select a **Sketch** from the menu **Playback > Sketches** to render all chords with a real-time accompaniment.



Note:

Always click on the next chord a short moment ahead of time, so Synfire gets a chance to prepare for the change. A few milliseconds are sufficient.

Transposition, Inversion And Voicing

In **Chords-Only Mode** you can control inversion and voicing of a chord to some extent by using the keyboard commands mapped to the **Transform** menu (open the menu to see).

Once a chord was added to a progression, there are two ways to transpose its sound.

1. If an entire progression seems to be pitched too low or high, you should transpose or widen the middle **Playing Range** of the **Global Instrument** 'Chords'. Open **Playback > Audio/MIDI Setup** and edit the middle playing range of the 'Chords' instrument.
2. If individual chords sound pitched wrong, you can edit **Inversion**, **Voicing** and **Alignment** in the **Progression Editor** or on the **Harmony Lane** ([on page 97](#)). If you need to remove these edits from a progression again, do **Transform > Reset Hints**.



Important:

Remember that it is up to the individual **Instrument** and the **Interpretation** ([on page 305](#)) parameter whether to obey the hints regarding inversion, voicing and alignment in a progression. The built-in interpretation for Chords-Only playback does so, but those your arrangements may not.

Trying Alternative Chords

While playing a palette you can use the **Left** or **Right** arrow keys to return to the previous chord or advance to the chord previously returned from (back and forth). Then you can try an alternative path starting from there.

The **Harmonic Context** ([on page 191](#)) panel on the right sidebar shows a back-trace of the three most recently played chords.

Highlighting Relationships

Chords

Select a chord to schedule it for playback. This highlights all scale steps used by the chord.

Drag a chord to any progression to insert it there.

Horizontal Scales

Select one or more scales to highlight chords that can be built from them exclusively.

Scale Steps

Select or more steps to highlight chords that include them.

Advanced Navigation

Using the **Navigation** menu, you can highlight in all open palettes the chords they have in common (**Shared**) or those they own exclusively (**Distinct**). This is helpful for finding a path to a [key change \(on page 10\)](#) (modulation).

Harmony (Outlet)

Drag the **Notepad** progression off to any destination, or drop a progression from elsewhere.

Freeze

Locks current chord and scale selections while you continue playing.

MIDI Input

Highlight scale steps and chords according to MIDI input.

MIDI Live

While responding to live MIDI input, also detect incoming chords.

Surfing Multiple Palettes

Open multiple palettes and play chords on them in any order. This is helpful if you want to compose a [key change \(on page 10\)](#) (modulation). Everything you play in one palette will be visualized on the other as seen from the perspective of that key.

Retrospective Recording

It is possible to call up the last played chord sequence at any time with **Navigation > History ...**. This opens a **Progression Editor** where you can copy & paste the recorded chords.

Related information

[Editing Palettes \(on page 111\)](#)

Moving Parameters

[Copy or move parameters to other instruments, containers, libraries or windows](#)

Parameters ([on page 2](#)) can be moved around freely for unlimited experimentation. When a parameter is copied to a destination with a different type, its [data is converted automatically \(on page 329\)](#) to match.

Drag & Drop

1. Click on a lit [Parameter Outlet \(on page 45\)](#).
2. Hold the mouse button and drag it towards the desired destination, which can be another outlet, an instrument, a container, a library or a different window.
3. Hold the  **Alt** key if you want to make a copy, otherwise it will be moved.
4. Drop it over the destination by releasing the mouse button.

Copy & Paste

Alternatively you can use the keyboard.

1. Click on a lit [Parameter Outlet \(on page 45\)](#).
2. Press  **Control-C**.
3. Click on a destination outlet.
4. Press  **Control-V** to paste the data.
5. Or use the [Right-Click \(on page 44\)](#) menu to copy and paste.

Related information

[Parameter Outlet \(on page 45\)](#)

[Parameter Conversion \(on page 329\)](#)

Editing Parameters

In the Parameter View you can edit parameter data in detail. Where parameter data is shown in gray, it is inherited or shows for additional background information. If you want to edit inherited data, make a **Snapshot**, or edit it in the original container.

Manipulating Selections

All commands you call from a menu or the keyboard are applied to the entire parameter, unless a **Selection** is established. Use the tools listed below to make a selection. Click on a selection again to undo it.



Span Selection: Extend a selection by holding down  **Shift** and clicking at the target position.

Drag at the edges to stretch or compress its content in any direction. If you want content to the right of a selection to make room while you stretch it, or close the resulting gap while you shrink it, hold down  **Control**.

Move or transpose the selection with the **Arrow Keys**. The current **Grid** applies. The **Left** and **Right** arrow keys scroll the selected content around. If only a single position is selected (vertical bar), the object will move along with it.



Chord Selection: Select and manipulate chords in a [Harmony \(on page 304\)](#) parameter.



Pointer Selection: With the arrow keys, you can move and transpose it.

Drag a lasso rectangle to select multiple objects, or extend a selection by holding down  **Control** while you click on additional objects.

Transpose or move the selection with the **Arrow Keys**. Hold down  **Shift** for finer steps.



Symbol Selection: Move, transpose, stretch and delete the selection.

Drag a lasso rectangle to select multiple symbols, or extend a selection by holding down  **Control** while you click on additional symbols.

Transpose or move the selection with the **Arrow Keys**. Hold down  **Shift** for finer steps.

Edit Menu

Several commands can be called from the **Edit** menu when the **Parameter View (on page 147)** has input focus.

Cut, Copy, Paste, Duplicate, Clear

Does as the name implies with the current selection.

Paste Rhythm

Transfer the (implied) [Step \(on page 315\)](#) of the object currently on the clipboard to the selection or entire parameter. This repositions selected objects in sequential order. Unless an actual [Step \(on page 315\)](#) parameter is on the clipboard, the steps inserted here are derived from the positions of objects in a parameter.

Paste And Join

Insert additional data (at the selected position) without replacing existing data. Works for polyphonic parameters only.

Group, Ungroup

Makes a new [Figure \(on page 298\)](#) segment from all selected symbols or segments, or separates all symbols of the selected segment respectively.

Divide

Splits a [Figure \(on page 298\)](#) segment at the selected symbol.

**Tip:**

Transfer the rhythm of one segment to another: Select a segment or a span on the time axis and copy it. Then **Edit > Paste Rhythm** to apply.

**Tip:**

Change the rhythm of a chord progression: Copy a span of the progression that represents the desired rhythm and **Edit > Paste Rhythm** to apply it to the entire progression.

Parameter Menu

Insert Snapshot Of Parameter

Inserts a physical copy of an inherited parameter so you can modify it.

Insert Template ...

Pick preset parameter data from a menu.

Save Template ...

Save current parameter data as a template for later reuse.

Extract From MIDI Output

Looks at the actual MIDI output and extracts the current parameter so you can edit it.

Save To Figure

Applies the parameter to the **Figure** and clears it after that.

Extract From Figure

Looks at the **Figure (on page 298)** and extracts the current parameter so you can edit it.

Repeat

Parameters are looped by default, that is they repeat until the end of the container. If you disable this with **Parameter > Repeat**, the parameter won't supply any more values beyond its length. For some fundamental parameters like **Figure (on page 298)**, this means no more notes will be generated.

Interpolation

With **Parameter > Interpolation** you can determine which values a parameter delivers at positions where it has no data.

1. **Recent:** Deliver the most recent value until the next value occurs.
2. **Snap:** Deliver the value that is nearest to the position being asked for.
3. **Linear:** Interpolated continuously from one value to the next.
4. **Dithered:** Increase the random probability of delivering the next value the closer we get to it.

5. **Sequential:** Deliver the next value every time. Position is completely ignored. Once all values are delivered, continue from the beginning. Allows for interesting effects with algorithmic music.
6. **Hits:** Deliver a value only at its exact position. Anywhere in between the value is undefined (same as if the parameter is not looped and has reached its end).

**Note:**

This feature is available with the **Express** and **Pro** editions.

Delete From Selected Containers, Instruments

Removes the selected parameter for all currently selected instruments in the selected containers (Pro).

Paste To Selected Containers, Instruments

Copies the parameter from the clipboard to all currently selected instruments in the selected containers (Pro).

Transform Menu

Which commands are available on the **Transform** menu depends on the type of parameter currently selected. There are [additional commands \(on page 252\)](#) specifically for the **Figure** parameter and [special commands \(on page 256\)](#) for the **Harmony** parameter.

Dynamics

Emphasize light or heavy beats by different amounts.

Reverse

Reverse the selection as if it were played backwards ("tape reverse").

Reverse Preserving Rhythm

Reverse the sequence of values while retaining steps and lengths. For example, you may duplicate a melody and reverse it this way to have both melodies play opposite pitches following the same rhythm.

Flip

Flip the selection upside down.

Invert Up/Down

Inverts chord segments upwards or downwards.

Stretch Parameter

Lengthen or shorten the entire parameter by a set amount.

Quantize

Snap positions and lengths of objects to the current **Grid**.

Clip Lengths

Snap lengths of objects to the length suggested by the current **Grid**, or keep them if they are already shorter.

Resample

Scan the current selection using the current **Grid** and rebuild it with interpolated values computed at those positions.

Monophonic

Reduce a parameter to a only single value at any time.

Drop Repetitions

Drop repeated occurrences of the same value.

Drop Redundancy

Drop values that are unnecessary in light of the current **Interpolation**.

Resizing a Parameter

Drag at the resizing handle  to alter the length of a parameter. If you shorten a parameter, data beyond its end will not be deleted, although you may no longer see it.

Related information

[Editing Figure \(on page 250\)](#)

[Editing Harmony \(Progressions\) \(on page 254\)](#)

Editing Figure

Figure is a powerful parameter with unique editing options. This section is about the things that are different with this parameter. For general parameter editing, please refer to the section [Phrase Editor \(on page 87\)](#).

Selection



Segment Selection (Pointer): Click on a symbol to select the segment it belongs to.

- **Click** on the selection again to switch to the **Symbol Selection** tool.
- **Transpose** or move the selection with the . Hold down  **Shift** for finer steps.
- **Drag** a selection to move it. Hold down  **Ctrl** to make a copy.
- **Drag** at the top, bottom or right end to **stretch** the segment.
- **Drag** the right end while holding  **Alt** to alter the **length** of all symbols.
- Hold down  **Control** and drag up or down to alter the **velocity** of all symbols proportionally by a percentage.

- Hold down  **Control** to unlock the grid while you are resizing or moving an object.
- Ungroup a segment with  **Control-U**.



Symbol Selection: Click on a symbol to select it.

- **Click** on the selection again to switch to the **Segment Selection** (Pointer) tool.
- **Drag** a selection to move it. Hold down  **Ctrl** to make a copy.
- **Transpose** or move the selection with the **Arrow Keys**. Hold down  **Shift** for finer steps.
- **Drag** the right end to alter the **length** of the selected symbols.
- Hold down  **Control** and **drag** up or down to alter the **velocity** of selected symbols absolutely.
- Hold down  **Control** to unlock the grid while you are resizing or moving an object.
- Make a symbol become the **anchor** of its segment with  **Control-R**.

Multiple Selections

To select multiple symbols or segments, hold down  **Control** while you click on them, or drag a lasso rectangle around them.

Select all segments in the [Figure \(on page 298\)](#) with  **Control-A**.

Group multiple symbols or segments to form a new segment with  **Control-G**.

Span Selections

Keep in mind you can use the **Span** tool with [Figure \(on page 298\)](#) too. Use it to scroll the positions of segments around or transpose an entire [Figure \(on page 298\)](#) with the **Arrow Keys**.

Drawing

Use the **Line** and **Freehand** tools to draw new symbols and segments.

- **Click** on a target position to insert a single **Symbol**.
- Draw a line or curve to insert new symbols at positions that match the current **Grid**. The **Anchor** of a new segment is placed where you start the stroke. Thus, stroking backwards will put the anchor at the right end.
- Draw a vertical line to insert a **Chord**.
- Draw a horizontal line to create a single **Symbol** with a particular length. Enable **Duplicates** ([on page](#)) if you want multiple equal symbols be inserted along the current **Grid**.
- Draw a diagonal line to insert symbols where it crosses the current **Grid**. Enable **Duplicates** ([on page](#)) if you are fine with symbols being repeated.
- To append additional symbols to a segment, hold down  **Shift** in the proximity of that segment and start drawing.
- Try the **Scale Board** to assist you with drawing segments incrementally.

Rhythm

You will notice that drawing a random line or freehand curve on the [Figure \(on page 298\)](#) parameter looks instantly pretty but doesn't always work musically. The reason is rhythm. This is what you can do to ensure consistent rhythm.

- Be sure to select a [Grid \(on page 89\)](#) that makes sense for the kind of phrase you have in mind. You can drop another phrase on the [Grid Outlet \(on page 89\)](#) to exactly recreate its rhythm.
- Start and end the line or curve at rhythmically significant positions. Consider their weight (heavy or light).
- Look at other phrases that work and resemble their structure.

Dynamics

Apart from very basic lines and sparsely placed notes, a [Figure \(on page 298\)](#) without expressive [Velocity \(on page 321\)](#) is bland. This is what you can do to add dynamics.

- Open the **Click Board** and use it to emphasize heavy or light parts of the beat.
- Recall a template from the **right-click menu** over the [Velocity \(on page 321\)](#) outlet.
- Switch to **Hyper Edit** mode and use the **Shape** tool to sketch dynamics.
- Select a segment and hold  **Control** while you move the mouse up or down to change dynamics proportionally. Hold down  **Shift** in addition if you want to change values absolutely.
- Select [Velocity \(on page 321\)](#), click into the **Parameter View** and use the **arrow keys** to transpose values up or down.
- Transfer dynamics of another phrase by dropping [Velocity \(on page 321\)](#) or [Figure \(on page 298\)](#) of that phrase on the [Velocity \(on page 321\)](#) outlet of the target phrase.



Tip:

To save the clutter of an extra [Velocity \(on page 321\)](#) parameter, you can edit dynamics of a phrase in **Hyper Edit** mode. Alternatively, edit a physical [Velocity \(on page 321\)](#) and permanently apply it to the figure with **Parameter > Save To Figure** when done.

Hyper Edit

After switching to this mode with the tool **H**, you can edit the [Velocity \(on page 321\)](#), [Step \(on page 315\)](#) and [Length](#) of a [Figure \(on page 298\)](#) as if they were physically present parameters. In reality however, your changes are immediately saved to the figure.



Note:

Hyper Edit mode makes sense only where a [Figure \(on page 298\)](#) is present. If necessary, make a **Snapshot** beforehand.

Transform Menu

The menu **Transform** offers additional commands for the [Figure](#) parameter.

Reverse at Anchor

Flip segments horizontally at their anchor positions. In contrast to other reverse commands, this creates a wildly different figure.

Reverse at Onsets

Play segments backwards without altering symbol lengths. In contrast to the default "tape reverse", this turns a legato melody into partially overlapping notes.

Flip at Anchor

Mirror segments vertically at their anchor position.

Force Legato

Alter the lengths of symbols such that overlaps are removed and all gaps between them are closed.

Shorten Overlaps

Shorten symbols only where they overlap in time.

Remove Clashes

Shorten symbols only where two repeated symbols overlap.

Simulate Strumming

Turn a vertical chord into a strummed performance.

Simulate Pedal

Stretch all symbols to play until the end of the last symbol in a segment.

Simulate Broken Chord

Turn a vertical chord into a broken, arpeggio-once performance.

Select

Select all segments of the current type.

Focus On

Highlight segments of the current type and dim all others.

Change

Convert all selected segments to the current symbol type.

Simplify Chords

Reduces chord segments to fewer symbols and adjusts segment properties to render the chord as it is configured with the **Harmony** parameter.

Round Accidentals

Round all symbols to diatonic steps.

Remove Symbol Tags

Drop all tags from a take (**Take** only).

Related information[Collecting Phrases \(on page 285\)](#)[Optimizing Phrases \(on page 258\)](#)

Editing Harmony (Progressions)

[Video Tutorial](#)

Harmony is a powerful parameter with unique editing options. This section is about the things that are different with this parameter. For general parameter editing, please refer to the section [Phrase Editor \(on page 87\)](#).

**Chord Selection:**

- **Click** to select a chord.
- **Click** on another chord while holding down  **Shift** to extend a selection.
- **Click** into the gap between two chords to **paste** something in between them.
- **Drag** at the right edge of a chord to change its length. Hold down  **Control** if you want to make room while stretching or close the gap while shrinking.
- Use **Arrow Keys** to move or extend a selection like you would do in a word processor.
- **Transpose** chords with **Up/Down Arrow Keys** while holding down  **Control**.



Span Selection: Select and edit arbitrary spans independently.

Drag

Drag a selection to move it. Hold down  **Alt** to copy. You can drop it also on any [Harmony \(on page 304\)](#) outlet, [Container \(on page 21\)](#) or **Phrase**.

Drop

Drop a chord from a **Palette** to insert.

Drop a (partial) [Progression \(on page 14\)](#) from elsewhere to replace, or hold down  **Control** to insert.

Colors

Each context shows a background color that hints at the **Relation Key**, using the colors also seen on the **Circle Of Fifths**. With a little getting used to, this can help you see at a glance what's going on in a progression, especially where the scale material changes more dramatically.

**Tip:**

To clean up a progression with excessively many different colors (which is not a good sign in most cases), do a *Transform > Estimate Key, Relations and Scales*. Using the **Alternative** option for **Scale Selection Preferences** often smoothes out the edges very well.

Pace & Rhythm

The pace and rhythm of chord changes is an important factor. A change at every measure can be boring. A change at every quarter note is often too fast to be noticeable and will muddy the overall experience. A good place to start is a change every two quarter notes, or roughly in the middle of a measure. It keeps harmony moving and is slow enough for instruments to pick up enough notes to make a chord noticeable.

**Tip:**

Try a progression at half or double speed (by stretching it) to find the pace that best matches your song. Also try different durations for each chord.

**Tip:**

You need not nudge the onset of a chord change to the left in order to meet an instrument's rhythm. Instead, adjust the **Look Ahead** setting of the *Interpretation* parameter.

Inspector Tabs

Harmony

Edit all components of the selected Harmonic Context (hover over widgets for help).

Scheme

The metric scheme edited here is saved to the *Harmony (on page 304)* parameter of the current container. The length of the progression is automatically calculated based on your input.

A certain column layout results from applying the metric scheme, which breaks the progression down into rows. Use the *Transform > Column* menu to split or cleanup the columns where needed.

Layer

Use the *Transform > Layer* menu to create or remove layers that you can select on the **Layer** tabs at the top and edit here.

Scale Selection Preferences

These preferences are used when you do *Transform > Estimate Key, Relations and Scales* or by pressing the **Estimate** button.

Details Shown

On the **View** menu, you can hide or show individual components of a harmonic context to show up in the progression or not. There is only limited space, so not all components can be shown at the same time.

Parameter Menu

Paste Last Played Chords

Inserts the chords you last played on a Palette or elsewhere into the progression (This command is also available on the Edit menu)

Transform Menu

Estimate Key, Relations and Scales ...

Apply key detection and scale selection to the current selection according to current **Scale Selection Preferences**.

Estimate Scales Only

Apply only automatic scale selection according to current **Scale Selection Preferences**.

Replace Key ...

Set a specific key for all selected contexts.

Replace Relation ...

Set a specific relation for all selected contexts.

Automatic Bass

Reset bass to automatic selection.

Bass: Prime (Root), 2nd, ... 9th

Demand a specific bass interval.

Toggle Alignment

Enable or disable pitch alignment between chords.

Reset Hints

Remove all hints regarding inversion, voicing and alignment.

Jazz Up / Down

Add or remove chord extensions.

Minor Third Substitution

Replaces the selected chord with a substitute that is a minor third away.

Tritone Substitution

Replaces the selected chord with a substitute that is a tritone away. Two different types are available. Learn [more about this technique here](#).

Transpose

Transpose current selection to absolute pitches or by a relative amount.

Column

Split or cleanup the column grid of the progression according to the metric scheme.

Layer

Add or remove polytonal layers.

Reverse

Reverses all chords as if a tape was played in opposite direction.

Reverse Values

Reverses the ordering of chords, but keeps transition positions unchanged.

Flip

Experimental inversion of harmony.

Drop Repetitions

Removes repeated contexts, provided all their components are equal.

Open Suitable Palette ...

Open a Palette on the current key (or: Scale Set).

Sections

The standalone **Progression Editor** window allows for multiple progressions to be saved under different section names. Use the **Section** menu to add, select, rename or remove sections of a file.

**Tip:**

Don't use the sections for collecting progressions. A **Library** is a much better tool for the task.

Controlling Inversion, Voicing and Octave

Harmony provides the rules for all instruments. Each instrument may interpret them in different ways. What you hear in the progression editor is how the global instrument **Chords** interprets them. In order to control inversion, voicing and pitch range for a phrase in your arrangement, you need to edit its **Figure** and **Interpretation** parameters.

1. Draw chords with **Chord** type symbols by dragging a vertical line with the **Line** tool.
2. Transpose symbols up or down to control inversion.
3. Edit the properties of a **Figure** segment on the **Parameter Inspector** to control voicing, bass and alignment with the previous chord.
4. Edit the middle **Playing Range** of the instrument to control the general pitch range, e.g. the octave.

Combining Multiple Progressions

Unlike audio or static MIDI clips, the **Harmony** parameter can be easily transposed in order to work in every key. Just transpose a progression (or a part of it) up or down until the global key setting matches the key you need. Once they are transposed into key, partial progressions can be combined freely.

Related information

[Harmony Concept \(on page 7\)](#)

[Collecting Harmony \(on page 286\)](#)

Optimizing Phrases

Tweak phrases to make them work best in any context

A comprehensive [online tutorial can be found here](#).

Harmonizing a Phrase

How to turn one or more takes into a **Harmony** [\(on page 304\)](#) parameter

Multiple views of Synfire feature a **Harmonizer** that turns one or more **Takes** into a **Harmony** [\(on page 304\)](#) parameter guided by your instructions and feedback. The final result is saved to the current **Container** [\(on page 21\)](#) or **Phrase**.

This way you find chords that match a MIDI recording or the rendered output of one or more instruments.

To open a Harmonizer, select one or more instruments on the **Track Sheet** and do **Phrase > Harmonize**. This takes you to the **Harmonizer** tab with the selected instruments ready for harmonization. You can also just switch to the tab at any time.



Tip:

To harmonize a melody you have in Standard MIDI File format, first select the desired instrument and import the MIDI track with **Phrase > Import** with the figure recognition preferences set to **Input for Harmonizer (static)**.

Workflow Summary

1. Select one or more instruments as input.
2. Verify the global key and other settings.
3. Generate chord suggestions with **Harmonize**.
4. Listen to chord suggestions and make a choice.
5. Add or remove chord transitions as desired.
6. Accept the final result with **Apply**.

1. Select Inputs

Select one or more instruments as input source. The [Take \(on page 317\)](#) parameter is used by default. Alternatively you can use rendered [Output \(on page 309\)](#) for interesting surprises. The **Parameter View** shows a piano roll style representation of the input.



Troubleshooting:

If you recorded a melody incrementally in multiple steps, the [Take \(on page 317\)](#) might hold only the most recently recorded input. Make sure you have a complete take before harmonizing it.



Tip:

Use static pitch symbols for vocal melodies, if you want to arrange a song around them. These won't change when they are rendered against new harmony.

2. Global Key And Settings

Key

Click on this button or call **Transform > Pick Global Key** to select a global key from the menu. If a [Harmony \(on page 304\)](#) parameter already exists, its key is considered with priority. This setting has a profound influence on the resulting chord suggestions.

Transitions

Algorithm that determines the positions of chord changes.

1. **Auto:** Selects an appropriate algorithm automatically.
2. **Search:** Looks at the input and estimates where chord changes can most likely be assumed.
3. **Polyphony:** Assumes every cluster of notes is a new chord. This algorithm is very simple and works with sequences that contain sustained chords only.
4. **Keep:** Keeps existing transitions unchanged. In order to protect your edits, this mode is enabled automatically after you changed a transition manually.

Style

Influences the complexity of chords and potential key changes being suggested. You should experiment to find the settings that best match your input.

Resolution

Clusters of notes whose onsets fall within this span of time are considered as potential chords. The setting helps with input that is not quantized.

Shortest

Potential chord changes faster than this will not be considered.

3. Generate Chord Suggestions

Click **Harmonize** to run the algorithm on the selected input. Selecting a span in the **Parameter View** ([on page 147](#)) will harmonize only the selected range.

Check the option **Retain Harmony** to use the current **Harmony** ([on page 304](#)) parameter to make initial default selections in the list of chords.



CAUTION:

If you want to (re)harmonize the entire input as a whole, you must make sure you have nothing selected in the **Parameter View**. This can be easily overlooked.



Note:

The **Generic** and **Simplified** styles deliver basic (vanilla) chords only. If you want more elaborate extensions like Am9 or C7(9, 13) instead of Am and C7 respectively, you can add these extensions in the **Progression Editor** later.

4. Select Chords

Select any of the detected transitions and pick a chord from the list to use it for this transition. Although chords are sorted by probability, some chords further down in the list can also offer interesting solutions.

If only a single chord is listed, the selected transition was not yet harmonized. Press **Harmonize** to search for potential chords.

When you select a transition, the **Global Instruments** play a short preview to illustrate the result so you can assess it.



Tip:

There are thousands of possible chord progressions that match a melody. Harmonization is a creative decision. Trust your ears and personal style preferences to find the best results.

5. Insert or Remove Transitions

Select a position or span in the **Parameter View** ([on page 147](#)) and press **+** or **-** to add and remove chord changes, respectively.

6. Accept The Result



Test your current choices in context of the arrangement.



Render a preview of the chords only.

Match Neighborhood

Synfire picks selections from the suggested list of chords automatically in order to optimize the overall progression. This affects transitions that follow the position you have changed. Hence, a large portion of the progression may change after a single edit.

Optimize Scales

Before the result is finally accepted for the container, all scale selections of the progression will be optimized.

Apply

Saves your current choices in the [Harmony \(on page 304\)](#) parameter. You may select a partial span to save a limited range only.



Tip:

The Harmonizer assist you with finding a chord progression, but it won't create a contrapuntal movement for you. If that is your goal, you need to create a melodic Figure for the desired instruments instead.

Drag & Drop

Drop a chord from a palette or progression on the **Parameter View** [\(on page 147\)](#) to insert it as a choice. Copy & paste works as well. No checks are performed. Whether it makes sense or not is your decision.

Preview Mixer

Use these faders to adjust the volume of the **Global Instruments** used to render results.

Snapshots

How to make a physical copy of an inherited or default parameter

Parameter data set in one container is also available in its child containers. Where parameter data is set, the [Parameter Outlet \(on page 45\)](#) is fully lit (bright), while in sub containers the outlet is only partially lit (dimmed). If you want to modify inherited parameter data, you need to make a **Snapshot** of it first.

1. Select the desired parameter outlet.
2. Right-click on it and choose **Insert Snapshot Of Parameter** from the menu, or press  **Control-Alt-S**.
3. Alternatively you can use the button on the nearby toolbar.
4. A (partial) copy of the inherited data is inserted.



Tip:

If you want to modify only a small portion of inherited parameter data, you can insert a sub container spanning the desired range and make a snapshot of the parameter in there. This will keep the rest of the parameter untouched.

Container Snapshots

Container > Make Snapshot collapses and removes all sub containers and makes snapshots of all inherited parameters for all instruments. Not unlike bounce-to-disk in a DAW, it is a way to consolidate nested containers into something more simple and lean.

Be aware though, that some parameters like [Interpretation \(on page 305\)](#) or [Signature \(on page 312\)](#) are constants within a container. Their value can't change. Any changes with these parameters in sub containers will be lost after a snapshot.

Related information

[Containers \(on page 21\)](#)

Fine Tuning Interpretation

How to allow more dissonance and free wheeling harmony

There are several ways to tweak and influence voice leading process.

Allowing More Dissonance

The **Voice Leading** process (VL) ensures that melodic movements are preserved no matter what happens to [Harmony \(on page 304\)](#) or how narrow the current **Playing Range** may be. Depending on the strategy you selected, it also takes care that chord changes are emphasized by melody where possible.

While transposing figure symbols in the phrase editor, you might notice that certain pitches are avoided. This is because VL excludes them for various reasons. If you feel a specific pitch should absolutely be allowed, you can do one of the following to relax VL constraints.

Choose a Different Scale

Your **Vertical Scale** may be too tame. Try a more dissonant one.

Insert an Intermediate Chord

If you have a specific melody in your head for which VL is not allowing individual pitches to be placed, this is probably because the chord in your head is different from the one in the progression at that point in time. Try adding intermediate chords or doubling the pace of your progression. Fast chord changes are not necessarily perceived as such, while they extend the scale material allowed for melodies.

Add Chord Extensions

Since the **Vertical Scale** is responsible for the set of allowed pitches, adding extensions to a chord makes sure these notes are more likely to be allowed. Still, some strategies allow only the strongest chord intervals to be used at rhythmically important places, excluding some chord extensions.

Lower Strength

Override the strategy by lowering the [Strength \(on page \)](#) parameter.

Allow Minor Seconds

Check **Enable Dissonance** on the **Form** tab. This will allow the minor seconds in some chord inversions to be played. This however only affects **Chord** segments.

Disable Cooperation

Disable the **Cooperative** mode.

Select a Different Strategy

Select a more relaxed VL strategy from the pop-up menu.

Disable Voice Leading

Disable VL for the individual [Figure \(on page 298\)](#) segment.

Allow Chromatic Alterations

In addition to disabling VL, also allow chromatic alterations for the individual [Figure \(on page 298\)](#) segment. This is really only a last resort, as it makes your phrase somewhat hard-wired to the current [Harmony \(on page 304\)](#). It won't adapt well anymore when you move it to another place.

Fitting Music Between Cue Markers

Using the Time parameter to fit music between cue markers.

How to adjust the tempo of a musical passage automatically in order to have it fit between two events in a film.

1. Select a cue marker in the [Time \(on page 318\)](#) parameter.
2. Select a position on the time ruler.
3. Press the button **Match with Ruler**. Synfire changes [Tempo \(on page 318\)](#) such that your selected position on the time ruler exactly matches the absolute time denoted by the cue marker.



Note:

This method is only useful within certain limits, because Synfire assumes a tempo outside the range of 30 to 300 does not make sense. Instead of extreme values for [Tempo \(on page 318\)](#), you should insert or delete a number of measures (bars) in order to get closer to the desired duration before doing this match.

Finding Ideal Tempo

By selecting both parameters [Tempo \(on page 318\)](#) and [Time \(on page 318\)](#) at the same time, you can watch the cue markers move relatively to the music while you change the value for Tempo.

This way you can adjust the tempo such that events in the film roughly meet with corresponding positions in the music, before you begin using the matching method explained above.



Note:

This feature is available with the **Pro** edition.

Recording

How to record phrases and parameters and live-detect incoming chords

[Video Tutorial](#)

Converts captured MIDI input into a **Phrase** or individual **Parameters**. MIDI input is captured in the [Take \(on page 317\)](#) parameter and subsequently **Figure Recognition** is run to create a [Figure \(on page 298\)](#).

Workflow

1. If you are on the **Tracks** page, select an existing [Clip \(on page 105\)](#) to record into, or draw a new one with the pen, or select a position on the time ruler where the newly recorded clip is supposed to be placed. You can also record directly in the phrase editor at the bottom of the window.
2. If you are on the **Structure** page, select the [Container \(on page 21\)](#) and **Instrument** of the phrase you want to record. Then select a starting position or span, if the recording shall be limited to a particular area (more on this below).
3. Press  and perform whatever you want to record on your external MIDI keyboard.
4. Press . Synfire converts the [Take \(on page 317\)](#) into a [Figure \(on page 298\)](#), based on the last used settings for figure recognition.
5. Press **Figure Recognition Settings** to return to the [Take \(on page 317\)](#), if you want to try the process with different settings until you are satisfied with the result.

Selective Recording

You can limit a recording to a particular span inside the phrase. If prior to recording a starting position is selected with zero duration (vertical line only), the recording will replace everything thereafter. If a span with some duration is selected, content outside the selection is protected from being overwritten.

This way you can work your way through a longer phrase incrementally, one short take at a time.



Note:

Keep in mind that only the most recent recording is kept in the [Take \(on page 317\)](#) parameter. If you record multiple times, previous takes will be replaced.

Latency

Synfire compensates for MIDI latencies if you enable **Compensate Latency During Recording** in [Playback > Audio/MIDI Setup > Inputs](#) and use the **Audio Engine** for MIDI input.

Latency compensation is based on timestamps in the MIDI messages being received. Only the Audio Engine is capable of passing MIDI timestamps to Synfire.

Related information[Recording Parameters \(on page 265\)](#)[Setting Up MIDI Input \(on page 236\)](#)[MIDI Routing \(on page 41\)](#)

Recording Parameters

Instead of recording a [Figure \(on page 298\)](#), you can also record many other parameters. For example, you may want to record MIDI controllers, [Velocity \(on page 321\)](#), [Step \(on page 315\)](#) or [Rhythm \(on page 311\)](#) by tapping them on your external MIDI keyboard. The record button is grayed out if the currently selected parameter doesn't support recording.

1. Select the desired parameter.
2. Press  on the transport bar and tap your performance on the external MIDI keyboard or move a controller.
3. Check the result in the **Parameter View** [\(on page 147\)](#) of the phrase. You may need to make **Parameter Views** [\(on page 147\)](#) follow parameter selection in order to see it: Click  above the **Parameter Block** [\(on page 146\)](#).

**Note:**

Parameter recording also works in **Hyper Edit** mode, so you can alter the rhythm and dynamics of a phrase by recording [Velocity \(on page 321\)](#), [Step \(on page 315\)](#), [Length](#) respectively.

Recording Harmony

Although Synfire can detect chords from live MIDI input, it is fundamentally difficult to determine proper chord names without context. Thus, you will get much better results if you simply record what you are playing live on a **Palette**.

1. Open one or more **Palettes**.
2. Select a suitable **Sketch** or choose **Chords-Only** mode.
3. Select the parameter [Harmony \(on page 304\)](#).
4. Press the parameter record button on the transport bar.
5. Play chords on the palette or multiple palettes. Synfire adds all chords with full harmonic context to the progression until you stop the recording.

You can start the recording anywhere you choose ([Selective Recording \(on page 264\)](#)). You could even record in multiple windows at the same time.

Related information[Setting Up MIDI Input \(on page 236\)](#)[MIDI Routing \(on page 41\)](#)

Live Chord Detection

Synfire can detect chords from live MIDI input. It makes Synfire double as an intelligent accompaniment machine. The detected harmonic context shows up in **Palettes** ([on page 111](#)), **Keyboard Widgets** ([on page 188](#)) and the **Circle of Fifths** ([on page 186](#)).

Enable Live Detection

1. Make sure Synfire is receiving input from your MIDI keyboard.
2. Go to the **Progression** or **Palette** tab.
3. Make the **Keyboard Widget** ([on page 188](#)) visible.
4. Enable **MIDI Input** ([on page 236](#)).
5. Enable **Live Chord Detection**.
6. Play chords on your external MIDI keyboard.

How It Works

A new chord is detected based on the keys you hold on the keyboard. The current key setting helps narrow down the search to plausible candidates.

1. At least three (3) notes pressed at the same time trigger a chord detection.
2. The lowest note is considered bass. It helps to play it at least an octave below the other notes.
3. Members of the current key and palette are preferred over more remote candidates.
4. Detected chords not yet visible in the palette will be added.

**Note:**

If a global **Keyboard Split** ([on page 164](#)) is set, only keys below the split are considered for chord detection. Keys above the split are reserved for playing an accompanying melody.

**Tip:**

Use your left hand for suggesting a root note and the right hand for suggesting a chord type.

**Tip:**

Live input can be recorded to a progression.

Related information

[Setting Up MIDI Input \(on page 236\)](#)

[MIDI Routing \(on page 41\)](#)

Recording Snippets

The most common workflow is to grab **Phrases** from a **Library** and drop them on the **Snippets Grid** ([on page 25](#)). You can however also record snippets directly.

1. Go to the **Structure** page.
2.  Open the **Snippet Grid View** with the grid icon on the toolbar.
3. You can now select both, containers in the **Structure View**, or snippets in the **Snippet Grid**. Whatever you selected last gets input focus and shows up in the **Track Sheet**.
4. **Double-click** on a slot in the grid to create a new empty snippet.
5. **Select** the desired instrument in the track sheet.
6. [Record a phrase \(on page 264\)](#) as usual.
7. The snippet now includes the recorded phrase.



Tip:

You can also record a phrase in any container of the arrangement and drop it on the snippets grid later.

Related information

[Setting Up MIDI Input \(on page 236\)](#)

[MIDI Routing \(on page 41\)](#)

Making a Sketch

How to make and optimize a Sketch

Sketch From Container

Select the desired container and do **Container > Make Sketch** to add a new Sketch to the **Playback** menu and select it for real-time playback immediately.

Sketch From Scratch

Open a **Sketch App** ([on page 150](#)) with **File > New > Sketch** and add phrases and other parameters just as you would do with an arrangement.



Tip:

If you want to save a temporary Sketch to a file, open it with **Playback > Edit Current Sketch ...** and do **File > Save As**

Related information[Sketch App \(on page 150\)](#)[Sketches \(on page 32\)](#)

Import, Export, Printing

About importing, exporting and printing documents

Limitations Of Import

Synfire is able to read **Standard MIDI Files**. Import however, is actually a misnomer. Synfire is neither a DAW nor a MIDI file editor. [Figure recognition \(on page 6\)](#), the process of converting static MIDI data to dynamic phrases, is a lossy and ambiguous process. Moreover, MIDI tracks are full of repetition and duplication you need to sift through and eliminate manually, since this task can't possibly be automated without making the imported arrangement sound even more different from the original.

A more appropriate label would be "**Creating New Phrases From MIDI Files**", because that's exactly what it does. Standard MIDI Files do not include the necessary meta-data that would be needed to properly import an arrangement and convert it to phrases that exactly render their original MIDI notes. This is an impossibility, as is [explained here \(on page 6\)](#).

That being said, harvesting phrases is still one of the best ways to build large libraries quickly. Apart from generating phrases randomly with KIM Factories, that is.

**Important:**

Import is a tool for harvesting useful **Phrases** from MIDI files and collecting them in a **Library**. Importing arrangements whole for the purpose of "editing" them is pointless.

Related information[Import SMF \(on page 268\)](#)[Library App \(on page 152\)](#)

Import SMF

[Video Tutorial](#)

Before you begin, make sure you understand the [limitations of MIDI import \(on page 268\)](#). We recommend you import into libraries, sift through the imported tracks and collect useful phrases.

Preparation

If you export MIDI files from another program, or have a chance to edit them, make sure they are best prepared for import.

1. Files must be in **Standard MIDI File Format** (1 channel for each instrument)
2. Program change messages should conform to the **General MIDI Standard**, so Synfire can automatically determine the kind of instrument for each track.
3. Drums and percussion should be on channel 10.
4. Only one sound per channel (no dynamic sound changes).
5. If possible, avoid upbeat, lead-in, or other events before the actual start of the piece. Likewise, nothing should come after the end.
6. Synfire can handle non-quantized music. However, quantization can be helpful to create cleaner and leaner phrases.
7. Notes must match the time signature and beat of a file. Synfire does not perform any after-the-fact tempo synchronization or beat recognition.
8. While key changes are recognized and handled, you should prefer files with a single key signature.
9. Remove any unnecessary and redundant data from a MIDI file if possible.

Possible Destinations

Create a New Library

Open a **Library App** with **File > New > Library** and do **File > Import > Standard MIDI File**.

Import Into The Embedded Library

In an **Arrangement App**, do **Library > Import > Standard MIDI File** to have all imported phrases added to the embedded library.

Import Into a New Arrangement

In an **Arrangement App**, do **File > Import > Standard MIDI File** to create a new arrangement based on the imported MIDI tracks.



Note:

If you want to re-import a MIDI file you have previously exported from Synfire, do **File > Import > Standard MIDI File (Copy My Sounds)** to copy the current arrangement rack over to the new arrangement. However, please consider the fundamental [limitations of this approach \(on page 268\)](#).

Import a Single Phrase

In an **Arrangement App**, select the desired target container and instrument. Then do **Phrase > Import ...** to import a single MIDI track into that phrase.

Import Settings

After selecting a file for import, the **Standard MIDI File Import** ([on page 207](#)) dialog pops up, allowing you to select the tracks you want to import and configure the handling and processing of MIDI data. The import process is then started on that dialog.

Post-processing

After an import has finished, you have the option to further improve the result.

1. Do the recognized chords somehow appear implausible? It is possible that Synfire incorrectly selected a parallel key. Try it yet again and confirm the detected key yourself.
2. Figures should spread out a bit around the center ("zero") line. If figures have been mistakenly set too far apart, transpose them manually by moving the entire vector seven steps (about an octave) upwards or downwards.
3. Do the segments seem to be torn apart and unusually messy? Try a new figure recognition with other settings: Select the **Take** parameter and perform the figure recognition in the inspector.
4. Play the arrangement. It should sound something like the original. If not, check once more whether all prerequisites for MIDI file import are met.

Re-Importing From a DAW

If you exported the MIDI file from a DAW yourself and the file is laid out for a particular device with specific MIDI channels, you can proceed as follows in order to retain the file's track structure and sounds:

1. **General MIDI Standard**: Disable this, unless the device confirms to the GM standard.
2. **Retain MIDI Channels**: Tick this box.
3. Switch to the **Settings** tab and use the **Sound Wizard** to setup the sounds for all tracks. This creates a rack for the arrangement that is about to be imported.



Troubleshooting:

If harmony seems messed up, double-check if drum tracks or other non-tonal content was accidentally included with the harmonization.

Related information

[Import MIDI File Dialog \(on page 207\)](#)

[Limitations Of Import \(on page 268\)](#)

Export SMF

Exporting in **Standard MIDI File** format (SMF) lets you send the finished composition or parts of it to a DAW or notation program. You have the option to export an arrangement as a whole, or only parts of it as outlined below.

Export Arrangement

Use **File > Export > Standard MIDI File ...** to begin an export of the whole arrangement.

Export Container

Use **Container > Export > Standard MIDI File ...** to begin an export of the selected container.

Export Track

To export an entire track's worth of MIDI output, you can either [drag & drop the phrase \(on page 274\)](#) in the root container, or [drag & drop from a Drone's user interface \(on page 272\)](#) inside the DAW.

Export Phrase

Single phrases can be [exported with drag & drop \(on page 274\)](#) only. Your last used export settings will apply.

Settings

On the file dialog window that pops up, you can make a few settings to control what exactly is written to the exported file.

Program Changes

Add a MIDI program change messages to each track, if the sound has one.

Controller Reset

Add a message to reset all MIDI controllers to default values at the beginning of each track.

Lead-in

Insert a measure of pause at the beginning in order to leave sufficient room for MIDI controllers and program change messages to settle.

General MIDI

Use GM-compatible program change messages for each sound, corresponding to its Category.

Optimize For Notation

Quantize note positions and lengths and close small gaps between notes. This may improve import into a notation program.

Global Key

Estimate and write a single global key at the beginning, instead of writing multiple key changes to the file.

Chords

Export chord names as text elements.

Container Structure

Export container names as text elements.



Tip:

Synfire remembers these settings, so when you do a drag & drop export next time, they will be used.

Related information

[Drag & Drop Export \(on page 274\)](#)

[Export Notation \(on page 272\)](#)

Export From Drone

If you are working with **Drones**, you can drag a Drone's current MIDI content and drop it on a DAW track.

1. From the arrange window, do **File > Export > Export MIDI From Drones to DAW**. This transmit the entire composition to all Drones. If you just saved the arrangement to disk, you need not do this.
2. Switch to the DAW and open the Drone you want to export from.
3. **Drag** the big rectangle in the left corner and drop it on the desired MIDI region in the DAW.
4. The drone switches to **Play DAW** mode after this. This means it no longer plays any music rendered by Synfire, but instead takes its input from the DAW track now. You can alter this mode on the **Rack Module** ([on page 133](#)) that controls the Drone.
5. Done.



Note:

Be sure to drop exported MIDI data at the exact position that corresponds to where the song starts in Synfire. Otherwise playback will be out of sync.

Export Notation

Synfire can write notation file formats that many notation programs are able to open. Originally, this export feature was intended for songwriters to print a lead sheet with chords, lyrics and melodies. It is however capable enough to assist you with notation tasks beyond that limited scope.

MusicXML

MusicXML files can be imported by most notation programs. You should adjust the page layout and other options in your notation program before you print the score.

LilyPond

LilyPond is a free open source program that produces printed notation of excellent quality. This is not a format for data exchange between programs, but rather a scripted language for printing scores. The files can be edited easily to change page layout and other options.

Please visit <https://lilypond.org> for more information. Download the latest version of LilyPond and install it on your computer. If you installed LilyPond correctly, Synfire will call it automatically and a PDF will be generated and opened.

In **Preferences** under the **Files** tab, you must set the location where LilyPond is installed. You may need to tweak the command line setting and look for errors in the LilyPond log to iron out issues if they occur.

Preparation

Before you export an arrangement for notation, make sure you understand the following.

1. **Global Key:** Consider that Synfire assumes the global key for the clef (key signature), which also determines all exported accidentals. If there are many key changes in your progressions that you don't want to see printed, tick the box **Global Key** in the global **Notation Export Settings**.
2. **Playing Ranges:** Make sure the playing ranges of your instruments match those of the real thing, if you export for orchestra or other natural instruments.
3. **Voice Separation:** Split multi-staff parts over multiple instruments (with the same sound) and check to have them all merged into the same staff on export with **Notation Export Settings**. This is not necessary, but has benefits.
4. **Note Positions And Durations:** Quantize Figure symbols exactly to what you want to see in the score. Be especially precise with triplets and dotted notes. Avoid swing or other forms of expressive rhythm. Make everything as simple as possible.
5. **Rests And Overlaps:** Use **Force Legato** everywhere unless the rests between notes are intended. Clean up unnecessary note overlaps.
6. **Sustain Pedal:** Remove this controller and disable **Generate Pedal** with [Interpretation \(on page 305\)](#).
7. **Morphing:** Freeze all morphed regions with a **Snapshot**, delete the [Morphing \(on page 309\)](#) parameter and clean [Figure \(on page 298\)](#) up by hand as detailed before.

Export Options

Make sure you configure the [global export options \(on page 65\)](#) and [options for each instrument \(on page 61\)](#).

Export Arrangement

Use **File > Export** menu to export the whole arrangement.

Export Container

Use **Container > Export** to export the selected container only.

Configuring External Editors

In the global **Preferences** [\(on page 193\)](#) under **Notation**, you can configure three command lines for processing exported notation files.



Note:

This feature is available with the **Pro** edition.

Export Audio (Bounce To Disk)

Click the **Cassette Tape** button on the transport bar in order to arm Synfire for audio export. Press **Play** to start the playback. Audio output is now saved to disk. When playback has finished, you need to press **Stop** to close the exported file (otherwise it will continue capturing all audio output).

You will find your exported audio file next to the arrangement. Open the folder with **File > Show in Finder** (or: Explorer).

**Important:**

All instruments must be hosted by a single Audio Engine for this to work.

Drag & Drop Export

[Video Tutorial](#)

To export a **Standard MIDI File**, grab an [instrument name \(on page 99\)](#) or [container \(on page 93\)](#) and drag it over to a DAW or your desktop. Wait a few seconds for the mouse pointer to change to a **MIDI** icon before you drop it. Only after the delay will Synfire turn the internal drag and drop operation into an external one.

If you don't want to wait, you can also tap the **space bar** once you are hovering over the target in order to activate the external export.

Exporting Chords

To export plain MIDI chords of any progression, grab the green **Harmony** outlet on the **Palette** page, or anywhere else where you find this outlet, and drag it to your DAW or desktop. The MIDI file will contain the chords as they are interpreted by the global **Chords** instrument.

You can use **File > Convert > Extract Progressions** to summon all progressions found in the arrangement and open a **Progression Editor** on them. This is especially worthwhile for songs whose chord changes you would like to share with other users.

**Note:**

Containers always export with meta data (e.g. tempo, time signature and chord names). Individual instruments don't. If you need meta data without rendered music, you can export **Global Parameters** by dragging that label.

**Note:**

Synfire always uses the settings you configured for your last **Standard MIDI File** export. In order to change these settings, you need to export from the menu **File > Export > Standard MIDI File** before exporting with Drag & Drop.

Reusing Containers

If you want to reuse a container of another arrangement (source) in your current project (target), this requires a bit of caution. Both arrangements may not have much in common, which prohibits a simple drag & drop. The following points need to be considered.

1. Transfer each phrase with copy & paste or drag & drop from the source to the target. If an instrument is yet missing, drop the phrase on the empty area or between the tracks of the **Track Sheet**.
2. Both arrangements may use different sounds. When you drop a phrase, Synfire will ask you whether to also copy the sound to the target arrangement, or use a different sound.

3. The source may be influenced by inherited parameters that are not present in the target. This is not a problem, but you should brace for possibly different results.
4. The source may have child containers. You need to recreate them in the target before you copy their phrases. Note that if those children are aliases, you must copy the phrases of their originals.
5. Check whether the source has **Global Parameters** that you are not aware of.

While you are doing this transfer, you may find yourself motivated by new ideas that lead to different results than you originally envisioned. Don't worry. If your goal was to exactly replicate the original, you could have as well edited a copy of it.

Printing

Synfire can currently print **Palettes** and **Progressions**. The command [File > Print ...](#) is enabled only on the **Progression** and **Palette** pages of the **Arrangement App**.

The standalone **Palette App** and **Progression App** can also be used for printing.

Progression: [Synfire/Palettes] Example 10 (Sky High).cogpro* [7-String Electric Guitar B-E-A-D-G-B-E]

Example 10 (Sky High)

1	2	3	4
Ebm t	Gbmaj7 tP	B tG, sP	Ddim
-	-	-	-
Eb.aeolian	Gb.ionian	B.lydian	D.altered-d
Eb.natural	Eb.natural	Eb.natural	Eb.harmonit
Eb.Minor	Eb.Minor	Eb.Minor	Eb.Minor

Chords

Ebm m7 m(add9) m7sus4 m9 m11

Gbmaj7 maj7(add4) maj7(9) maj7(13) maj7(9,11)

B (add2) 6 maj7 (add9) 6(add9) maj7(9) maj7(13)

Ddim dim7

Cognitone - Synfire Pro 2.0.8 - Page 1 of 1

Progression: ☒ Print Scheme

Helpers: ☒ Diagrams

7-String Electric Guit

☒ Chord ☐ Scale

☐ All Octaves

☒ No Duplicates

Optional Information: ☒ List Of Chords ☒ List Of Extensions

Preview Page: ☒ Color ☐ Landscape

Cancel Print

Palettes

If you want to print a palette in black and white, use the coloring preset [Coloring > Preset > Printing](#).

Progressions

Progressions on paper can be helpful for a rehearsal with real instruments. You can prepare a printout for each musician and their string instrument or keyboard specifically.

Progression

Print the chord progression as it currently shows up in the progression editor. You can disable this if you only want to print the fingerings (tablature) or keyboard helpers.

Helpers

Print fingerings (tablature) or keyboard patterns. You may choose to print the scale instead of the chord.

Each Chord Once ensures each unique chord is only printed once.

Optional Information

Prints a list with additional information that can be useful when playing together and for improvisation.

File Management

How to organize and handle your projects and files

Arrangement Templates

When Synfire opens a new arrangement window, it looks into the folder **Templates** inside your **Configuration Folder** and presents the files in there as starting points for new work. By saving additional arrangements to that folder, you can extend this collection of templates to support your personal workflow.

Reverting To a Previous Version

Synfire keeps backups of previous versions of your files in a sub-directory **backups** next to the file. The maximum number of versions to keep can be set with **Preferences**.

If you want to return to the last saved version and have not yet saved the currently open file, you can do so with **File > Revert to Saved**.

If you want to restore a previous version, look it up under **File > Backups** and select the version you want to restore. Doing so will merely open that file and not change anything on your hard drive until you save it.

**Tip:**

To free up space on your hard drive, you can delete all previous back-up copies of a file at once with **File > Remove Backups**. You may safely delete the folder **backups** altogether, but be aware that this will remove a lot of backups of several other files also.

Archiving Projects

Future versions of Synfire may potentially use new algorithms that produce slightly different output, as the rendering technology evolves over time. You should therefore not rely on Synfire documents as a long term storage format for your finished work. Be sure you export your work to notation programs, to a DAW or to Standard MIDI Files, before you upgrade to a new version of Synfire.

**Note:**

Although many random decisions are involved with the rendering process, Synfire always produces the same output for the same input parameters. This is because random streams get reset to a defined initial state before each run.

Installation

How to install or uninstall Synfire

Upgrade From an Earlier Version

Always [make a full backup \(on page 279\)](#) of your system before you install an update. You should do that at least daily anyway. At the very least, backup your current Synfire projects and other saved files.

**Important:**

It is not necessary to uninstall a previous version of Synfire before you install an newer updated version. During installation, all important settings will be migrated and preserved. An uninstall is only needed when you possibly need to revert to an earlier version.

iLok License Manager

Before you install or update Synfire, always download and install also the most recent version of **iLok License Manager** from the [PACE website ilok.com](https://www.pace.com/website/iloc.com). Synfire will not run without it, even if no specific license is required for a demo or other utility.

Install Synfire On macOS

1. **Download** the most current version of Synfire from your user account at the [Cognitone website](#). Your web browser will place the downloaded archive in your **Downloads** folder.
2. **Right-click** on the package named **Synfire Pro.mpkg** (or similar) and select **Open**.

You will see a warning that the developer can't be verified, which however is merely because the package needed to be compiled on our servers prior to download and, thanks to Apple's lack of support for other operating systems, could not be signed properly on a Linux system. You can safely dismiss the warning, provided you obtained the download directly from our website.

3. The macOS system installer will install the **Audio Engine** and all associated system components and documents and open another **SETUP** application that will guide you through the steps of installing Synfire itself.
4. When **SETUP** has finished, you will find the Synfire program in your **Applications** folder.
5. Please keep your original download files in a safe place. This will allow you to reinstall your current version of Synfire at any time.

Install Synfire On Windows

1. Log-in to Windows with an administrator account. Administrator rights are required to install Synfire. Otherwise Synfire will not be able to install or update required system components.
2. **Download** the most current version of Synfire from your user account at the [Cognitone website](#). Your web browser will place the downloaded archive in your **Downloads** folder.
3. **Extract** the ZIP archive completely before you proceed. This is a required step. Launching **SETUP.exe** from inside the ZIP archive is not supported.
4. Please regard the file **README.rtf**, if available. It contains the most current installation instructions.
5. Launch the program **SETUP.exe** found among the downloaded files. If at some point you need to reinstall the **Audio Engine**, you can also do so by running **Cognitone Audio Engine.msi**. Installing Synfire however does not work this way.
6. The Windows system installer will install the **Audio Engine** and all associated system components and documents and open another **SETUP** application that will guide you through the steps of installing Synfire itself.
7. When **SETUP** has finished, you will find a shortcut to the Synfire program on your desktop.
8. Please keep your original download files in a safe place. This will allow you to reinstall your current version of Synfire at any time.

Uninstall Synfire From macOS

Apple does not provide a standard uninstall procedure. Instead, run the **Automator** script **Uninstall Synfire Pro** (or similar) that came with the original download. You will be asked for your log-in password, so the script can obtain administrator rights in order to be able to remove the system components associated with Synfire.

Delete Files Manually

If for some reason the above method does not work, you can manually delete the files associated with Synfire.

1. **/Library/Application Support/Cognitone**. If you have other Cognitone software installed, make sure you only delete the sub-folders associated with Synfire.
2. **/Library/Application Support/Synfire**
3. **/Users/Shared/Documents/Synfire/Examples**
4. **/Applications/Synfire.app**
5. All Drone plug-ins in **/Library/Audio/Plug-Ins/Components**, **VST** and **VST3**
6. **/Library/Application Support/Propellerhead Software/ReWire/Transport.bundle**

Files You May Want To Keep

If you potentially want to re-install Synfire at a later time, you should keep or backup the following files, which contain your personal configuration and documents. They are located under your user account's home directory.

1. ~/Library/Application Support/Cognitone.
2. ~/Documents/Synfire
3. Your custom **Projects** folder, if you changed it.

Uninstall Synfire From Windows

Synfire and the Audio Engine can be removed from the Windows **System Control Panel** in the **Apps** section. Alternatively, you will also find an Uninstaller in the Windows **Start** menu right under Cognitone. Administrator rights are required to uninstall Synfire.

Delete Files Manually

If for some reason the above method does not work, you can manually delete the files associated with Synfire.

1. **C:\ProgramData\Cognitone**. If you have other Cognitone software installed, make sure you only delete the sub-folders associated with Synfire.
2. **C:\ProgramData\Synfire**
3. **C:\Users\Public\Documents\Synfire\Examples**
4. **C:\Program Files\Cognitone\Synfire**
5. All Drone plug-ins in **C:\Program Files\Steinberg\VstPlugins** or any other directory you chose when you installed the Audio Engine
6. In the Windows registry, delete the key **HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\Synfire 2** using the command **regedit** from the command prompt as an administrator.

Files You May Want To Keep

If you potentially want to re-install Synfire at a later time, you should keep or backup the following files, which contain your personal configuration and documents. They are located under your user account's home directory.

1. **C:\Users\<name>\AppData\Roaming\Cognitone**.
2. **C:\Users\<name>\Documents\Synfire**
3. Your custom **Projects** folder, if you changed it.

Backup

Where to find the files and folders to include with a manual backup of Synfire



Important:

We strongly recommended you backup your installation of Synfire and the projects and files you created using your operating system's preferred tools and schedules. On macOS this is **Time Machine** and on Windows this is the backup utility found in **System Preferences**.

Should you ever need to manually backup or restore the files you have created with Synfire, this is where you find the relevant files.

Home Folders

These are all found under your personal home directory.

`~/Documents/Synfire` `Documents\Synfire`

The default folder for all your settings and projects. It should have a sub-folder for **Arrangements**, **Sketches**, **Libraries**, **Palettes** and other document types. We recommend you keep your saved files in this hierarchy in order to simplify backup and migration to future versions of Synfire.

Inside this folder you find the so-called **Configuration Folder** **Config** that contains your customized system preferences, **Device Descriptions**, **Palette Colorings and Layouts**, **Plug-in Presets** and more. Your **Global Racks** also go here into the **Racks** folder by default, unless you save them to a more specific location.



Note:

Version 1 used distinct names **Synfire Express** and **Synfire Pro** for this folder, which are now migrated into a single folder for all editions **Sparks**, **Express** and **Pro**. This is to ensure a smoother upgrade experience and simplify file management and backup.

`~/Library/Application Support/Cognitone` `AppData\Roaming\Cognitone`

This is where the **Audio Engine** stores its settings and the list of scanned plug-ins. You need not necessarily backup this folder, unless you manually patched individual files.

System Folders

These are found under the root folder of your startup volume.

`/Library/Application Support/Cognitone` `C:\ProgramData\Cognitone`

This is where Synfire installs the apps of the **Audio Engine** and the **SETUP** application used to install or uninstall Synfire. You need not backup these manually, as they can be restored by re-installing Synfire.

`/Library/Application Support/Synfire` `C:\ProgramData\Synfire`

This is where user manuals, update logs and system-provided settings and defaults are stored in order to keep them separate from files you customized for your own purposes. It also includes a **Configuration Folder** the content of which you should not modify.



Note:

Version 1 used distinct names **Synfire Express** and **Synfire Pro** for this folder, which are now migrated into a single folder for all editions **Sparks**, **Express** and **Pro**. This is to ensure a smoother upgrade experience and simplify file management and backup.

Making a Manual Backup

Grab all of the above folders and copy them to a thumb drive, external disk or other data volume. In order to not confuse folders that bear the same name, be sure to create empty destination folders **Home** and **System** first before you copy the original folders into them.

Restoring a Manual Backup

Uninstall and re-install Synfire first. Then copy your backup folders back to their original locations as they are explained above, replacing any existing files.

Chapter 5. Workflows

Suggestions for approaches you may want to try

Composing music is a highly creative, chaotic and unpredictable process. Every songwriter, composer or producer develops their own personal approaches and habits over time. Synfire however is an entirely new tool to which most routines you have internalized with a DAW no longer apply.

Synfire supports new agile workflows that can be overwhelming for beginners. This section is about introducing you to general approaches of organizing a project and developing an arrangement. It will help you getting productive more quickly.

Strategies

General approaches to staying focused and productive

Creativity never follows a predictable path. Still, there are general strategies you can pursue to stay focussed and not get distracted by too many possibilities. The following sections outline different approaches.

Collect And Arrange

The most convenient strategy is to assemble music from phrases and parameters you have already at hand in the form of libraries or previously composed arrangements. This requires a bit of preparation.

1. You begin with [collecting phrases \(on page 285\)](#) and [progressions \(on page 286\)](#) according to your personal preferences. Keep everything you like, for whatever reason, even if it is unlikely to be used anytime soon.
2. Once you have filled a few libraries, look for phrases that inspire you most for a new song.
3. **Drop** phrases on a new arrangement to add instruments, extend phrases, change harmony, etc.
4. Develop the arrangement following your intuition.



Tip:

You should do the collecting on a different day than the arranging. Collecting phrases is more routine and repetitive, while arranging is chaotic and intuitive. Both states of mind do not go together well.

Import And Rebuild

You may have a number of DAW projects or MIDI files at hand that you want to harvest for musical expressions that worked well. This strategy is about reusing some of your previous work to create new music.

1. Export previous work as **Standard MIDI Files**.
2. [Import \(on page 268\)](#) these files, preferably as static pitches to speedup the process. Make sure every track with a tonal instrument is included with the estimation of [Harmony \(on page 304\)](#).
3. In the imported arrangement, skim every **Take** for interesting fragments. Select them with the **Span** tool and collect a phrase into the embedded library with  **E** or **Control-E** or [Phrase > New Phrase From Selection](#). This is [explained in more detail here \(on page 50\)](#).

4. Save the embedded library as a file with [Library > Save As](#)
5. Open the library on the sidebar of a new arrangement and use it to build the parts of a new composition.
6. Develop the arrangement following your intuition.

You can also import directly into a library using the standalone [Library App \(on page 152\)](#).



CAUTION:

Be sure you understand the [limitations of MIDI file import \(on page 268\)](#) before you attempt to faithfully recreate previous work. This strategy is about rebuilding music from individual elements. You will almost certainly come up with a variation and reinterpretation of the original.

Concept And Execution

The crucial part of this strategy is to start with a general idea that intrigues you and take that as a motivation to build something unique. Here are a few examples.

- The idea to have a song based on a single chord only with varying extensions.
- The idea to compose a modal ambient piece with slowly evolving phrases.
- The idea to use excessive ostinato (same note over and over).
- The idea to use chords from a chromatic palette and forget about traditional harmony.
- The idea to make excessive use of parameters together with extremely short figures.
- The idea to change time signature in the chorus.
- The idea to continuously move from beginning to end without any repetitions, in a single big chain of evolving counterpoint figures and rhythms, with a dramatic build-up towards a climax and a final resolution.

Whatever idea you come up with, the key to this strategy is a deep understanding of Synfire. It's definitely not for beginners, but will reward power users with unparalleled results.



Tip:

No matter how extreme or harsh an idea may sound at first, if you listen to the results a few days later, you will notice that it actually isn't that radical but quite refreshing. The key to great stuff is to be not afraid of extremes.

Related information

[Editing \(on page 243\)](#)

[Import SMF \(on page 268\)](#)

[Collecting Phrases \(on page 285\)](#)

[Collecting Harmony \(on page 286\)](#)

[Building Structure \(on page 288\)](#)

Songwriting

Arrange a song based on sections like verse, bridge and chorus

Songwriting is most productive when you follow the [Collect & Arrange \(on page 282\)](#) workflow. At the time you begin with a new song, you will already have a lot of phrases at hand that you can try out and see what works best with the lyrics and style you have in mind. The phrases will put any chord progression to live in an instant.

There are probably a million ways to come up with an idea for a new song. Playing around with Synfire is one of them. This workflow summary therefore focusses on how to arrange and refine a song based on existing phrases.

Song Parts

You only need very few phrases for a song. Build a riff or pattern for the verse first and then make variations of it as you develop other parts, like bridge and chorus.

1. Create a **Container** for each part. Leave room at the beginning for one measure in order to simplify the synchronizing with a DAW later on.
2. Use an **Alias** where a part repeats later in the song.
3. Use **Pause** to turn individual instruments on or off while the song evolves. It is a good idea to keep all pause parameters in separate child containers, so you can use different combinations of pauses at different places in the song.

Another possible approach is to start with a very dense pattern for the chorus (the climax of your song with everything maxed out) and then strip it down and thin it out for the more mute parts like intro and verse. This ensures a consistent rhythm and makes the parts similar to each other, which is a great way to build up anticipation and tension. Jumping right into a completely different part may be too disruptive for unsuspecting listeners, but ultimately it depends on your style, how harsh or smooth you want it to be.

Yet another approach is to generate related but somewhat different parts with a **Factory** and glue them together. Make sure though that rhythm is compatible across parts. The best way to verify that is to get up from your seat and move.

Melody

Keep in mind that 80% of a melody is rhythm. If you already have lyrics, that will largely determine the rhythm. Once you have a rhythm that works, do the following.

1. [Record a Step parameter \(on page 265\)](#) by tapping in the rhythm on your external MIDI keyboard.
2. Move that **Step** parameter to the [Grid outlet \(on page 89\)](#) of the phrase toolbar. Now you have a grid to draw along.
3. Draw a horizontal line with the **Line Tool** using the blue horizontal symbols. Be sure [duplicates are enabled \(on page 88\)](#) to get a series of multiple symbols.
4. Nudge individual **Figure** symbols up or down to shape a melody.

The more convenient method of coming up with a melody is to generate some with [Factories \(on page 29\)](#) and keep and refine those you like.

(this is not finished yet)

Collecting Phrases

Phrases are the lifeblood of music, much more so than chords and sounds. Since it is impossible for Cognitone to meet everyone's demand with pre-manufactured libraries, given the vast variety of styles and individual preferences out there, collecting your own phrases is imperative if you want your music to stand out.

So, now that you became a hunter and gatherer in the realm of **Music Prototyping**, here are different ways to get hold of precious phrase material.

Drawing

Drawing a **Figure** in the **Phrase Editor** ([on page 250](#)) is the most flexible way to create a phrase, although it takes some patience and practice before you get productive with this.

Combining

A simple way to get new phrase material is to edit or combine already existing ones. Altering melodies comes to mind first. You can also isolate individual lines out of a phrase to use them standing alone. Or append multiple phrases to get one with more variation.

Recording

If you are good at playing the keyboard, there is no reason not to leverage that virtue for prototyping. Nothing could be more targeted and individual than a performance you recorded yourself.

You can record a **Phrase** directly into an arrangement when you need it, or use the **Library App** ([on page 152](#)) to record and collect phrases in preparation for future projects. The actual recording task works the same in both cases, as [explained here \(on page 264\)](#).

Generating With Factories

Synfire 2.0 introduced [Factories \(on page 29\)](#) that you can use to generate a huge variety of phrases for all sorts of purposes.

Agony Of Choice

Factories are probably the most inspiring and surprising way to collect phrases, even though it is often a challenge to assess whether a particular phrase will eventually be useful or not. Still, you can't possibly keep them all. You have to delete a majority of them as soon as possible, or risk getting swamped in huge phrase pools that are impossible to sift through when you need them.

Polyphonic phrases with multiple parts are easier to assess than melodies or bass lines, because the latter often make sense only in context with other instruments. Over time you will learn to recognize a good melodic phrase, even if it sounds bland or generic in isolation.

Harvesting MIDI Files

Whether you recycle your own earlier projects, or search for files on the Internet, importing and disassembling **Standard MIDI Files** is a very targeted way to create phrases.

Keep Phrases Short

Remember that phrases are supposed to be flexible building blocks. You want to be able to combine them in new ways in order to achieve something new. Importing entire tracks is not only tediously slow, you also end up with long phrases full of repetitive content that is too clunky to be useful in a prototyping workflow. What you need is brief and unique fragments of musical expression that are no longer than 4 to 8 bars.

When you examine a MIDI file, look for the essence of each track. Keep only the spans with unique expressions and drop all repetitions and insignificant variations.

Related information

[Editing Parameters \(on page 246\)](#)

[Editing Figure \(on page 250\)](#)

[Editing Harmony \(Progressions\) \(on page 254\)](#)

Collecting Harmony

Pulling chords from a palette is intuitive and easy. Having a library full of progressions ready when you need them is even more comfortable. Here are a few tips how to collect chord progressions.

Surfing Palettes

Open a **Palette** and explore chord changes that sound the way you like. This is a very convenient way of finding new progressions. Just drag a chord off the palette and drop it into the palette's notepad view. When a progression is complete, you can grab the **Harmony** outlet and drop it into a **Library**.

Transpose & Combine

Unlike audio or static MIDI clips, the **Harmony** parameter can be easily transposed in order to work in every key. Just transpose a progression (or a part of it) up or down until the global key setting matches the key you need. Once they are transposed into key, partial progressions can be combined freely.

Factories

There are **Factories** that generate random **Harmony** parameters. Sometimes they are great to be used as a whole. Often they contain a few chord changes that inspire you. You can copy these portions into a progression editor and build a more meaningful harmonic narrative that suits your taste.

Song Books

The ability to enter one or more chords by name into the **Parameter Inspector's** input field is often overlooked. Grab a song book or a visit a website with songs and write down the chord names right into Synfire. With the Pro edition, you can also write chords in **Roman Numeral** ([on page 328](#)) notation or as **Harmonic Functions** ([on page 324](#)).

Related information

[Editing Harmony \(Progressions\) \(on page 254\)](#)

Production vs. Notation

Before you start a new arrangement, be clear about your goals, whether you want to export a score for notation (export MusicXML or LilyPond), or render a musical performance for audio production (export to DAW).

Notation export requires strict quantization (note onsets and durations) and a rather minimalistic arrangement.

For audio production, you probably want to maximize rhythmic expression and variation and enhance the overall listening experience by all sorts of edits and enhancements that will look overly complex and confusing in exported notation.

Related information

[Export Notation \(on page 272\)](#)

Audio Engine vs. DAW

Although Synfire offers great flexibility through the use of **Drones** and the synchronization with your DAW, we strongly recommend you begin your first projects based on the **Audio Engine** alone. Your arrangements will be wholly self-contained and restore all audio setup automatically when opened. This is especially convenient when you open multiple arrangements at the same time in order to exchange phrases, sounds and other data with drag & drop.

1. Synfire is in control and behaves much like its own DAW.
2. No back and forth between two programs. Plug-ins can be opened and edited in Synfire.
3. No conflicts accessing shared MIDI ports or audio drivers (Windows).
4. No keeping of separate files for DAW and Synfire. No need to take care of when to open and save which files.
5. Multiple arrangements can be open at the same time.

Once your composition or song reaches a certain maturity, you can relocate it to a DAW for production. **Drones** then host all plug-ins on behalf of (and controlled by) Synfire. You can still replace sounds and edit your entire composition, while the audio processing is already done by the DAW.

Only after you exported all rendered MIDI physically to DAW tracks and unloaded the Drones, your project will become final and all further editing constrained by the capabilities of the DAW.

Latency Playing Drones Live

The synchronization with a DAW for regular playback is almost perfect (sample precision). Latencies may occur when playing a Drone live through an external MIDI keyboard, though.

It takes some time for the MIDI messages sent by Synfire to arrive at the Drone and an additional time elapses until the DAW is processing them. The latency compensation built into most DAW unfortunately does not go into effect when playing a Drone this way. This is especially an issue with recording.

**Tip:**

In order to minimize the latency, you can connect your external keyboard to the DAW directly and arm the track with the Drone for monitoring. Please make sure you disable input for MIDI keyboard at the Synfire end or you will receive all input twice.

Building Structure

While most projects start out with all phrases in the root container, sooner rather than later you will need to build a structure of nested containers.

Container Roles

Containers take on different roles and serve different purposes in an arrangement.

- **Parts:** The most common role for a container is to represent a section or part of a song. That's where you usually put phrases with a **Figure** parameter.
- **Landing Containers:** After some climax, crescendo, build-up or chorus, a landing container introduces relaxing contrast by pausing several instruments for a few beats.
- **Aliases:** A previous section reoccurs, possibly modified by a parallel container that alters a few things to make it sound different this time around.
- **Mixing:** Use the **Pause** parameter in an empty child container to enable or disable individual instruments for the duration of that container.
- (this is not finished yet)

Tips for Containers

Containers need not necessarily contain figures. There are many ways you can use other parameters, sometimes to dramatic effect. Most importantly, containers can be convenient tool for non-destructive editing and experimentation.

- **Abstract Parameters:** Populate containers not only with **Figure**, but with other parameters that influence their rendering: **Transpose**, **Step**, **Variation**, **Velocity**, **Pause**, **Shift** and many others.
- **Temporary Harmonies:** Throw a **Harmony** into an empty container and move the container to different places. You will be amazed at the things that will happen!
- **Variation Of Aliases:** Make an **Alias** of a container and move it to another location. Place a new container next to it with **Container > New Parallel Container** and fill it with parameters you want to override in the alias.
- **Synchronization of Rhythm:** Put a **Step** into the **Global Parameters** of a container and hear all instruments play that rhythm in sync. This is very effective for a short dramatic interplay.
- **Continuous Morphing:** Put a **Morphing** into the **Global Parameters** of the root container. All transitions between all containers will then be influenced by the morphing settings for all instruments.

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Chapter 6. Tutorials

Instructions and links to videos and examples online

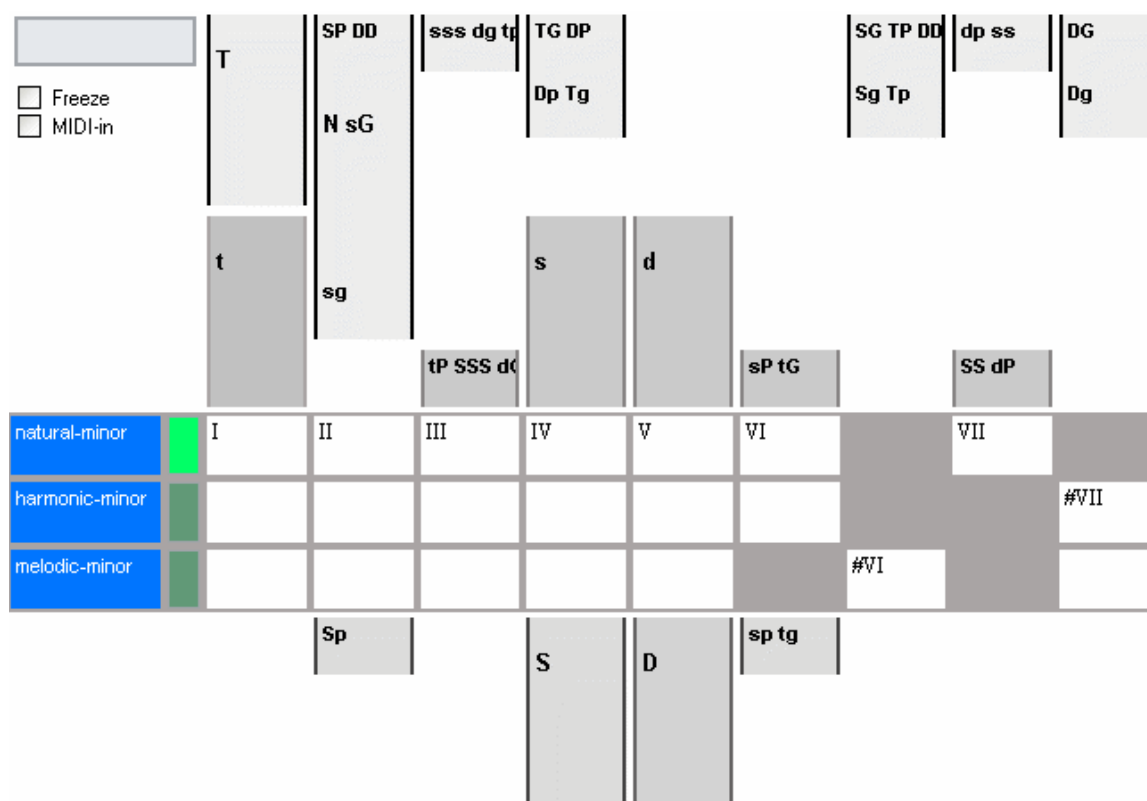
Palette Surfing 1

For beginners, it is helpful to do a few simple exercises to get used to the layout of Palettes.

Simple Cadence

Visit the **Palette** page and select a **Standard Palette** in Minor from the **Circle of Fifths**. Now recall a preset [Layout > Preset > Harmonic Functions](#) for a layout that shows harmonic functions instead of chord names.

Select a **Sketch** from the [Playback](#) menu that puts some emphasis on the chords, for example, *Pop Push w/Guitar*.



Don't get confused by the symbols. All you have to know now is that **T** stands for *Tonic*, **D** for *Dominant*, and **s** for *Subdominant*. The lowercase letters are for minor, and the uppercase are for major. These chords are also called the **Primary Functions** of a key, according to the [Theory of Harmonic Functions \(on page 324\)](#).

Now play the sequence

t - S - D - t

It will probably sound very familiar to you because this is a **Cadence**. Cadences clearly indicate to a listener which key we are in. This is most obvious with an **Authentic Cadence** that passes from **D** to **T** or **t**, or in Roman Numeral notation from **V** to **I**, also written **V - I** or **5 - 1**.

**Tip:**

As a rule of thumb, a V - I authentic cadence is always a good way to close a progression, or establish a new key after a key change.

Palette Surfing 2

Substitutions

You can add variation to a progression by substituting chords by functionally related chords that sound different. One hint to find these replacements is their harmonic function.

According to the [Theory of Harmonic Functions \(on page 324\)](#), secondary functions can be derived from primary functions by appending the letters **P**, **p** (Parallel) or **G**, **g** (Gegenklang). Lowercase letters stand for Minor and uppercase for Major.

When you play the sequence below in a palette, you will notice there are multiple chords for the same function that you can choose from.

tP - sP - dP - t

The fundamental cadence *Tonic – Sub-dominant – Dominant – Tonic* is still maintained, even when the original chords are replaced with chords that have a similar harmonic function.

Palette Surfing 3

Secondary Harmonies

Now that starting with the tonic **t**, **T** and returning to it via a **v** - **I** is a safe haven of sorts, you can take further risks and experiment with **Secondary Functions**. There are no fixed rules.

Here is an example:

t - d - dP - S - t - dP - D - T

Palette Surfing 4

Key Changes (Modulation)

Visit the **Palette** tab and make sure the sidebar with the **Circle Of Fifths** is shown. The major keys are on the outside, and their parallel minor keys are on the inside.

Now select the key of **c major** and switch to a layout **Layout > Preset > Default** to see the names of relevant chords.

The circle of fifths window always shows you in which keys the chord currently being played has a particular function. These keys are highlighted in darker colors and are also labeled with the function.

Now play the chord **Gm**. You obtain the picture at the right. According to this picture, the chord is

1. the dominant of C minor,
2. the tonic of G minor,
3. the sub-dominant of D minor and D major, and
4. the dominant of C major.

This information is extremely useful when you want to change the key. Let's assume that so far you have played the following chords:

C Gm ... ?

and now you would like to change to the key of **D Minor**. Now our chord in the palette appears at another position, namely, the sub-dominant.

You may remember the cadence that will confirm the new key: Play the authentic cadence **v - I**, preferably with a seventh chord (**A7** and **Dm**). You can clearly hear that you have arrived in **D Minor**.

The progression is thus as follows:

C Gm A7 Dm

For fun, you can now do the same thing again and pretend that the last chord **Dm** is not the tonic, but rather in turn the sub-dominant of another key in order to jump into the next key with an authentic cadence according to the formula **s - D - T**. The circle of fifths tells you that **Dm** is the sub-dominant of A major and A minor. If you decide on major, click on **A Major** and continue with the cadence **v - I**.

Meanwhile, the complete progression looks like this:

C Gm A7 Dm E A

Once again? The same formula. This time we go to **E Minor** via **B7 - Em**. The result:

C Gm A7 Dm E A B7 Em

You have now changed the key three times with only eight chords in total. If you like, you can continue with the same formula until you finally come to **C Major** again.



Tip:

There is an example progression **Circular Modulation** composed according to this formula. You can open it with the Progression Editor.

Chapter 7. Troubleshooting

Solutions to problems and confusion that may arise

Occasionally you may wonder why your arrangement behaves in a certain way and not in another, or why you don't hear anything or don't hear what you expect. Synfire provides several troubleshooting options and information about the structure of your arrangement.

Report Potential Problems

Use **Help > Potential Problems with Arrangement** to obtain a report on conspicuous findings collected during the rendering process. If your arrangement behaves in a puzzling way, this report may provide hints where to look for an explanation or solution.

Parameter Hints

Use **View > Parameter Hints** to display explanatory information in the **Parameter View** ([on page 147](#)) about where a parameter is inherited, paused, empty or otherwise special in a not immediately obvious way.

Console Log

Open the console with **Window > Console** for possible clues about unexpected events or errors that have occurred.

Online Help

On our website www.cognitone.com in the **Support** area, you will find various FAQs and a link to the online version of this manual, which may be more current.

Graphics Glitches on Windows

Condition

The moving playhead leaves trails on screen, gray lines appear inside content when scrolling a view. Fonts do not display correctly. This happens on Microsoft Windows with high DPI monitors only.

Cause

Odd DPI scaling factors like 175% or 225% cause misalignments through rounding issues. Synfire has problems addressing quarter pixels, so to speak. We have not yet found a solution that works with all DPI settings.

Remedy

1. The glitches go away when you set your monitor's DPI scaling factor in the Windows **System Settings** to 100, 150, 200, 250 or 300 percent.
2. Alternatively, you can disable HiDPI for Synfire altogether by editing its desktop shortcut: Append the command line option **-H** after the program name that is written in quotes.

Plug-ins Can't Access Sounds

Condition

Some or all plug-ins loaded by the **Audio Engine** can't seem to be able to load sounds, presets and other contents.

Cause

With macOS Big Sur and later, programs are required to ask the user for permission to access external volumes and other folders. Some audio plug-ins are not aware of this when they attempt to open their sounds and presets. Unless the Audio Engine has been granted permission, the plug-ins it has loaded don't have that permission either.

Remedy

1. Open **Audio/MIDI Setup** and visit the **Audio** tab.
2. Select the Audio Engine that is unable to load sounds, if necessary.
3. Click on **Grant File Permission**.
4. Point the file dialog to a volume or folder where the sound s are stored.
5. Reload the rack with the problematic plug-ins, or restart Synfire.

State Of Drones Not Restored After Opening

Condition

After opening in your DAW a project with Drones or MIDI Drones in it and then opening the associated arrangement in Synfire, the rack modules on the **Sounds** page are not restored to the state that was present when the arrangement was last saved.

Synfire shows a warning message that some sounds could not be restored when the arrangement is opened.

Cause

Your DAW might not have loaded the Drone plug-ins, or not early enough.

Remedy

Check the project settings in your DAW and make sure all plug-ins are always loaded, whether the DAW thinks they are currently needed or not.

Unpredictable Auto-Chords Output

Condition

Rendered MIDI output of the **Auto-Chords** ([on page 305](#)) feature changes significantly after making only minor progression edits or changes to the instrument's playing ranges.

Cause

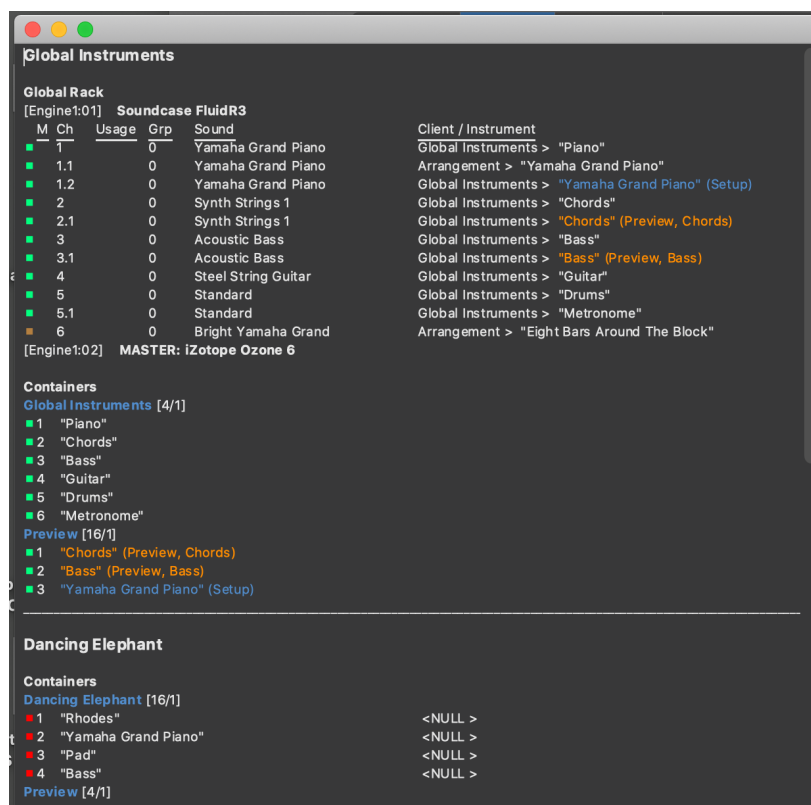
Auto-Chords ([on page 305](#)) is a convenience feature that automatically populates a track with sustained chords of the current progression. It doesn't support detailed control of inversion, voicing and rhythm.

Remedy

Disable **Auto-Chords** ([on page 305](#)) and draw individual chords using the **Figure** ([on page 298](#)) parameter to match the rhythm you have in mind. Draw chords by sketching vertical lines with the **Line** tool.

Sound Allocation Monitor

In order to track down routing problems or unexpected MIDI behavior, you can open a sound allocation monitoring panel with **File > Sound Allocation Monitor**. This information can be helpful to fix MIDI-related issues and to understand the general sound management of Synfire.



Note:

This feature is available with the **Express** and **Pro** editions.

Chapter 8. References

Appendix with tables, lists and other resources

Encyclopedia of Parameters

Complete list of all parameters, their meaning and purpose

Analysis

This parameter is used internally by the **Harmonizer** to store its results and preferences. You can delete it if you need to reset those to defaults.

Chromatic

Transposes final MIDI output absolutely in chromatic steps. To preserve harmonic integrity, transposing in increments of 12 halftones is safe. Other increments may still lead to interesting results.

Properties

Using the fader (slider) on the **Parameter Inspector** ([on page 54](#)) sets a particular value for the entire duration of the container (constant). If you want to continuously automate this parameter, you need to draw values in the **Parameter View** ([on page 147](#)).

Conversion

Drop any parameter with a curve-like shape. The form is preserved as far as possible and values are scaled into range. Instead of drag and drop, you can also use copy and paste.



Note:

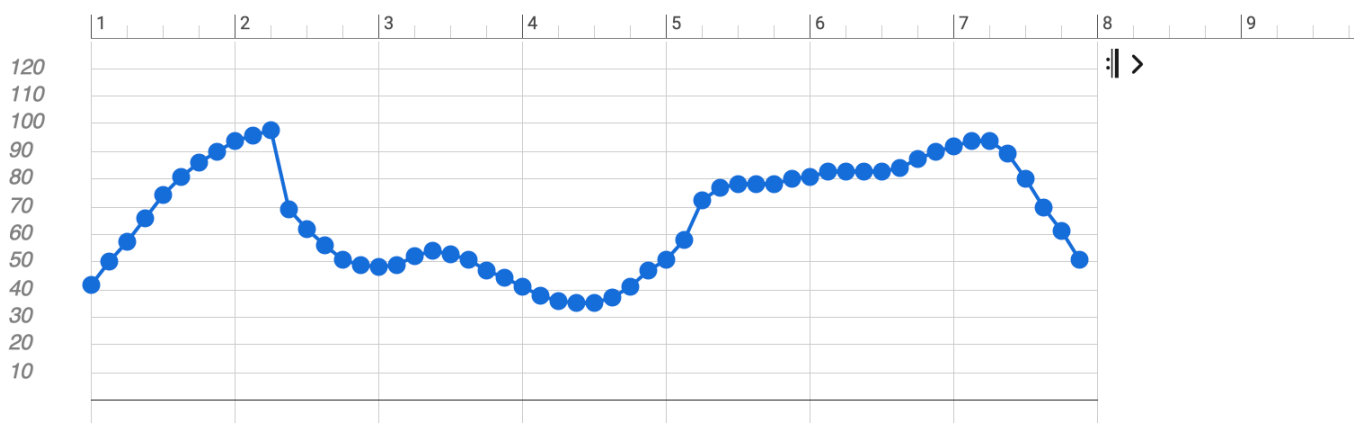
Do not transpose output by octaves when you can alter the **Playing Range** of the **Instrument** instead. If for some reason the octave range of your device is extremely off, try compensating for this at the plug-in or synthesizer first.



Note:

This feature is available with the **Pro** edition.

Controllers



Several parameters resemble their standard MIDI equivalent. Values range from 0 to 127 or -64 to +64.

Some controllers like [Volume \(on page 323\)](#) and [Pan \(on page 296\)](#) are mapped to knobs and faders on the **Matrix Console** [\(on page 107\)](#).

Properties

Using the fader (slider) on the **Parameter Inspector** [\(on page 54\)](#) sets a particular value for the entire duration of the container (constant). If you want to continuously automate this parameter, you need to draw values in the **Parameter View** [\(on page 147\)](#).

Conversion

Drop any parameter with a curve-like shape. The form is preserved as far as possible and values are scaled into range. Instead of drag and drop, you can also use copy and paste.

Custom Controllers

User-defined **Custom Controllers** [\(on page 202\)](#) can be configured per **Sound** [\(on page 37\)](#) or **Device** [\(on page 36\)](#). Their customized names will appear in **Parameter Outlets** [\(on page 45\)](#) where the sound or instrument is currently selected.



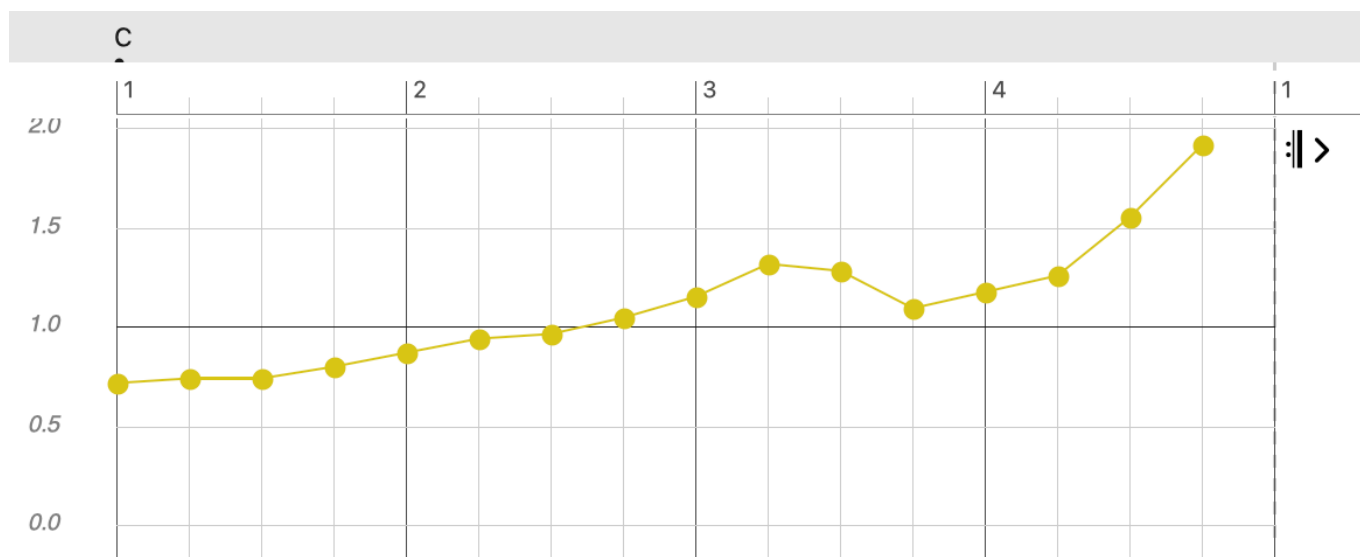
Important:

The faders for [Volume \(on page 323\)](#), [Pan \(on page 296\)](#) and similar controllers don't do *audio* mixing. They merely transmit MIDI messages and set the corresponding **Parameter** [\(on page 2\)](#) that is used to render MIDI output. This has no effect if a plug-in or device doesn't respond to the MIDI controller as expected. The master faders and **Solo**, **Mute** and **Master** buttons work at the audio level, though.

Related information

[Custom Controllers \(on page 202\)](#)

Dynamics



Dynamics modulates the final [Velocity \(on page 304\)](#) of the output. Values are floating point numbers which the velocity gets multiplied by. Thus 1.0 doesn't change anything and greater values increase velocity while smaller ones damp it down. Since the scaling is proportional, natural variation is preserved.

Use this parameter to conduct and fine-tune overall dynamics without altering velocities.

Properties

Using the fader (slider) on the **Parameter Inspector** [\(on page 54\)](#) sets a particular value for the entire duration of the container (constant). If you want to continuously automate this parameter, you need to draw values in the **Parameter View** [\(on page 147\)](#).

Conversion

Drop any parameter with a curve-like shape. The form is preserved as far as possible and values are scaled into range.

Drop a **Figure**, **Take** or **Output** to extract this parameter and insert it here.

Drag this outlet to estimate a dynamics profile for the current **Figure** and drop it somewhere else.

Instead of drag and drop, you can also use copy and paste.

The parameter can be extracted from the current **Figure** [\(on page 298\)](#) with **right-click** menu or **Parameter > Extract From Figure**.

The parameter can be applied to the current **Figure** with the **right-click** menu or **Parameter > Save To Figure**, which will permanently alter the figure and clear the parameter when done.

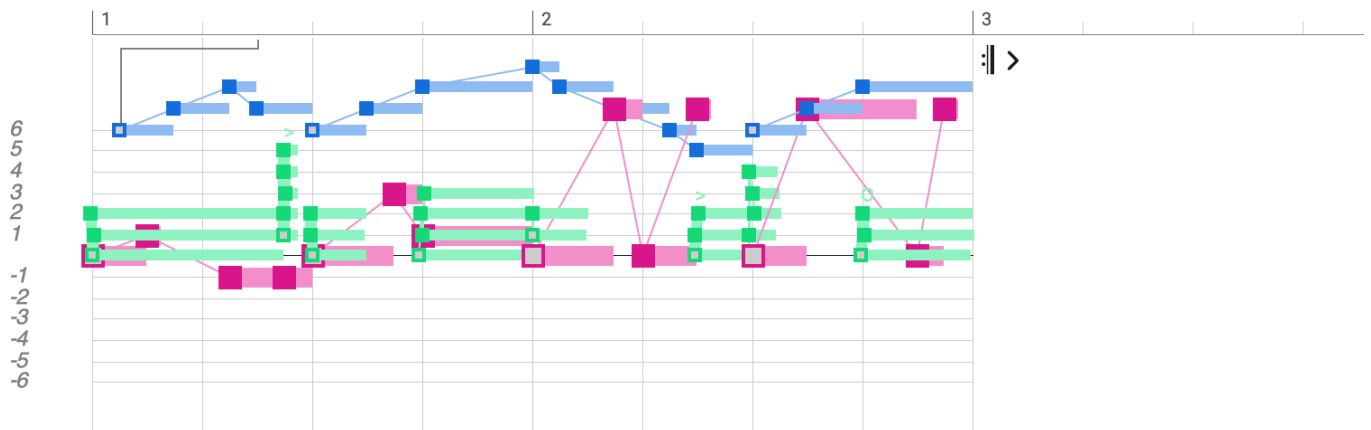
Right-click and **Extract From MIDI Output** to insert what can be derived from the current output.



Note:

This feature is available with the **Pro** edition.

Figure



Video Tutorial

The [Figure \(on page 298\)](#) parameter carries a [parametric format of musical expression \(on page 2\)](#) that is independent of pitch and harmony. It contains **Symbols** grouped into **Segments**, the latter of which are responsible for preserving melodic movement and expression, regardless which harmony a Figure is rendered against.



Important:

The most important thing about **Figure** is that it's not a substitute for notation or piano rolls. It's an **algorithm**.

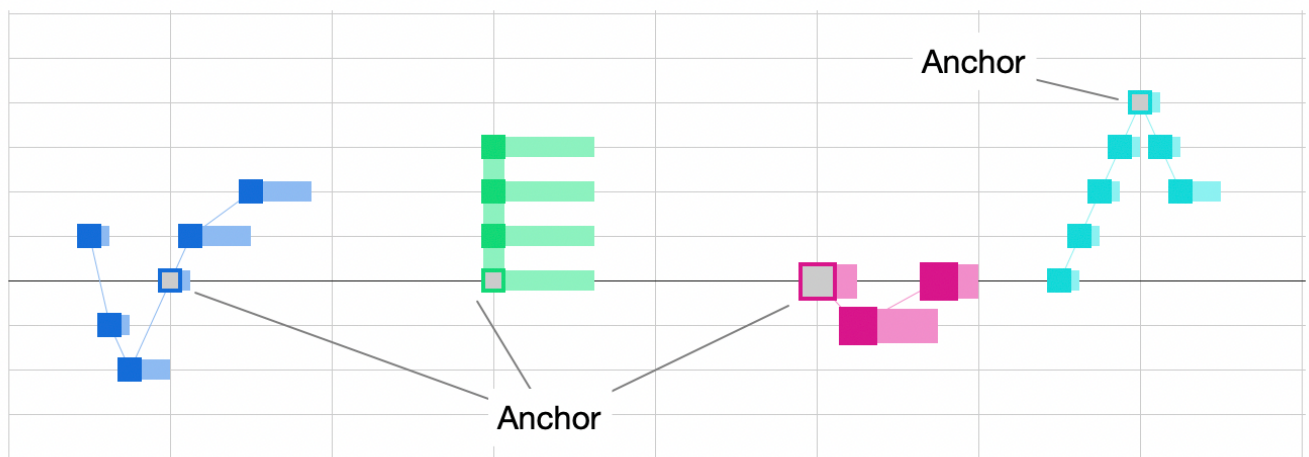


Note:

The term **Figure** stands for a technical data structure here. Not to be confused with the musical notion of a melodic shape.

Segments

One or more **Symbols** are grouped to form a **Segment**. Segments denote musically meaningful units that are supposed to preserve their relative shape. Symbols in a segment may be stacked vertically (chord), placed in a row (melody), or any combination of the two.



Segments are selected, edited and transformed as a cohesive unit, making them a convenient device for building melodies and musical expressions of arbitrary complexity.

Anchor

Every segment has one **Anchor** that denotes a point of emphasis that marks the melodically most important symbol of a segment. The anchor is rendered first and then other symbols are rendered relative to it. It also determines the position of the segment on the timeline.



Tip:

If you want a segment to end on a particularly important target note, make that last symbol the anchor. Likewise, if you care most about any other note in between, make it the anchor.

Symbol Types



Symbols are notated on a staff with horizontal lines that, for most symbol types, correspond to the steps of a scale. The bold middle line is a reference that depends on the type of symbol.

H

Horizontal: Best for long running melodies relative to the current key. The zero line denotes the root of the **Reference Scale** ([on page 11](#)) of the **Global Key**.

V

Vertical: Best for ornaments, licks or improvised melodies. The root of this scale changes with every chord. The zero line denotes the root of the **Vertical Scale** ([on page 8](#)).

C

Chord / Arpeggio: Best for chords, horn stabs, arpeggios and finger picking patterns. The zero line denotes the lowest note of the current chord in its current inversion and voicing. Each line represents a note in the chord.

I

Interval: The anchor describes an interval of the chord. All other symbols are mapped relative to the anchor. Use this type to start a segment on a desired chord interval and let it continue from there.

For example, 3 maps to the third, 5 to the fifth, and 7 to the seventh (since the grid starts at zero, it is one off). Negative values go in the opposite direction. Since -3 is a third below root, it is no longer actually a third. We recommend you write positive anchors to avoid confusion.

P

Pitch: Absolute pitch. For drums, percussion and other sounds that need not follow harmony. The zero line denotes C4.

B

Bass: The zero line denotes the bass of the current **Harmonic Context** ([on page 12](#)). Each line is a step on the **Vertical Scale**.

R

Relative: The Anchor is mapped like a **Chord** symbol, while additional symbols are rendered like **Vertical** symbols relative to the anchor. Use this type to start a segment on a desired chord note and let it continue from there.

Gray

Exclusively used by the [Take \(on page 317\)](#) parameter. Absolute pitch.

The best way to make yourself familiar with the different symbol types is to draw a segment in a short **Figure** and let it repeat over and over while a chord progression moves on.

**Note:**

Segments may contain only one type of symbol. Types cannot be mixed within the same segment.

**Note:**

The **Vertical** type is available with the Express and Pro editions. The **Relative** and **Interval** types are available with the Pro edition only.

**Important:**

Figure has no idea of pitch and thus can't be sight-read or played. It would be pointless to print it. It is also not meant as a substitute for MIDI or traditional notation. It is exclusively a tool for creative composing.

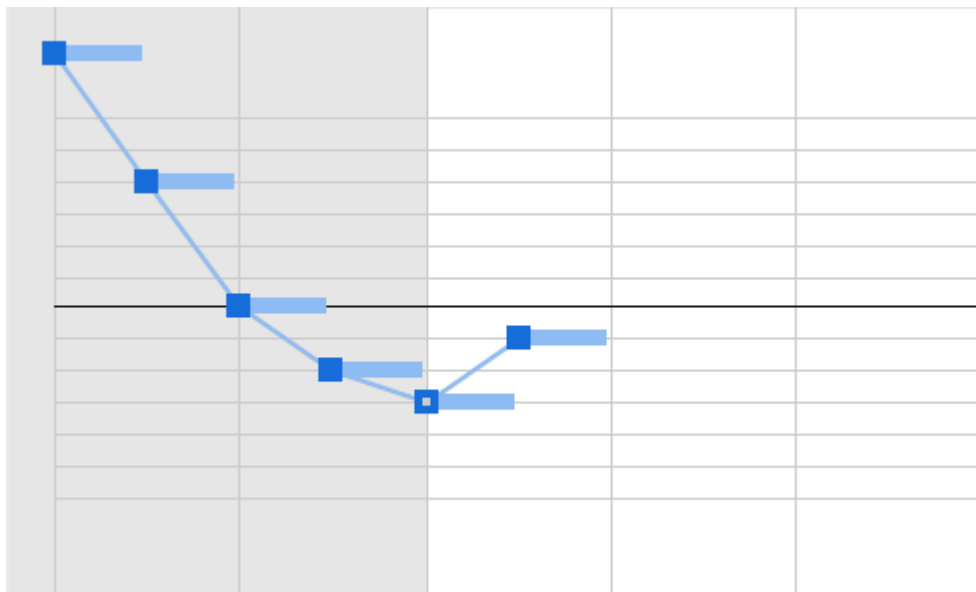
**Important:**

Although there are +/- seven lines in the grid, there are many scales that have more or fewer steps. The interval 0-7 is thus not necessarily always an octave. If you want to notate an octave, please use a chromatic shift of 12 or -12 for a symbol.

Positioning Of Segments

The position of a segment in a **Figure** is determined by its anchor. It is therefore only included with a Span selection if the selection also includes the anchor. Likewise, a segment will not be rendered if its anchor is outside the bounds of a container.

Individual symbols of a segment may also occur at negative positions, that is, before the start of the parameter. Provided the anchor is inside container bounds, such a segment starts playing even before the container begins. This is useful for melodic lines that are supposed to pick up early before moving into a container, or finish gracefully after exiting a container.



Similarly, segments that reach beyond the end of a parameter will continue playing into the next loop or the next container.



Tip:

Segments reaching across container bounds are only useful for very short overlaps. If you want a melody to overlap more than a bar, consider placing them in a container that is shifted on the timeline accordingly.



Note:

The range of negative positions is limited. Symbols can't occur more than 4/4 before zero. The segment will also show a warning, if the anchor is at a negative position, which will exclude it from being rendered at all.

Conversion

Drop any parameter with a curve-like shape. The form is preserved as far as possible and values are scaled into range. Instead of drag and drop, you can also use copy and paste.

Right-click and **Extract From MIDI Output** to insert the current output as a figure with absolute pitch symbols.

Accidentals

Symbols have **diatonic** and a **chromatic** component. The diatonic component determines the line on which the symbol is drawn. The chromatic component determines the number of semitones to shift away from that. Although this chromatic shift is called an **accidental**, its meaning is different from tradition notation.

Figure symbols always snap to the current scale or chord. Whether that note is traditionally notated with an accidental (flat or sharp) or not depends on the key.

Notes may land out of scale only if **Voice Leading** ([on page 73](#)) is bypassed and chromatic shifts are enabled for the segment (Pro). Such chromatic shifts can be pretty harsh. After all, the job of a scale is to make sure all instruments behave in a harmonically consistent manner. The introduction of blue notes or passing tones is a matter of picking an appropriate scale, if only for the duration of a single chord.

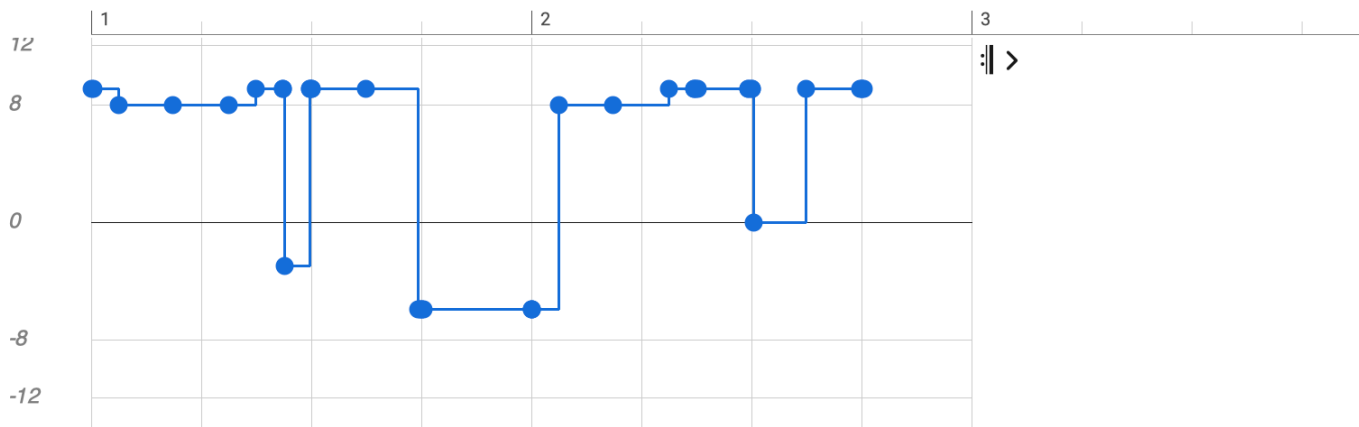
The chromatic component of a symbol means: If there is a note in the scale this number of halftones away, use it. So if you have a green chord symbol with a chromatic component of -1, there may be a note in the scale a halftone below that chord tone. If not, the next note in the scale below that chord tone is used.

Related information

[Rendering](#) ([on page 18](#))

[Figure Inspector](#) ([on page 72](#))

Flow



Flow modulates the length of notes to achieve a variety of rhythmical articulations. Values range from -12 ... 12. For best musical suitability, the value range is split into distinct zones with different interpretations.

Val	Effect	Amount	Of
12	Overlap	1/16	Fixed
11	Overlap	1/32	Fixed
10	Overlap	1/64	Fixed
9	Overlap	1/128	Fixed
8	Legato	100 %	Step between onsets
7	Legato	90 %	Step between onsets
6	Legato	80 %	Step between onsets

5	Legato	70 %	Step between onsets
4	Legato	60 %	Step between onsets
3	Legato	50 %	Step between onsets
2	Legato	40 %	Step between onsets
1	Legato	30 %	Step between onsets
0	Original	100 %	Original length
-1	Shorten	90 %	Original length
-2	Shorten	80 %	Original length
-3	Shorten	70 %	Original length
-4	Shorten	60 %	Original length
-5	Shorten	50 %	Original length
-6	Shorten	40 %	Original length
-7	Shorten	30 %	Original length
-8	Shorten	20 %	Original length
-9	Staccato	1/16	Fixed
-10	Staccato	1/32	Fixed
-11	Staccato	1/64	Fixed
-12	Staccato	1/128	Fixed

The splitting of zones is a compromise to balance math and music. It affords us a parameter with symmetric range that can be easily sketched, inverted and converted from other parameters, without risking harsh musical outcomes.

Properties

The parameter supports custom templates. You can save and recall **Parameter Templates** from its **right-click menu** or the main *Parameter* menu.

Conversion

Drop any parameter with a curve-like shape. The form is preserved as far as possible and values are scaled into range.

Drop a **Figure**, **Take** or **Output** to extract this parameter and insert it here.

Drag this outlet to estimate a flow pattern for the current **Figure** and drop it somewhere else.

Instead of drag and drop, you can also use copy and paste.

The parameter can be extracted from the current **Figure** ([on page 298](#)) with **right-click** menu or *Parameter > Extract From Figure*.

The parameter can be applied to the current **Figure** with the **right-click** menu or **Parameter > Save To Figure**, which will permanently alter the figure and clear the parameter when done.

Right-click and **Extract From MIDI Output** to insert what can be derived from the current output.



Note:

This feature is available with the **Pro** edition.

Harmony

B	F#	Gmaj7	A	B	Em7	Gmaj7	F#7
1		2		3		4	1
B T	F# D	Gmaj7 tG, sP (t)	A dP, SS	B T	Em7 s (tG sP)	Gmaj7 tG, sP (t)	F#7 D
-	-	-	-	-	-	-	-
B.ionian	F#.mixolydian	G.lydian	A.lydian	B.ionian	E.dorian+4	G.lydian	F#.bebop-minor
B.major	B.major	B.natural-minor	B.major-b7	B.major	B.harmonic-minor	B.natural-minor	B.major-add#7-add7
B.Major	B.Major	B.Major-minor	B.Major	B.Major	B.Major-minor	B.Major-minor	B.Major
B.Major	B.Major	B.Major	B.Major	B.Major	B.Major	B.Major	B.Major

The **Harmony** parameter holds a **Progression** ([on page 14](#)) that provides a **Harmonic Context** ([on page 12](#)) for every point on the timeline. In cooperation with the **Interpretation** ([on page 305](#)) parameter, it guides the rendering of **Figure** ([on page 298](#)) and other parameters to produce final MIDI output.

You can modify **Harmony** at any time, causing the entire **Arrangement** ([on page 19](#)) to be re-composed in an instant.

Properties

Harmony supports **Polytonality** ([on page 15](#)), the superimposition of multiple chords at the same time.

The parameter is **Global** ([on page 23](#)) and thus influences all instruments in the container.

The parameter supports custom templates. You can save and recall **Parameter Templates** from its **right-click menu** or the main **Parameter** menu.

Conversion

Drop a **Container** or **Snippet** on this outlet to extract the parameter.

Drop a **Harmony** or **Preview** parameter to insert its progression here.

Instead of drag and drop, you can also use copy and paste.

Converting **Harmony** from **Take** is done by **Figure Recognition**, which is an interactive procedure that requires your attention.

Related information

[Fundamentals](#) ([on page 7](#))

[Harmonic Context](#) ([on page 12](#))

[Harmony Settings](#) ([on page 70](#))

[Progressions \(on page 14\)](#)

[Controlling Inversion, Voicing and Octave \(on page 257\)](#)

Interpretation

The [Interpretation \(on page 305\)](#) parameter guides the rendering of [Figure \(on page 298\)](#) and other parameters to MIDI. In particular it handles conflicts with respect to voice leading and [Harmony \(on page 304\)](#).

Properties

The parameter is **Constant**. It takes effect for the entire duration of a [Container \(on page 21\)](#). If you need to change it in the middle of a container, insert a child container and modify the parameter there.

The parameter adds [Output \(on page 309\)](#) to the **Parameter View** to give visual feedback on its effect.

The parameter supports custom templates. You can save and recall **Parameter Templates** from its **right-click menu** or the main [Parameter](#) menu.

Related information

[Interpretation Settings \(on page 78\)](#)

[Fine Tuning Interpretation \(on page 262\)](#)

Auto Chords

Generating sustained chords and bass automatically

Auto-Chords and **Auto-Bass** are convenience features of the [Interpretation \(on page 305\)](#) parameter that render sustained chords and bass notes automatically without needing a [Figure \(on page 298\)](#).

Chord inversions, voicing and alignment set in the [Harmony \(on page 304\)](#) parameter are considered.

If there is already a [Figure \(on page 298\)](#), it will be rendered in addition to Auto-Chords and Auto-Bass.

Enable **Tie Notes** to sustain all notes that are already playing in the previous chord. The initial setting for a new interpretation is assumed from [Playback > Tie Auto-Chord Notes](#).



Tip:

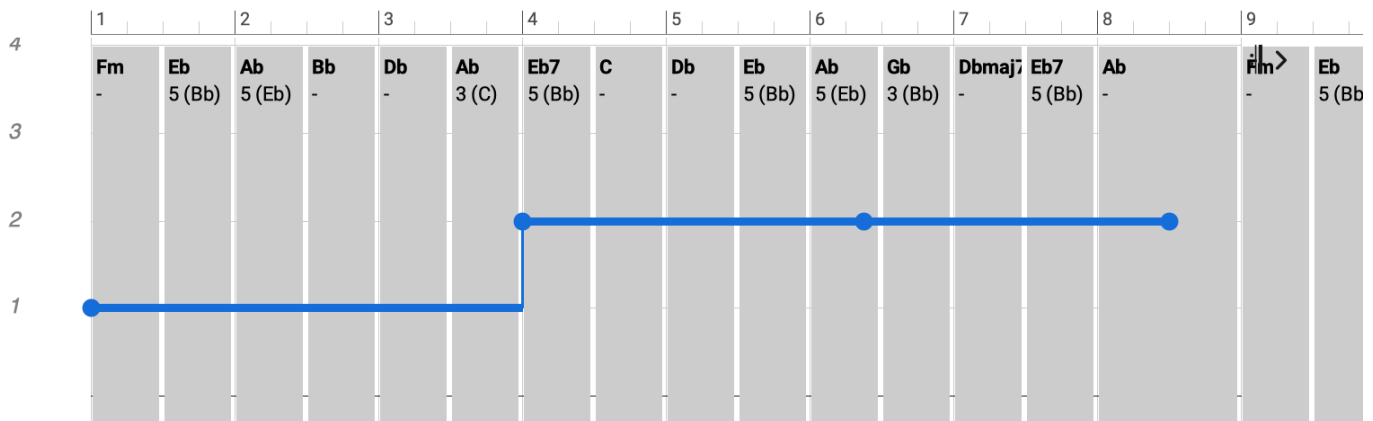
To convert Auto-Chords into a [Figure \(on page 298\)](#), drag [Harmony \(on page 304\)](#) to the [Figure \(on page 298\)](#) outlet. Edit the figure's segments to customize inversions, voicing and dynamics they way you want.



Tip:

To control the overall pitch range, adjust the middle **Playing Range** of the instrument and its [Interpretation \(on page 305\)](#) settings.

Layer



This parameter supports **Polytonality** ([on page 15](#)) in that it assigns one of up to four variations of the **Harmony** ([on page 304](#)) parameter to individual instruments. Each such layer may use a different chord, effectively superimposing them over other chords at the same time.

Properties

Using the fader (slider) on the **Parameter Inspector** ([on page 54](#)) sets a particular value for the entire duration of the container (constant). If you want to continuously automate this parameter, you need to draw values in the **Parameter View** ([on page 147](#)).

Conversion

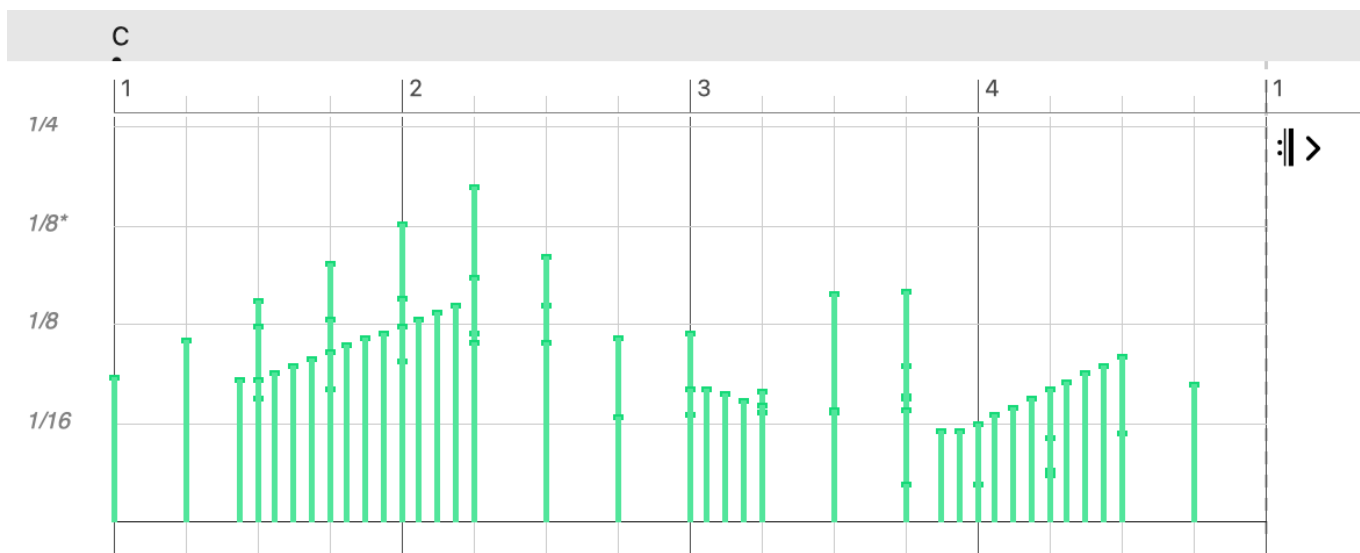
Drop any parameter with a curve-like shape. The form is preserved as far as possible and values are scaled into range. Instead of drag and drop, you can also use copy and paste.



Note:

This feature is available with the **Pro** edition.

Length



With the **Length** parameter, you can override (replace) the note lengths of a figure.

Properties

The parameter is **Polyphonic**. It can contain multiple values at the same position.

The parameter can be edited in **Hyper Edit** mode.

Using the fader (slider) on the **Parameter Inspector** ([on page 54](#)) sets a particular value for the entire duration of the container (constant). If you want to continuously automate this parameter, you need to draw values in the **Parameter View** ([on page 147](#)).

Conversion

Drop any parameter with a curve-like shape. The form is preserved as far as possible and values are scaled into range.

Drop a **Figure**, **Take** or **Output** to extract this parameter and insert it here.

Drag this outlet to grab the lengths of the current **Figure** symbols and drop them somewhere else.

Instead of drag and drop, you can also use copy and paste.

The parameter can be extracted from the current **Figure** ([on page 298](#)) with **right-click** menu or **Parameter > Extract From Figure**.

The parameter can be applied to the current **Figure** with the **right-click** menu or **Parameter > Save To Figure**, which will permanently alter the figure and clear the parameter when done.

Right-click and **Extract From MIDI Output** to insert what can be derived from the current output.



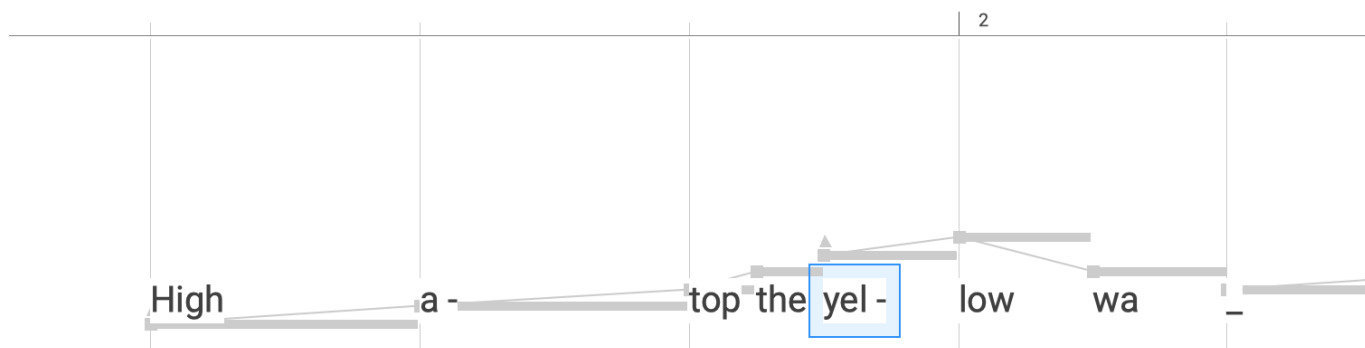
CAUTION:

Length is now deprecated in favor of **Flow** ([on page 302](#)), because absolute lengths do not translate well to different phrases.

**Note:**

This feature is available with the **Express** and **Pro** editions.

Lyrics



You can use the **Lyrics** parameter to associate syllables, words, and other text with symbols of a figure. In exported notation files, these are rendered underneath the notes.

For reference, the [Figure \(on page 298\)](#) is displayed in the background. Active the **Snap To Figure** option to make text input snap to positions with symbols automatically.

Text is entered in the **Text Input** field on a sentence-by-sentence basis, with individual syllables separated by hyphens (-). Spaces are not allowed within a single word. The underscore character (_) serves as an extender. It stands for an empty (silent) syllable. You need extenders to preserve rhythm where the previous syllable continues to sound over multiple notes in succession.

Examples:

High a-top the yel-low wa_a-gon

She is so _ _ in-cre-di-bly beas-ty and in-sa-tia-ble

Lines of text, as well as individual syllables, can be moved (transposed) from one line to another using the arrow keys.

This parameter is **Polyphonic**. It may have up to four values at the same point in time, representing lines of text placed above each other. Printed for **Text Input**, the syllables arranged above each other are enclosed in parentheses.

**Tip:**

You can select a span of multiple syllables and edited them selectively. If the total number of syllables does not change, their previous positions are retained.

**Tip:**

It is more convenient to set each line of text independently and then bring them together via the clipboard with **Edit > Paste and Join**.

**Note:**

This feature is available with the **Pro** edition.

Morphing

The **Morphing** ([on page 309](#)) parameter allows for a **Phrase** to seamlessly cross-fade into the phrase in the next **Container** ([on page 21](#)), creating a continuously transforming phrase along the way.

Properties

The parameter is **Constant**. It takes effect for the entire duration of a **Container** ([on page 21](#)). If you need to change it in the middle of a container, insert a child container and modify the parameter there.

The parameter adds **Output** ([on page 309](#)) to the **Parameter View** to give visual feedback on its effect.

The parameter supports custom templates. You can save and recall **Parameter Templates** from its **right-click menu** or the main **Parameter** menu.

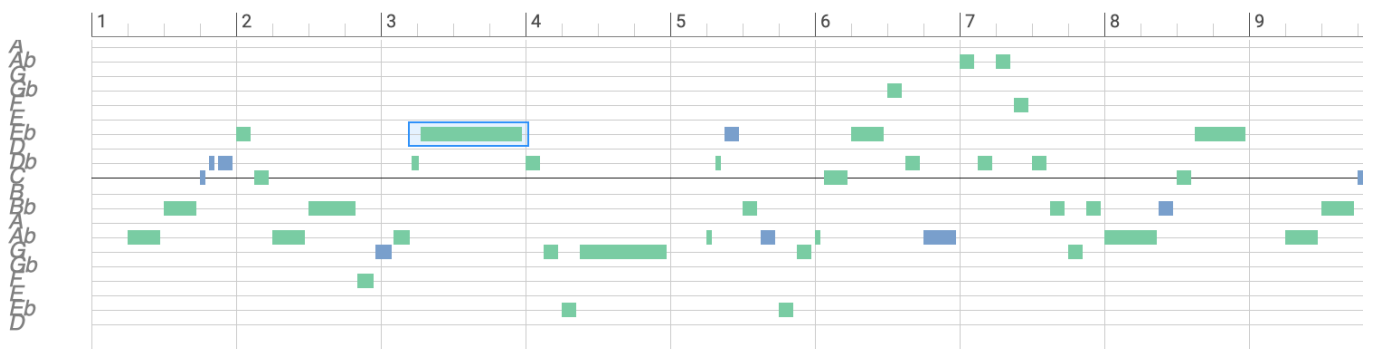
**Note:**

This feature is available with the **Pro** edition.

Related information

[Morphing Settings \(on page 83\)](#)

Output



This parameter shows generated MIDI output.

It is useful for visual feedback about the effect of parameter changes. The [Tracks \(on page 100\)](#) page uses it to offer you a bird's eye perspective on your score.

Notes are color coded.

Magenta

Note matches the current bass, which may or may not be included with the chord.

Green

Note belongs to the chord.

Blue

Note belongs to the vertical scale.

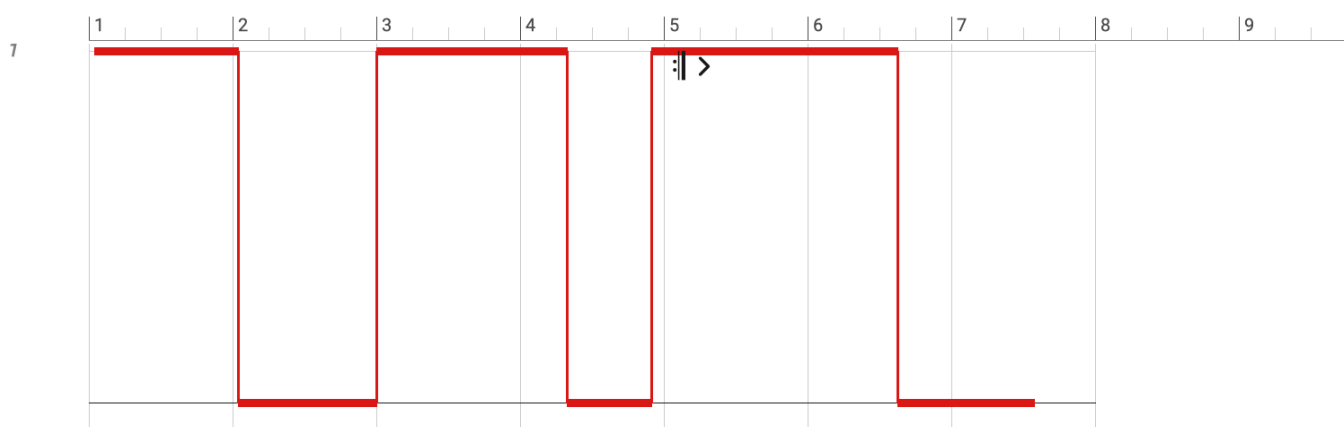
Red

Note is a chromatic alteration not in the vertical scale.

**Important:**

This parameter is **read-only**. Although you can select and inspect all notes, you can't edit them. This wouldn't make sense because any parameter change anywhere in the arrangement will make your edits obsolete as soon as all output is generated anew from scratch.

Pause



The [Pause \(on page 310\)](#) parameter is convenient for temporarily suppressing the output of a **Phrase**.

Pause is musically sensible in that it does not break [Figure \(on page 298\)](#) segments apart. Whether a segment is audible is determined by the position of its [Anchor \(on page 299\)](#).

A value of **1** means output is paused, while a value of **0** means the phrase is playing.

Arranging With Pause

The track number of a **Track Header** offers a shortcut to the [Pause \(on page 310\)](#) parameter. **Click** on the track number multiple times to switch between paused, playing and neutral.

This way you can enable or disable an instrument for the duration of a **Container (on page 21)**. By placing various containers with [Pause \(on page 310\)](#) parameters in them, you effectively control which instruments are playing when and for how long. This is a great non-destructive way to build up tension and is a lot more flexible than deleting or inactivating phrases.



Tip:

You can use [Pause \(on page 310\)](#) to thin out dense phrases, or control the interaction of multiple phrases with each other by alternatively pausing the other instrument.

Conversion

Drop any parameter with a curve-like shape. The form is preserved as far as possible and values are scaled into range. Instead of drag and drop, you can also use copy and paste.

Right-click and **Extract From MIDI Output** to insert what can be derived from the current output.

Preview

Preview is equivalent to [Harmony \(on page 304\)](#). It is a placeholder for a preview progression to use when rendering phrases where no [Harmony \(on page 304\)](#) parameter is otherwise available.

You can define a default preview progression in [Preferences > Defaults](#).

Properties

The parameter supports custom templates. You can save and recall **Parameter Templates** from its **right-click menu** or the main **Parameter** menu.

Conversion

Drop a **Container** or **Snippet** on this outlet to extract the parameter.

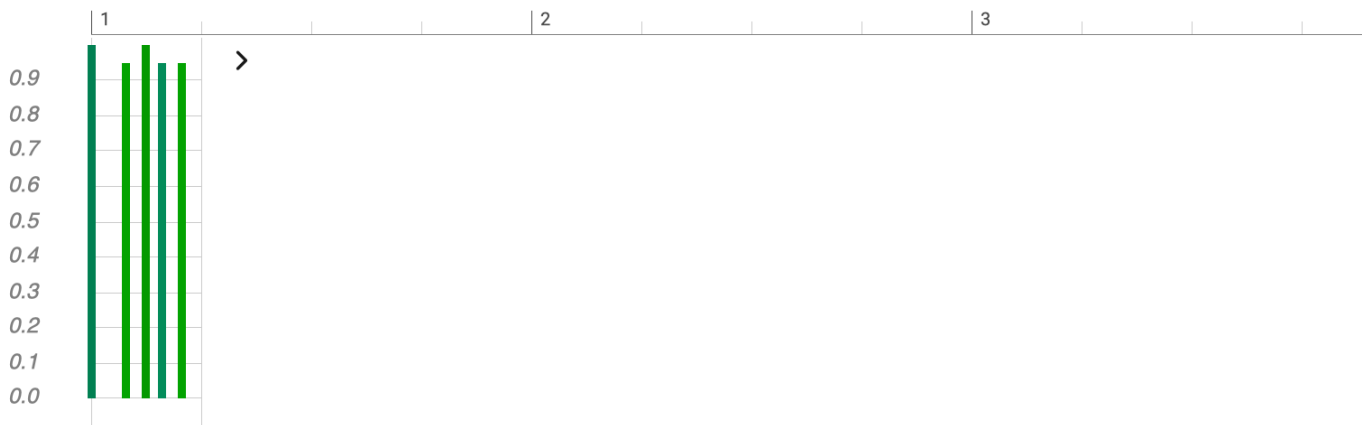
Drop a **Harmony** or **Preview** parameter to insert its progression here.

Instead of drag and drop, you can also use copy and paste.

Related information

[Harmony \(on page 304\)](#)

Rhythm



The [Rhythm \(on page 311\)](#) parameter modulates note positions and velocities according to a rhythmic profile. It is relatively similar to what is known as 'groove quantization' with some DAWs and sequencers.

Unlike the [Step \(on page 315\)](#) parameter, note positions and velocities are altered only gradually. This parameter exerts a certain feel of rhythm rather than doing a strict quantization.

Name

A label that might be useful if save a rhythm profile as a template.

Thumbnail

Rhythm is usually a short loop of 1m or 2m length. The thumbnail illustrates the effect it has on note positions and dynamics.



Tip:

Assign a [Rhythm \(on page 311\)](#) to the **Global Parameters** of a [Container \(on page 21\)](#) to have all instruments play the same groove.

Properties

The parameter supports custom templates. You can save and recall **Parameter Templates** from its **right-click menu** or the main **Parameter** menu.

Conversion

Drop a [Figure \(on page 298\)](#) on this **Outlet** to analyze its rhythmic structure and insert a rhythm profile.

Drop a **Figure**, **Take** or **Output** to extract this parameter and insert it here.

Drag this outlet to estimate a rhythm profile for the current **Figure** and drop it somewhere else.

Instead of drag and drop, you can also use copy and paste.

Right-click and **Extract From MIDI Output** to estimate a rhythm profile from current output.

Editing

The height of a bar indicates how much **Velocity** is changed (1.0 = unchanged). You can alter the overall curve with the Gestalt tool and the drawing tools as usual.

The thickness of a bar indicates attraction strength, that is how much a note will be pulled towards that position (1.0 = 100%). Thick bars are strong, thin bars are weaker. You can alter the thickness by holding down the  **Control** key while dragging with the mouse.

Select, add and remove rhythm positions as you would do with any other parameter.

Signature

This parameter sets the time signature for a **Container**.

Progressions

The time signature also determines where the line breaks appear in a **Progression** ([on page 14](#)). Its verse metrics can be changed on the **Scheme** tab on the **Progression** page. When you assign a new time signature, previously existing verse metrics are reset to defaults.

Settings

These settings provide hints for future interpretation, but are not currently used.

Half Time

Only every other beat is emphasized, resulting for a slower feel.

Straight vs. Swing

Whether rhythm is suggested to have a swing factor.

Properties

The parameter is **Global** ([on page 23](#)) and thus influences all instruments in the container.

The parameter is **Constant**. It takes effect for the entire duration of a **Container** ([on page 21](#)). If you need to change it in the middle of a container, insert a child container and modify the parameter there.

Conversion

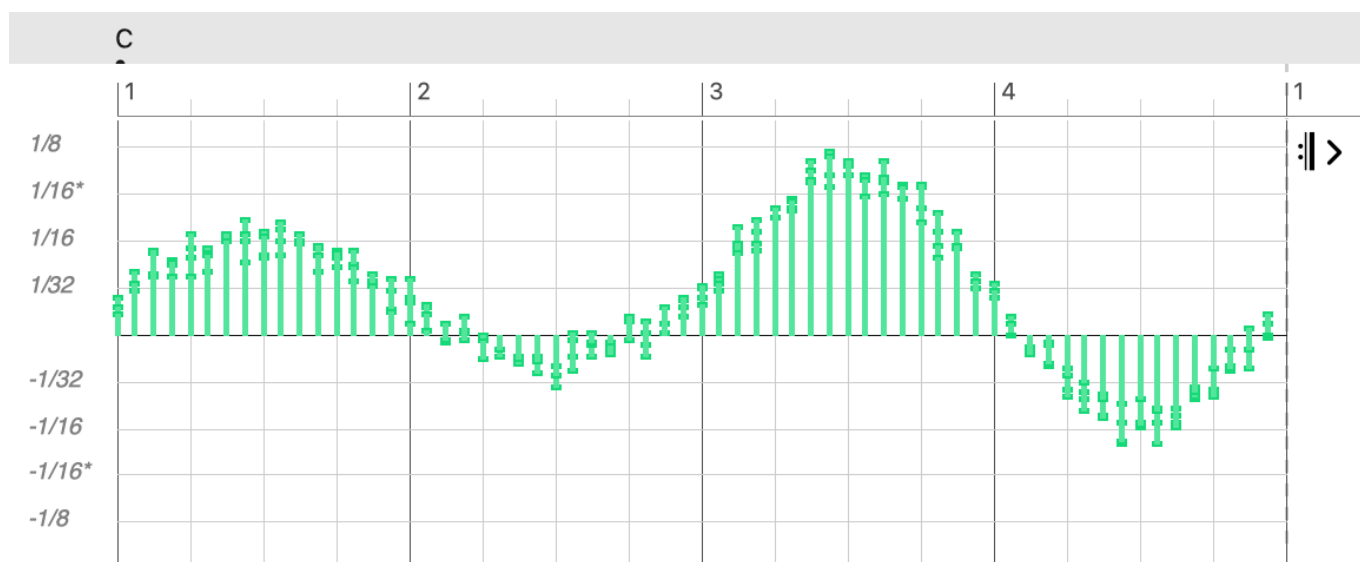
Drop a **Container** or **Snippet** on this outlet to extract the parameter.

Instead of drag and drop, you can also use copy and paste.

Related information

[Progressions \(on page 14\)](#)

Shift



The [Shift \(on page 313\)](#) parameter alters note positions to play earlier or later. It lets you achieve subtle to dramatic effects, depending on its amplitude. From a gentle "humanizer" to expressive rubato effects (steal-time), everything is possible. In the extreme, entirely distorted phrases can be created.

Properties

The parameter is **Polyphonic**. It can contain multiple values at the same position.

The parameter supports custom templates. You can save and recall **Parameter Templates** from its [right-click menu](#) or the main [Parameter](#) menu.

Using the fader (slider) on the [Parameter Inspector \(on page 54\)](#) sets a particular value for the entire duration of the container (constant). If you want to continuously automate this parameter, you need to draw values in the [Parameter View \(on page 147\)](#).

Conversion

[Drop](#) any parameter with a curve-like shape. The form is preserved as far as possible and values are scaled into range.

Instead of drag and drop, you can also use copy and paste.

The parameter can be applied to the current [Figure](#) with the [right-click menu](#) or [Parameter > Save To Figure](#), which will permanently alter the figure and clear the parameter when done.



Note:

This feature is available with the **Express** and **Pro** editions.

Skip

The [Skip](#) parameter determines how many positions of the [Step \(on page 315\)](#) parameter are to be skipped at any point on the time line.

The parameter is intended to be used with multiple instruments that follow the same [Step \(on page 315\)](#) parameter but are supposed to play a different subset of the given steps.

Values are positive integers including zero.

This parameter requires a [Step](#) parameter to be present in the same container to have any effect.

Conversion

Drop any parameter with a curve-like shape. The form is preserved as far as possible and values are scaled into range. Instead of drag and drop, you can also use copy and paste.



CAUTION:

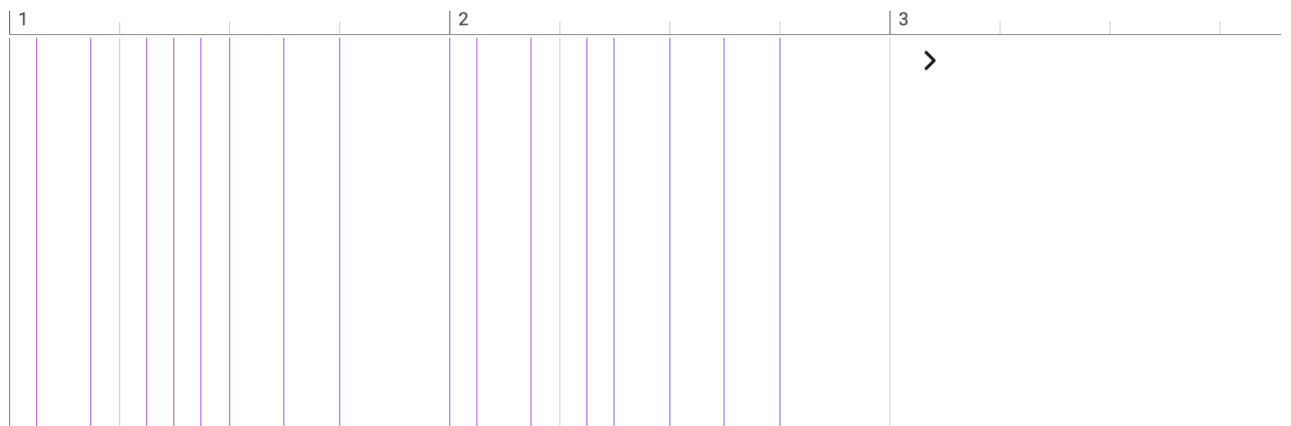
The parameter is not officially supported and is considered experimental.



Note:

This feature is available with the **Pro** edition.

Step



The [Step \(on page 315\)](#) parameter re-arranges the positions of all symbols in the [Figure](#) parameter sequentially from left to right. Results can be dramatic and surprising, as the rhythm of a phrase is altered.

This parameter is always looped. However, if the [Figure](#) is not looped, it will be rolled out only once.

Properties

The parameter can be edited in **Hyper Edit** mode.

The parameter supports custom templates. You can save and recall **Parameter Templates** from its **right-click menu** or the main [Parameter](#) menu.

Conversion

Drop any non-constant parameter to insert the positions of its values as steps.

Drop a **Figure**, **Take** or **Output** to extract this parameter and insert it here.

Drag this outlet to grab the steps of the current **Figure** and drop them somewhere else.

Instead of drag and drop, you can also use copy and paste.

Right-click and **Extract From MIDI Output** to insert what can be derived from the current output.

The parameter can be extracted from the current [Figure \(on page 298\)](#) with right-click menu or **Parameter > Extract From Figure**.

The parameter can be applied to the current **Figure** with the right-click menu or **Parameter > Save To Figure**, which will permanently alter the figure and clear the parameter when done.



Tip:

Put a [Step \(on page 315\)](#) parameter in **Global Parameters** to make all instruments play the exactly same rhythm for the duration of the container.



Tip:

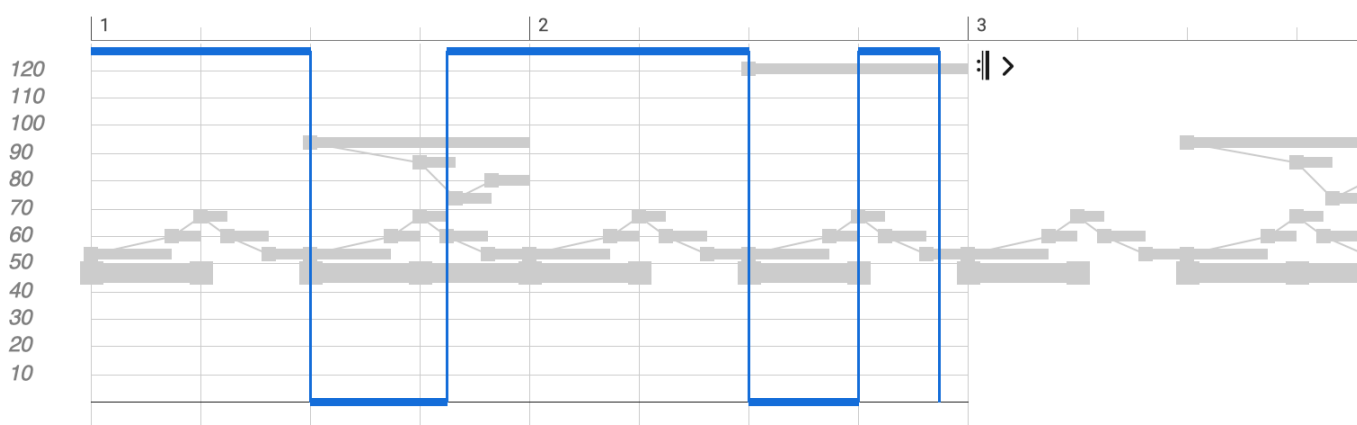
Have multiple instruments play the same [Figure \(on page 298\)](#), but set a different [Step \(on page 315\)](#) for each instrument.



Note:

This feature is available with the **Express** and **Pro** editions.

Sustain



The [Sustain \(on page 316\)](#) parameter resembles the standard MIDI controller for the sustain pedal.

Values can be 1 (pedal pressed, notes keep sounding after key is released) and 0 (pedal released, notes stop when key is released).

The [Interpretation \(on page 305\)](#) parameter has a setting to generate [Sustain \(on page 316\)](#) pedal controllers automatically, depending on [Harmony \(on page 304\)](#) and phrase properties.

Conversion

Drag this outlet to generate an auto-pedal for the current **Figure** and drop it somewhere else.

Instead of drag and drop, you can also use copy and paste.

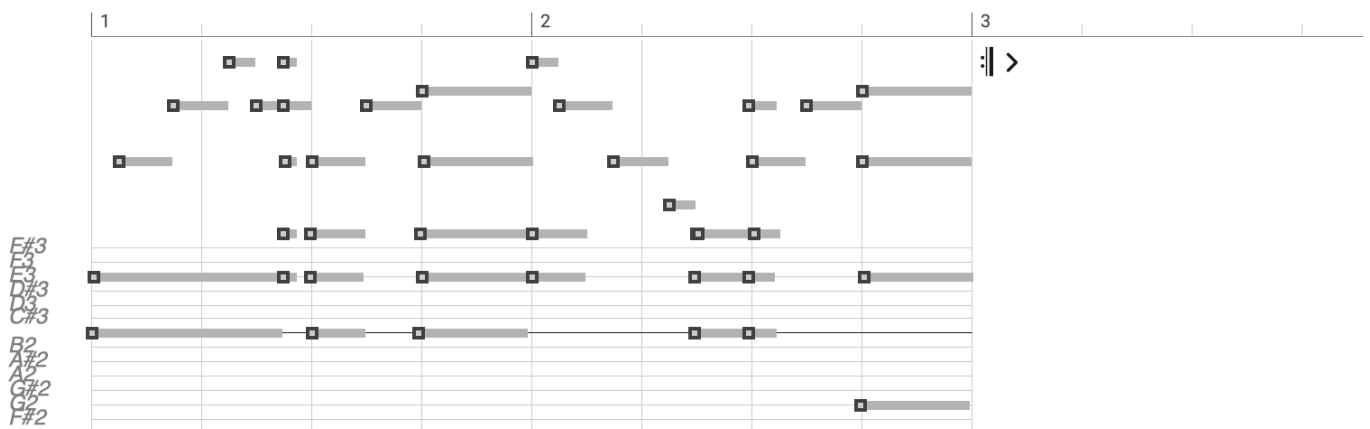
The parameter can be extracted from the current **Figure** ([on page 298](#)) with **right-click** menu or **Parameter > Extract From Figure**.

The parameter can be applied to the current **Figure** with the **right-click** menu or **Parameter > Save To Figure**, which will permanently alter the figure and clear the parameter when done.

Related information

[Interpretation \(on page 305\)](#)

Take



The **Take** ([on page 317](#)) is a temporary buffer for [recording \(on page 264\)](#) and import. It contains the last recorded take or imported MIDI file track in the form of absolute pitches (MIDI). It provides the input for subsequent **Figure Recognition** or the **Harmonizer**.



Note:

You can create variations of an already rendered phrase by using **Parameter > Extract from Output** and then recycle that **Take** ([on page 317](#)) by recognizing it again.

Conversion

Drop a **Figure** or **Output** to insert their current pitches as a take. Better yet, do a **right-click** and **Extract From Output**. This way the current segment properties are preserved in the form of tags.

Related information

[Take Settings \(on page 74\)](#)

[Recording \(on page 264\)](#)

[Recording Parameters \(on page 265\)](#)

Tempo

Tempo is a floating point parameter with values denoting beats-per-minute (BPM). Synfire supports continuous tempo changes.

Tempo Tap-in Feature

Using the **Parameter Inspector** ([on page 54](#)), you can tap ¼ notes on your external MIDI keyboard. Press the **Tap-In** button and start tapping until the tempo value stabilizes. Finish by clicking the button again.



Tip:

With **File > Convert > Scale Tempo** you can globally double or halve the tempo of an arrangement. All phrases are then automatically stretched or compressed to reflect the change.

Properties

The parameter is **Global** ([on page 23](#)) and thus influences all instruments in the container.

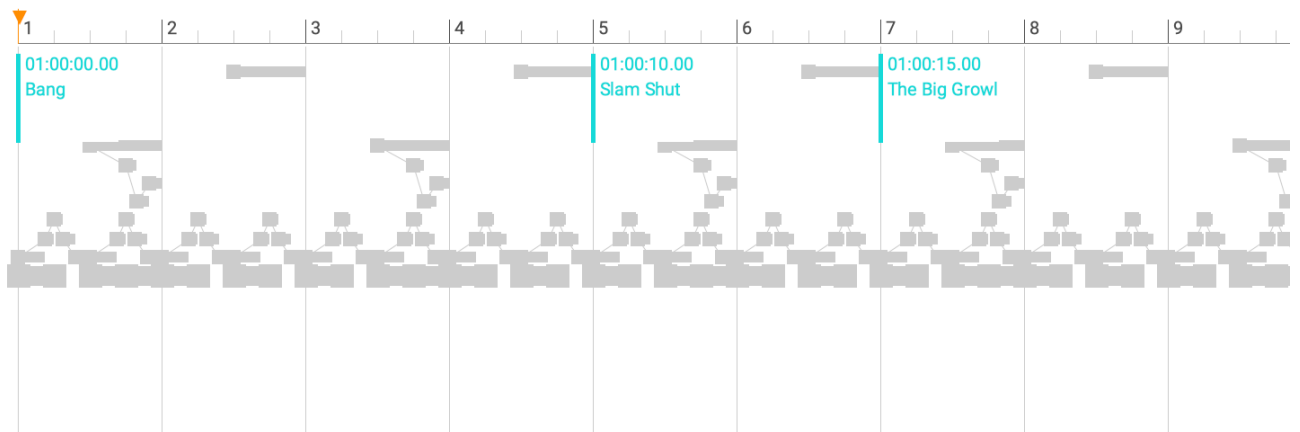
Using the fader (slider) on the **Parameter Inspector** ([on page 54](#)) sets a particular value for the entire duration of the container (constant). If you want to continuously automate this parameter, you need to draw values in the **Parameter View** ([on page 147](#)).

Conversion

Drop a **Container** or **Snippet** on this outlet to extract the parameter.

Instead of drag and drop, you can also use copy and paste.

Time



This parameter is used for film scoring.

Unlike all other parameters, the horizontal axis of [Time \(on page 318\)](#) is not measured in bars and beats, but absolute time. Cue markers therefore dynamically change position depending on [Tempo \(on page 318\)](#). Which is the purpose. You place **Cue Markers** at absolute times in order to see where they occur in the music.

This allows you to [fine-tune \(on page 263\)](#) [Tempo \(on page 318\)](#) such that a particular beat in the song meets with a moment in time.

Properties

The parameter is **Global** ([on page 23](#)) and thus influences all instruments in the container.



Note:

The time being displayed is measured from the beginning of the container in which the parameter is set. In order to avoid confusion when scoring for film, you should therefore set the [Time \(on page 318\)](#) parameter in the root container.



Note:

This feature is available with the **Pro** edition.

Related information

[Time Inspector \(on page 85\)](#)

[External Synchronization \(on page 66\)](#)

[Fitting Music Between Cue Markers \(on page 263\)](#)

Transition

This parameter is only relevant for sketches. It determines at which locations Synfire should be prepared for a possible chord change during real-time playback. Only at these locations will Synfire switch to the next chord chosen by the player.

Two templates can be called:

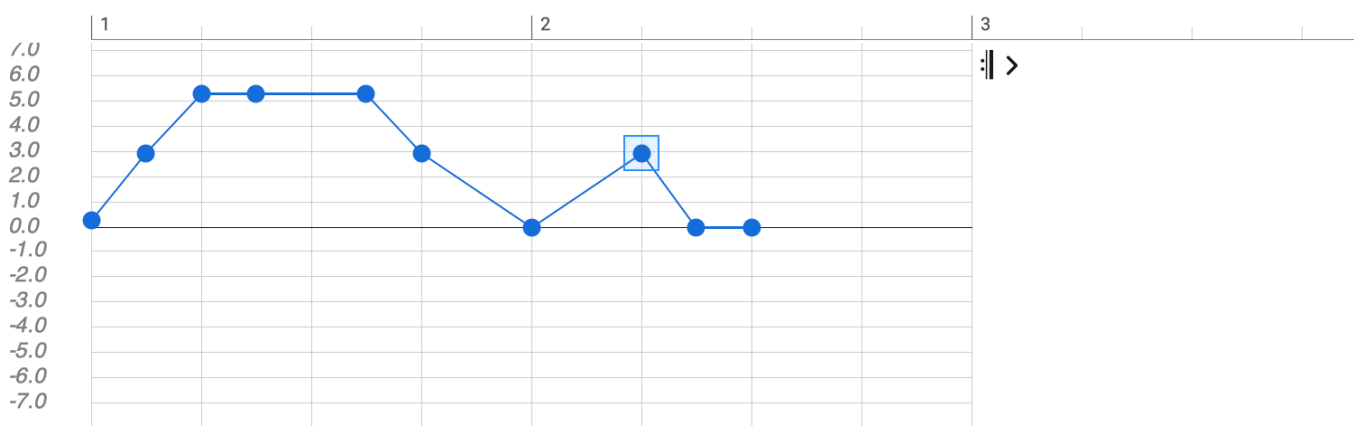
1. **From Signature:** Use the current metric scheme
2. **From Current Progression:** Adopt the positions of the cords from the current progression. You can use this to configure even unconventional rhythms.

You are free to set the positions manually with the phrase editor.

Properties

The parameter is **Global** ([on page 23](#)) and thus influences all instruments in the container.

Transpose



Transposes the [Figure](#) ([on page 298](#)) parameter before it is finally rendered. Its unit is scale steps and values can be integers or floating point numbers, possibly creating accidentals as a result.

Each symbol is transposed individually, while the melodic shape of segments is preserved where possible.



Tip:

With Synfire, transposing music is much more relaxed than with conventional sequencers. You need not worry about potential dissonances at all and may use it as a means for introducing variation and expression.

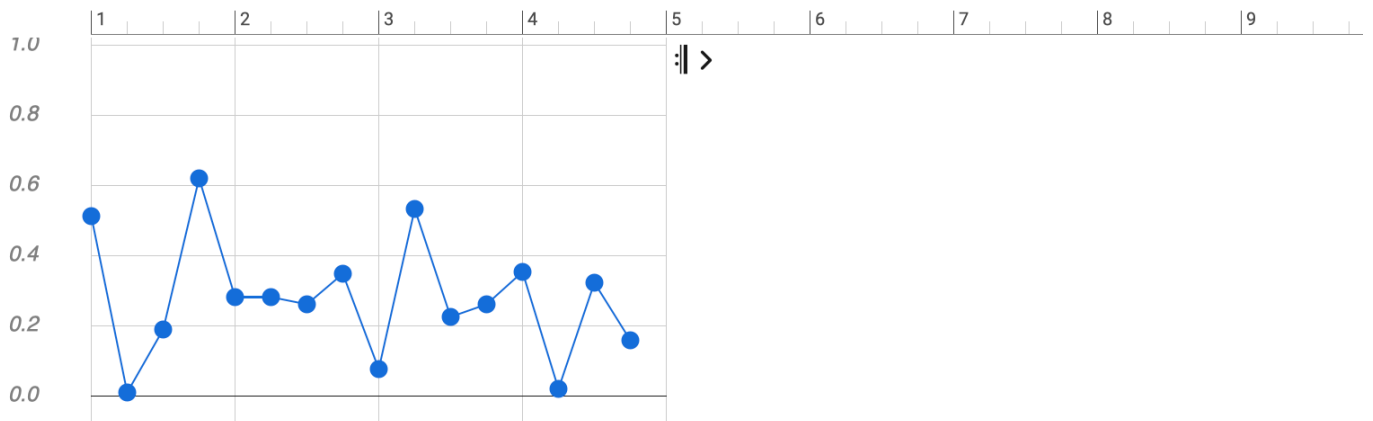
Properties

Using the fader (slider) on the **Parameter Inspector** ([on page 54](#)) sets a particular value for the entire duration of the container (constant). If you want to continuously automate this parameter, you need to draw values in the **Parameter View** ([on page 147](#)).

Conversion

Drop any parameter with a curve-like shape. The form is preserved as far as possible and values are scaled into range. Instead of drag and drop, you can also use copy and paste.

Variation



The [Variation \(on page 321\)](#) parameter controls which of a set of predefined transformations are applied to [Figure \(on page 298\)](#) segments before they are rendered.

Values are floating-point numbers between 0.0 and 1.0 mapped to a total of 25 transformations (e.g. Invert, Flip, Transpose, Stretch, Reverse, etc).

New Variation

[Click](#) to try a new random value for the parameter.

Thumbnail

Illustrates the level of randomness, although individual transformations can't be distinguished here.

There is little in the way of achieving a specific outcome, so this parameter is more of a heuristic "surprise me" feature intended to kick off new ideas. If you like a result however, you can do [Parameter > Save To Figure](#) to permanently apply the transformation to the [Figure](#) and clear the [Variation](#) parameter.

Properties

The parameter adds [Output \(on page 309\)](#) to the **Parameter View** to give visual feedback on its effect.

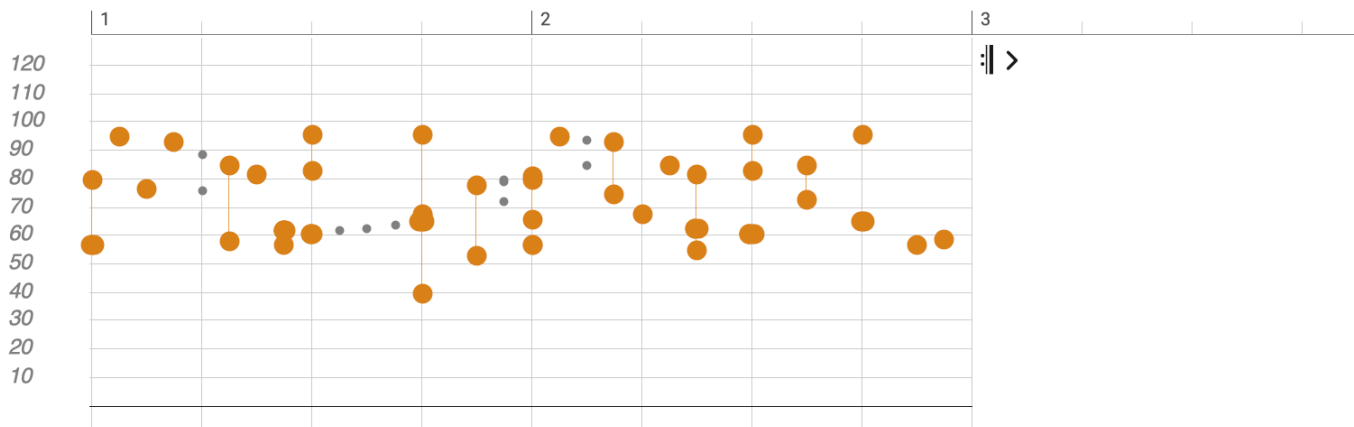
Conversion

[Drop](#) any parameter with a curve-like shape. The form is preserved as far as possible and values are scaled into range.

Instead of drag and drop, you can also use copy and paste.

The parameter can be applied to the current [Figure](#) with the [right-click](#) menu or [Parameter > Save To Figure](#), which will permanently alter the figure and clear the parameter when done.

Velocity



The [Velocity \(on page 321\)](#) parameter overrides the velocities of [Figure \(on page 298\)](#) symbols. It can be used to transfer the dynamics of one phrase to another, or to alter dynamics over a time span that is longer than the figure itself.

Properties

The parameter can be edited in **Hyper Edit** mode.

The parameter is **Polyphonic**. It can contain multiple values at the same position.

The parameter supports custom templates. You can save and recall **Parameter Templates** from its **right-click menu** or the main **Parameter** menu.

Conversion

Drop any parameter with a curve-like shape. The form is preserved as far as possible and values are scaled into range.

Drop a **Figure**, **Take** or **Output** to extract this parameter and insert it here.

Drag this outlet to grab the velocities of the current **Figure** and drop them somewhere else.

Instead of drag and drop, you can also use copy and paste.

The parameter can be extracted from the current [Figure \(on page 298\)](#) with **right-click** menu or **Parameter > Extract From Figure**.

The parameter can be applied to the current **Figure** with the **right-click** menu or **Parameter > Save To Figure**, which will permanently alter the figure and clear the parameter when done.

Right-click and **Extract From MIDI Output** to insert what can be derived from the current output.



Tip:

Try a [Velocity \(on page 321\)](#) that is longer than the [Figure \(on page 298\)](#) to achieve a dynamic build-up, variation or development over time.

**Tip:**

Transfer the dynamics of one phrase to another by copying the [Velocity \(on page 321\)](#) parameter with drag & drop.

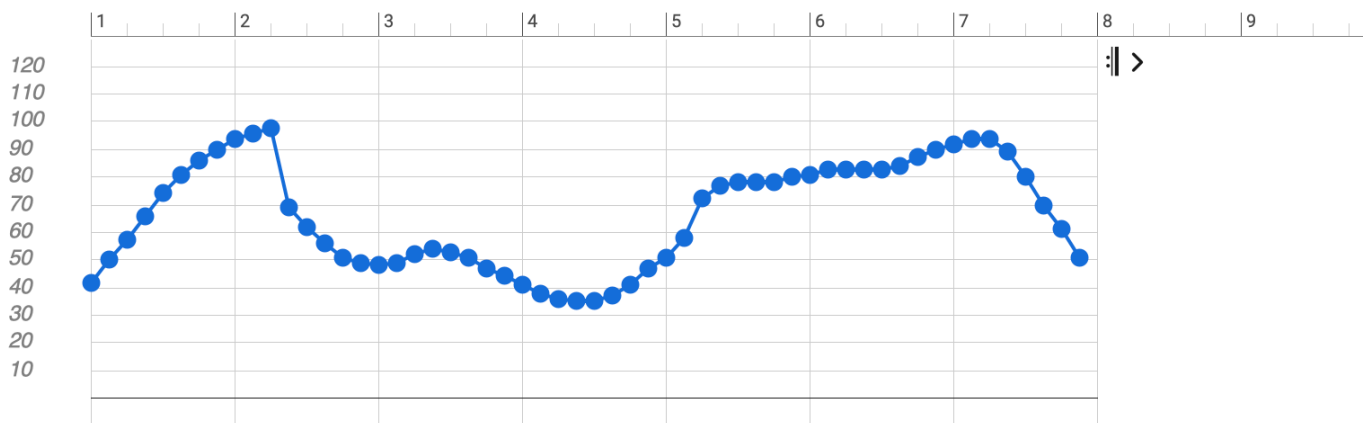
**Tip:**

Record the parameter [Velocity \(on page 321\)](#) with your MIDI keyboard in order to change the dynamics of a phrase more intuitively.

Related information

[Recording Parameters \(on page 265\)](#)

Volume



Resembles the standard MIDI controller. Values range from 0 to 127.

The controllers is also mapped to a fader on the **Matrix Console**.

**Important:**

The faders for [Volume \(on page 323\)](#), [Pan \(on page 296\)](#) and similar controllers don't do *audio* mixing. They merely transmit MIDI messages and set the corresponding [Parameter \(on page 2\)](#) that is used to render MIDI output. This has no effect if a plug-in or device doesn't respond to the MIDI controller as expected. The master faders and **Solo**, **Mute** and **Master** buttons work at the audio level, though.

Properties

Using the fader (slider) on the **Parameter Inspector (on page 54)** sets a particular value for the entire duration of the container (constant). If you want to continuously automate this parameter, you need to draw values in the **Parameter View (on page 147)**.

Conversion

Drop any parameter with a curve-like shape. The form is preserved as far as possible and values are scaled into range.

Instead of drag and drop, you can also use copy and paste.

Harmonic Functions

Brief introduction to the theory of harmonic functions according to Hugo Riemann

The theory of harmonic functions can be traced back to the German music theorist Hugo Riemann (1849–1919). It was revised by Herrmann Grabner (1886–1969). This theory is still taught today at German music schools. The theory is not without controversy and by no means a natural given. Synfire makes use of this theory only to the extent that it may be useful and inspiring for creating chord progressions.

Basics

The theory describes a system of relationships between harmonies that spread out around a Tonal Center (root). Letters (function symbols) are used to identify the harmonies:

```
T, t = Tonic
S, s = Sub Dominant
D, d = Dominant
P, p = Parallel
G, g = Gegenklang ("contrast" in German)
N = Neapolitan
```

On the one hand, when resolved in relation to a tonal center, these symbols point to a particular major or minor triad. On the other hand, they also represent the idea of a "function", in the sense of a role or purpose they serve inside a chord progression.

Apart from the primary functions **Tonic**, **Dominant**, and **Sub Dominant** and their immediate relatives, Synfire does not speculate whether there may be some hidden magic behind higher level functions. We are looking at this more from a practical perspective, as an aid for understanding and creating progressions, not unlike the well-known **Roman Numeral** notation.

Primary Harmonies

The primary harmonies of a key are **Tonic**, **Dominant**, and **Sub Dominant**. The Dominant is a fifth above the Tonic and the Sub Dominant a fifth below. Because each is a fifth away from the root, we say there is a **Fifth Relationship** (German: "Quint-Verwandtschaft") between primary harmonies.

Tonic

The **Tonic** is the triad with the root on the first degree of the **Horizontal Scale** of the key. Thus, the root of the chord is also the root of that scale. A major triad is denoted as a capital **T**, and a minor triad is written with a lowercase **t**. For example, if C is the root of our key, the following applies:

T = C
t = Cm

The Tonic is perceived as a center of calm, invoking a feeling of stability and rest. If a melody at its end comes down to a final conclusion that feels like "Amen" or "Om", then this last note is usually the **Tonal Center**, the root note of the Tonic. In classical music, the final chord in a minor key's progression is often replaced by its major version for a well-known effect (German: "Trugschluss").

Dominant

The **Dominant** is written as D or d. It is on the fifth degree of the **Horizontal Scale**. In contrast to the Tonic, the Dominant is full of suspense and tension, yearning for a resolution towards the Tonic. It is often played with dissonant extensions to make this yearning more obvious.

D7 t
D9 t

This resolution D → T is called **authentic cadence**, also known as 5 → 1. It works best with a major Dominant chord, although Dominants may be minor as well. If you don't know how to conclude a chord progression D → T is always a good option.

Sub Dominant

The **Sub Dominant** is written as S or s. It is built on the fourth degree of the **Horizontal Scale**. In the tonal center of C (major or minor), the following applies:

D = G
d = Gm
S = F
s = Fm

In a chord progression, **Sub Dominant** chords (and the secondary harmonies derived from them) often precede a more dissonant **Dominant** chord, which then leads back to the **Tonic**.

Neapolitan

This merry friend is notated as N and called the **Neapolitan Sixth Chord**. It is a major triad on the lowered second degree (minor second) of the **Horizontal Scale**. It can be used in place of the **Sub Dominant** and is often resolved towards the **Dominant**.

Examples

Here is an example of the popular progression t s D T resolved in three different keys:

Cm Fm G C
Am Dm E A
Ebm Abm Bb Eb

Secondary Harmonies

Secondary Harmonies are built in relation to the primary harmonies. They are in a **Third Relationship** (German: "Terz-Verwandtschaft") to the primary harmonies. Their root is one third away from the root of a primary harmony. The harmony based on a major third away is called **Gegenklang** ("contrast" in German). The one based on a minor third away is called **Parallel**. They are notated $\bar{g}$ and $\bar{p}$ or $\bar{P}$ and $\bar{p}$ respectively, appended to the primary function:

```
tP, tp, tG, tg, TP, Tp, ..., dP, dp, dG, ..., SG, Sg
```

For example, the symbol $t\bar{P}$ stands for **Tonic Parallel** and $d\bar{G}$ stands for **Dominant Gegenklang**.

In order to keep it simple, we don't want to dig into the secondary harmonies any deeper. As a practical rule of thumb, replacing primary harmonies with their secondary relatives and vice versa is a thing you should definitely try.

Interlude Harmonies

Functions may temporarily refer to a shifted Tonal Center. These are called interlude harmonies. It's a matter of opinion whether this already constitutes a key change (modulation) or just adds more tension to the mix (i.e. more accidentals). It much depends on the duration of the shift and whether the other Tonal Center is reaffirmed strongly enough. For example, a $\bar{D} \rightarrow \bar{T}$ cadence (in the shifted key) might establish it as the new Tonal Center.

Synfire allows for text input of interlude harmonies using the official Riemann notation. All chords that refer to the shifted key are grouped in parentheses, while the root note of the chord immediately after the closing parenthesis determines the shifted Tonal Center:

```
t d (s DG) D T
t d (s DG) [D] T
```

Thus the two chords $(s - DG)$ above refer to the Tonal Center at the root note of $\bar{D}$ (after the closing parenthesis). That chord may be set in square brackets (as in the second example), to prevent it from sounding. Nesting multiple interlude harmonies can lead to interesting progressions that wander through several keys.

Distant Relationships

Dominants may be chained (stacked) to build **Secondary Dominants**. The root of one Dominant is taken as the tonal center of the subsequent Dominant to obtain the **Dominant of the Dominant**. The same goes for Sub Dominants.

The notation is simple: $\bar{D}\bar{D}$ is a double dominant, $\bar{D}\bar{D}\bar{D}$ a triple dominant, etc. The same goes for $\bar{S}\bar{S}$, $\bar{S}\bar{S}\bar{S}$, $\bar{S}\bar{S}\bar{S}\bar{S}$, etc.

These are also called **Dominant Chains**. Two examples in the Tonal Center of A:

```
DDDD DDD DD D = Db F# B E
S SS SSS SSSS = D G C F
```

Dominant chains achieve a great effect when they are understood only in hindsight, i.e. leading to a conclusion that is obscure enough until finally resolved with the last chord. Theoretically, secondary harmonies also allow themselves to be chained (stacked) to denote more distant relationships:

```
tGG, Tpp, ..., spp
```

Although Synfire can deal with chained expressions to an unlimited extent, it is doubtful whether extremely remote relationships achieve anything that is perceived as more sophisticated or interesting (acoustically) than a much simpler expression.

Mixing Major And Minor

As you may have noticed, a **Tonal Center** has no gender. It's neither major, nor minor. When working with harmonic functions, it is common for both major and minor variants of the same chord to occur in the same key, even though the chord's notes fall outside the **Horizontal Scale** of the key. You should not worry about that at all, because the unlimited mixing of major and minor offers more freedom and adds color and tension to your music.

Ambiguity

Chords take on different roles (functions) depending on the context in which they are played. It probably comes as no surprise that multiple function expressions may resolve to the same chord, especially when expressions are nested.

If function symbols are shown in a **Palette** ([on page 26](#)), you will see many chords with multiple function expressions next to them. A few expressions show up in parentheses (not to be confused with interlude harmonies!). Example:

```
F6(add9) in A = sP tG (s)
```

Chord **F6(add9)** has two functions **sP**, **tG** in A and a third function shows in parentheses, meaning it is a function of only a sub-triad of the chord (if the chord can be decomposed into multiple superimposed triads). Whether a sub-triad (subset) of a chord really constitutes a functional relationship is debatable. However, it is certainly interesting in a practical sense when you are looking for a substitute for a chord with a similar harmonic function but a different timbre.

Syntax

With the Pro edition of Synfire you can input chords and progressions in harmonic function expression format. The original notation introduced by Riemann didn't include specific about the interval structures to use for each chord. Synfire recognizes all chord interval structures in the **Catalog** to be appended as a suffix to the expression following a colon.

The major or minor triad implied by the original Riemann expression is replaced with whatever chord expression you append after a colon. Merely the root note is preserved in that case. For simple chord extensions that can be written as a number, the colon is optional.

An optional bass interval can be appended after a slash.

```
t
tP/5
TG:(9,13)/7
DP7
DDD:dim7
sg:m7(b5)
Tp:7sus4(no5)
[sG]
```

Roman Numerals

Popular notation for chords and progressions

Roman numerals can be used to notate chords and chord progressions independent of a key. You have the option to display roman numerals instead of chord names in a **Palette**. The Pro edition of Synfire also supports writing chords and progressions as text input in this format.

Syntax

Component	Examples
Accidental	b
	#
Scale Step, Gender	Major: I II III IV V VI VII VIII IX X XI XII
	Minor: i ii iii iv v vi vii viii ix x xi xii
Other Interval Structures	Diminished: dim, ø, o
	Augmented: aug, +
	Other: maj7, (add9), 13, m7b5
Bass	/b5, /6, /7

Examples

The triad implied by the original expression is replaced with whatever chord name you append after a colon. For simple chord extensions that can be written as a number, the colon is optional.

V

#iii

viø, vio, vi:dim (all equivalent)

iiv°, iiv+, iiv:aug (all equivalent)

bVII/#11

III:maj7

#II6

#ii:m6

i:m7b5/b5

bVII:(7,9,13)/5

Related information

https://en.wikipedia.org/wiki/Roman_numeral_analysis

Parameter Conversion

Table showing which parameters convert best to other parameters

Parameters are designed to be [copied and moved around \(on page 245\)](#) to allow for unlimited experimentation. When a parameter is dropped on a destination outlet with a different type, its data is converted to that type. For example, if you drop a [Figure \(on page 298\)](#) on a [Velocity \(on page 321\)](#) outlet, the velocity values of the symbols in that figure are extracted.

Only certain conversions make practical sense . These are listed in the table below.

Drag	Drop On	Conversion
Figure	Velocity, Length, Step	Extracts velocities, lengths or steps of symbols
	Rhythm	Estimates a rhythm profile of the figure
	Flow	Estimates a flow profile from the figure
	Dynamics	Estimates a dynamics profile from the figure
	Sustain	Estimates sustain pedal activations from the figure
	Take	Converts the current output of the phrase to a Take
	Controllers	Converts the melodic shape of the figure to CC values
Harmony	Figure	Creates chord segments for each chord change
Take	Figure	Creates a figure with static pitch symbols
Parameter that resembles a shape or curve	Parameter that resembles a shape or curve	Converts the shape or curve as best as possible
Container	Harmony, Tempo, Signature	Grabs the parameter from the container and inserts it

For the [Figure \(on page 298\)](#) parameter and many others, you can also use the [right-click](#) menu on a parameter outlet to do things like [Save To Figure](#), or [Extract From Figure](#), or [Extract from Output](#).



CAUTION:

Conversions not listed here are considered experimental and may change in the future.



CAUTION:

Note that the opposite direction often makes no sense. For example, dropping [Step \(on page 315\)](#) on a [Figure \(on page 298\)](#) won't apply the steps to the figure.

Syntax

[How to read and write chords, scales and lengths \(durations\).](#)

Note Syntax

Notes begin with an uppercase letter **A**, **B**, **C**, **D**, **E**, **F**, **G**. These can be followed by one or more accidentals indicating a raise (sharp) or lowering (flat) by one half-tone:

```
D# = D sharp
Eb = E flat
Gb = G flat
F# = F sharp
F## = F double sharp
```

The C chromatic scale is written this way:

```
C, C#, D, D#, E, F, F#, G, G#, A, A#, B
```

Synfire assumes your MIDI equipment is tuned with well-tempered **12TET** tuning (Twelve-tone Equal Temperament), which is the default for all current hardware and software. Thus **D#** and **Eb** are assumed to send the same MIDI note. Still, Synfire presents and accepts the different enharmonic spellings correctly, depending on context.

Hence, the Db Major scale is written this way:

```
Db, Eb, F, Gb, Ab, Bb, C
```



Note:

Synfire optionally supports German note spelling where **H** is rendered for **B** and **B** for **A#** ([Edit > Preferences](#)). Actually there is no reason to do so, unless you are doing a formal music education in Germany. This weird notation stems from a historical confusion of **b** with **h**. It is not used anywhere outside German speaking countries.

Interval Syntax

The chromatic distance between two notes is called an **Interval**. Examples are minor third, augmented fifth, diminished seventh, etc. For the labeling of chords and scales, Synfire uses a shorter form, though, as listed in the column **Interval** below.

Semi-tones	Note	Interval	Names
0	C	1	Prime
1	C#/Db	b2	Augmented Prime / Minor Second / Half Tone
2	D	2	Major Second / Whole Tone
3	D#/Eb	b3	Minor Third / Trisemitone
4	E	3	Major Third
5	F	4	Perfect Fourth

6	F#/Gb	b5	Augmented Fourth / Diminished Fifth / Tritone
7	G	5	Perfect Fifths
8	G#/Ab	#5	Augmented Fifths / Diminished Sixth
9	A	6	Major Sixth / Diminished Seventh
10	A#/Bb	7	Augmented Sixth / Minor Seventh
11	B	#7	Major Seventh
12	C	8	Octave
13	C#/Db	b9	Minor Ninth
14	D	9	Major Ninth
15	D#/Eb	#9	Augmented Ninth
16	E	b11	Diminished Eleventh
17	F	11	Perfect Eleventh
18	F#/Gb	#11	Augmented Eleventh
19	G		Perfect Twelfth / Tritave
20	G#/Ab	b13	Minor Thirteenth
21	A	13	Major Thirteenth
22	A#/Bb	b14	Minor Fourteenth
23	B	14	Major Fourteenth

**Note:**

This interval nomenclature assumes 12TET tuning (Twelve-tone Equal Temperament)

Chord Syntax

**Note:**

The Pro edition of Synfire supports additional syntax for chord input that recognizes **Roman Numerals** ([on page 328](#)) and **Harmonic Function Expressions** ([on page 324](#)).

For the designation of chords, Synfire uses the standard North American notation commonly used for Jazz. The chord name always begins with the name of the root note, whose spelling depends on the key in which the chord is used.

The root is followed by the designation of various triad forms (or nothing at all, if it is a major triad). For example, an **m** for a minor triad, **dim** for a diminished triad, **aug** for an augmented triad, and so forth:

Am, Cdim, F#aug, G, Esus4

An optional numeral 6, 7, 9, 11, or 13 stands for sixth, seventh, ninth, eleventh, and thirteenth chords:

```
Am9, C7, Gm9, F#13, Bmaj7, Ebmaj9
```

Extensions may be appended. These additional notes are numerals, optionally prefixed with # or b, listed in parentheses and separated by comma:

```
A7(9,#11), Cm7(b9), Emaj7(9,11), Am(7,9,13)
```

If only a single extension is added, an alternative notation uses the keyword add:

```
A(add9), Cmaj7(add4)
```

Many chords allow for multiple equivalent notations, although only certain notations are commonly used. For example, these chords on each line are identical:

```
Am9 = Am(7,9)
Am11 = Am(7,9,11) = Am7(9,11)
C13 = C(7,9,13)
Faug = F(#5)
Fmaj7 = F(#7)
Fmaj9 = Fmaj7(9) = F(#7,9)
```

In practice, the exact notation you choose for text input is not relevant in Synfire, as chords will be renamed automatically.

The standard chords included with the **Catalog** ([on page 16](#)) are shown below. You can add more chords to the Catalog as you need.

Dim.	Minor	Major	Augm., Susp.
Cdim	Cm	C	Caug
Cdim7	Cm6	C(add2)	Csus2
C(b5)	Cm7	C6	Csus4
C6(b5)	Cm7(b5)	C7	C7sus4
C7(b5)	Cm9	C7(b9)	
	Cm(maj7)	C7(b9,#9)	
	Cm6(add9)	C9	
	Cm7(#5)	C7(#9)	
		Cmaj7	
		Cmaj7(9)	
		C(add9)	
		C6(add9)	

**Note:**

Chord symbols must not include white space. All letters, digits, parentheses and numerals must be written without gaps. Multiple chord symbols however can be separated by spaces.

Slash Chords

Slash Chords are written with a bass note appended after a slash. The bass note need not necessarily be a member of the chord.

```
Am/F#
```

```
C/A
```

Power Chords

Power Chords omit the third interval, playing only the root note and the fifth. The power chord is an interpretation of the major or minor triad. It cannot be added to a progression directly, because it has no name in the **Catalog**. Writing `F(no3)` doesn't help either, because Synfire needs to consider the full triad to ensure harmonic consistency for all instruments.

If you want a particular instrument to play power chords, use the **Chord** symbols of the **Figure** parameter to draw a chord with only two symbols for the prime and fifths.

**Warning:**

Resist the temptation to add a power chord interval structure to the Catalog, e.g. `c5`. Using this in a progression would force **all** instruments to use only the two notes of the power chord, which is certainly not what you want.

Scale Syntax

Like chords, scales begin with the name of their root note. A period follows that separates the root note from the scale's name, which is arbitrary (i.e. not parsed like chord symbols):

```
Eb.hungarian-minor
```

```
C.major
```

```
F#.aeolian
```

The name may be followed by a hyphen and references to features, such as added, altered or omitted notes.

Accidentals and alterations use `#`, `-` or `+`, `-` respectively:

```
F.altered-dominant-bb7
```

```
E.locrian+2
```

```
C#.lydian-augmented
```

```
B.natural-minor-b2
```

The character `@` followed by a digit says the object in question is the n^{th} inversion (or rotation) of the scale. The example below denotes G natural minor, starting from the fourth degree, or `Mode 4` of natural minor:

```
G.natural-minor@4
```

A dot followed by `h` at the end (not unlike a file extension) denotes a **Horizontal Scale** that was automatically generated by Synfire from a **Vertical Scale**:

```
F.bebob-minor@3.h
blues1.h
```

In the course of your work with Synfire, you will actually never be confronted with having to input scales. The program makes these decisions for you automatically.

Scale Set Syntax

Scale Sets ([on page 7](#)) always start with a capital letter. Otherwise, they are written like **Scales** ([on page 7](#)). If you create your own, you are free to assign them any name.

Syntax of Durations And Times

Several inspectors in Synfire allow for text input of time offsets and lengths (durations). These are notated as fractions, denoting a note length in a format that is easily understood by every musician. The shortest supported duration is 1/128. Durations shorter than that are denoted as MIDI ticks (see below).

```
1/1, 1/2, 1/4, 1/8, 1/16, 1/32, 1/64, 1/128
```

With dotted lengths, each dot (asterisk) adds ½ of the previous length. Up to three dots are supported.

```
1/4*, 1/8**, 3/4***
```

Triplets

```
1/3, 1/6, 1/12, 1/24, 1/48, 1/96
```

Quintuplets

```
1/5, 1/10, 1/20, 1/40, 1/80
```

Of course triplets and quintuplets may be dotted, too. Odd tuplets like 1/7 and 1/9 are not currently supported, because the internal resolution can't represent them as integral numbers. This may change in a future version of Synfire.

The length `1/1` is equivalent to `4/4`. It always refers to four quarter notes regardless of time signature, e.g. in 3:4 time, it exceeds one measure by a quarter note. This is where you would use `1m` or `2m` to denote a number of measures. The actual length depends on time signature currently in effect:

```
1m, 2m, 4m, 12m
```

Multiple expressions can be combined with `+` to break an odd length down into smaller units:

```
2m+2/4
4m+1/4*
```

For especially odd lengths, a number of MIDI ticks can be appended to the expression. Synfire uses a clock resolution of 1920 ticks per 4/4 note.

Synchronization Settings For DAWs

Settings known to work with several DAWs

Since Propellerhead's ReWire has been discontinued, [synchronizing Synfire with a DAW \(on page 241\)](#) requires slightly different settings per each DAW. Unlike ReWire however, current MIDI synchronization methods cannot alter a DAW's tempo. Therefore until we find a combination of sync hacks that might eventually fix this, you need to set the DAW tempo manually for now.

This information is maintained collaboratively here:

<https://users.cognitone.com/tags/synchronization-daw>

Related information

[Synchronizing With a DAW \(on page 241\)](#)

Feature Comparison

What distinguishes the Sparks, Express and Pro editions of Synfire

Features of the **Sparks**, **Express** and **Pro** editions have been carefully balanced out in order to make every edition as useful as possible for their envisioned target audience and at the same time allow us to offer more affordable options as an alternative to the flagship **Pro** edition.

The **Sparks** edition is a great entry into the world of **Music Prototyping**. It helps you create and arrange songs in an exciting new way.

The **Express** edition offers more creative tools and more control over details. It is great entry point for home producers who don't yet need the advanced features of the **Pro** edition.

The **Pro** edition includes all prototyping features ever made for Synfire, offering the most comfortable and productive workflow for professionals and music enthusiasts.

Table 1. Synfire Editions

	Synfire Sparks	Synfire Express	Synfire Pro
Target Audience	Songwriters, Bands, Key-boarders, Teachers	Home Producers, Elec-tronic Music, Band Lead-ers	Composers, Producers, Enthusiasts
Use Cases	Songwriting, building in-strumental parts for export to the DAW, teaching har-mony	Prototyping of arrange-ments, creating phrases with more detail and con-trol.	Composing orchestral mu-sic, advanced electronic music, game soundtracks, film scores, piano music, jazz, developing a personal style

Table 1. Synfire Editions (continued)

	Synfire Sparks	Synfire Express	Synfire Pro
Harmony			
Interpretation	Presets	Voice Leading, Chromatic, Strategies	Voice Leading, Chromatic, Strategies, Voicing, Inversion, Alignment
Progressions	Embedded	Embedded, Standalone	Embedded, Standalone
Palettes	Embedded	Embedded, Standalone	Embedded, Standalone
Harmony Knowledge Base	Standard	Extended	Extended, Customizable
Harmonizer	✓	✓	✓
Chord Substitutions		✓	✓
Jazz Up/Down Progressions		✓	✓
Multiple Palette Windows		✓	✓
Catalog Editor		✓	✓
Merge Catalogs			✓
Polytonality			✓
Arrangement			
Structure	Song Parts	Nested Containers, Two Levels	Nested Containers, Unlimited Levels
Arrangement Instruments	8	32	Unlimited
Sketch Instruments	8	24	24
Sketches	Create & Play	Fully Editable	Fully Editable
Import	Single Phrases	Phrases, Libraries	Phrases, Libraries
Advanced Import Options		✓	✓
Time Signature Changes		✓	✓
Container Snapshots		✓	✓
Tracks & Clips		✓	✓
Continuous Tempo Changes			✓
Cue Markers			✓

Table 1. Synfire Editions (continued)

	Synfire Sparks	Synfire Express	Synfire Pro
Phrase Morphing			✓
Inactivate Container, Inactivate Phrase (A/B Testing)			✓
Phrase Editing			
Symbol Types	Horizontal, Chords, Bass, Pitch	Horizontal, Vertical, Chords, Bass, Pitch	Horizontal, Vertical, Chords, Bass, Pitch, Relative
Parameter Interpolation		Use-Only	Recent, Linear, Snap, Dithered, Sequential, Hits
Extract From Figure, Output, Save To Figure		✓	✓
Inversion, Voicing, Bypass, Chromatic (Per Segment)		✓	✓
Advanced Figure Recognition		✓	✓
Simulate Strumming, Pedal, Broken Chords		✓	✓
Humanize, Enhance Beat		✓	✓
Shape Tool, Mute Tool		✓	✓
Focus On Symbol Type		✓	✓
Click Board		✓	✓
Scale Board			✓
Text Data Entry			✓
Custom Quantize Grid			✓
Quintuplets (and more)			✓
Split, Merge			✓
Parameters			
Parameter Templates	Harmony	✓	✓

Table 1. Synfire Editions (continued)

	Synfire Sparks	Synfire Express	Synfire Pro
Harmony, Figure, Interpretation, Pan, Pause, Take, Volume	✓	✓	✓
Custom Controllers		✓	✓
Bend, Breath, Expression, Length, Modulation, Output, Portamento, Preview, Reverb, Rhythm, Signature, Shift, Step, Sustain, Transpose, Variation		✓	✓
Chromatic, Dynamics, Flow, Layer, Lyrics, Morphing, Skip, Tempo, Time			✓
Parameter Aliases			✓
Library			
Drag/Drop, Copy/Paste	✓	✓	✓
Immediate Phrase Editing		✓	✓
Standalone Apps		✓	✓
Batch Import		✓	✓
Libraries With Sounds (Racks)		✓	✓
Generating Phrases		Variations of existing factories	✓
Preparation For Archive/ Sharing			✓
Snippets			
Single-Instrument Groups		✓	✓
Mixed Groups (Folders)			✓
Conversion of Arrangement to Snippets, Session to Arrangement			✓

Table 1. Synfire Editions (continued)

	Synfire Sparks	Synfire Express	Synfire Pro
Factories			
Generate Random Phrases		Variations of existing factories	✓
Edit New Factories			✓
Audio/MIDI			
Embedded GM Synth	✓	✓	✓
External MIDI Ports	✓	✓	✓
Plug-In Hosting	VST, VST3, AudioUnits	VST, VST3, AudioUnits	VST, VST3, AudioUnits
DAW Drones		VST, VST3, AudioUnits, AAX	VST, VST3, AudioUnits, AAX
DAW Drones (MIDI Effects)			VST, VST3, AudioUnits, AAX
Record Parameters		✓	✓
Online Repository		✓	✓
Transport Remote Control		✓	✓
Sound Allocation Monitor		✓	✓
Custom Controllers		✓	✓
Insert FX Slots		3	3
External Synchronization		Basic	SPP (MIDI Clock), MTC (MIDI Time Code), ReWire, OSC
Custom Synch Configuration			✓
Custom Articulations			✓
Device/Sound Templates			✓
Tagging Of Takes			✓
Multiple Audio Engines			✓
Export			
Printing	Tablature, Scales, Palettes	Tablature, Scales, Palettes	Tablature, Scales, Palettes

Table 1. Synfire Editions (continued)

	Synfire Sparks	Synfire Express	Synfire Pro
Drag & Drop MIDI	✓	✓	✓
Standard MIDI Files	✓	✓	✓
Transfer To Drone		✓	✓
Notation Formats			MusicXML, LilyPond

Upgrading To Express

Upgrading from **Sparks** to **Express** much extends your possibilities to create, collect and edit phrases and gives you more leeway to arrange them in creative ways. Snippets allow for playing phrases as live loops.

Arrangement

- Build more elaborate song structures with [containers \(on page 21\)](#) inside containers, nested up to two levels deep. Reuse containers in multiple places with [aliases \(on page 22\)](#). Use containers that can overlap each other.
- Time signature changes in any container.
- Room for more instruments.

Phrase Editing & Parameters

- Build more expressive Figures with an additional **Vertical** [\(on page 299\)](#) symbol type.
- Additional parameters to control rhythm independently of Figure: **Step**, **Rhythm**, **Shift**, **Length**, **Velocity**.
- Additional parameters to transform melodies and harmony: **Transpose**, **Preview**, **Variation**.
- MIDI controllers: **Bend**, **Breath**, **Expression**, **Modulation**, **Reverb**.
- Look at the [Output \(on page 309\)](#) parameter to see in an instant what Synfire is rendering from your input.
- Save and recall **Parameter Templates** for many parameters.
- Use the intuitive **Click Board** [\(on page 91\)](#) to transform a phrase and its parameters more comfortably.
- Use the **Shape** tool to warp parameter data.
- Use the **Mute** tool to silence individual Figure symbols.
- Focus on a single symbol type at a time for easier selection and editing.

Library

- Edit **Phrase Pools** and phrases in a **Library** down to the parameter level. Do so inside the Arrange window or with a standalone **Library App** ([on page 152](#)). Open multiple such apps at the same time to copy or move phrases with drag & drop.
- Create libraries with their own **Library Rack** ([on page 29](#)), so you can collect phrases together with their original sounds. Drop phrases along with their sounds to new arrangements.
- **Import MIDI files** ([on page 268](#)) into a Library to collect new phrases for your songs.
- Edit your **Sketches** with the standalone **Sketch App** ([on page 150](#)).
- Generate any number of variations to existing factories.

Snippets

- Place phrases in a **Snippets** ([on page 25](#)) grid and conduct them live and in real-time.

Harmony

- Customize the **Catalog** ([on page 16](#)), which offers a more extensive collection of chords and scales from the start. Leverage an extended harmony knowledge base.
- Keep multiple palette windows open at the same time to explore **key changes** ([on page 10](#)).
- Obtain more control over the **Interpretation** ([on page 305](#)) parameter with different voice leading strategies, filter settings and response times.
- Assign chord inversion and voicing to individual figure segments.

Audio/MIDI

- Use **Drones** ([on page 43](#)) to host audio plug-ins for your instruments in a DAW and synchronize them with Synfire.
- Define your own **Custom Controllers** ([on page 202](#)).
- Record **individual parameters** ([on page 265](#)) directly.
- Access our **Online Repository** to share device descriptions with the user community.

Upgrading to Pro

Coming from **Express**, an upgrade to **Pro** dramatically increases your creative freedom, workflow productivity and fun. Generate phrases to transform and experiment with them. Enjoy the power of **Music Prototyping** to the fullest. Additional sophisticated tools allow for more detailed control and help you develop your own personal style of music.

Arrangement

- Build container structures with unlimited depth and a virtually unlimited number of instruments.
- Inactivate individual phrases and/or containers for A/B testing and experimentation.
- Navigate the **Overview** ([on page 100](#)) page to see the how your container hierarchy actually rolls out onto tracks, like in a DAW.

Phrase Editing & Parameters

- Build more expressive Figures with an additional **Relative** ([on page 300](#)) symbol type.
- Define a custom **Grid** ([on page 89](#)) to make everything you draw or move around snap to arbitrary rhythmical positions. Drop phrases on the **Grid** outlet to use their rhythm.
- Additional parameters to control rhythm, dynamics and articulation: **Skip**, **Flow**, **Dynamics**.
- Additional parameters to transform harmony: **Layer**, **Chromatic**.
- Use **Morphing** ([on page 309](#)) to smoothly blend parameters, phrases and even containers into one another.
- Synchronize music to film using the **Time** parameter. Scale the tempo of your arrangement in order to match the beat with cue markers in a film.
- Use continuous **Tempo** ([on page 318](#)) changes anywhere.
- Assign an **interpolation** ([on page 248](#)) mode to parameters in order to achieve dramatic effects.
- Have triplets and quintuplets at hand from the toolbar to build more fluid rhythms.
- Freeze, split and merge phrases.
- Enter parameter data as text.

Library

- Create libraries with their own **Library Rack** ([on page 29](#)), so you can collect phrases, containers and snippets together with their original sounds. Drop phrases along with their sounds to new arrangements.
- Populate libraries with automatically generated phrases (see: Factories).
- Package finished libraries for archiving and sharing. Apply data reduction, time stamping, cleanup and more.

Snippets

- Unleash the power of an advanced **Snippets** ([on page 25](#)) grid with **Mixed Groups** to compose, improvise and arrange music live and in real-time. Combine any number of parameters and phrases in a snippet to affect a session in real-time.
- Compute a snippet grid from any arrangement automatically.
- Convert your last snippets session to a new arrangement automatically.

Factories

- Configure your own custom **Factories** ([on page 29](#)) to generate random phrases that sound more musically sound than anything ever.
- The saying goes: Music is a language. Experience first hand how the power of a rules-based Artificial Intelligence Programming Language (KIM) turns this principle into natural sounding music fragments like nothing else.
- Generate thousands of unique phrases and variations. Enjoy a virtually endless supply of new musical expressions and ideas.

Harmony

- Merge multiple [catalogs \(on page 16\)](#) and control what to do with conflicting or duplicate entries.
- Use [polytonality \(on page 15\)](#) to create multiple layers of **Harmony**.
- Obtain even more fine-grain control over the [Interpretation \(on page 305\)](#) parameter.

Audio/MIDI

- Use **MIDI Effects Drones** [\(on page 44\)](#) to send rendered music to anywhere inside your DAW.
- Use **Custom Articulations** [\(on page 204\)](#) to control the timbres and playing styles of orchestral instruments and other big sound libraries.
- Run multiple **Audio Engines** [\(on page 41\)](#) in your LAN.

Export

- Export **MusicXML** and **LilyPond** notation formats.
- Publish beautiful lead sheets using the [Lyrics \(on page 308\)](#) parameter.



Note:

The details of this comparison subject to change without notice.

Glossary

Terms not explained elsewhere but useful to know

Summary of terms in alphabetical order.

Equivalence

Two chords or scales in **Twelve Tone Equal Temperament** that share the same pitch classes are said to be equivalent. This holds true for the chords `Dm7(b5)` and `Fm6` or the scales `C.natural-minor` and `G.phrygian`, for instance. Equivalent chords or scales are not necessarily identical.

Root

The first note of a scale or chord that also starts its name.

Interval

The distance between two pitches measured in halftones.

Interval Structure

The pattern of intervals that identify a chord or scale, independent of a root pitch. The interval structure of `Am9` is thus `m9`, and the structure of `F.harmonic-minor` is `harmonic minor`.

Rendering

The process of mapping all parameters to MIDI output.

Texture

The overall timbre and rhythmical experience evoked by multiple instruments interacting with each other.

Twelve Tone Equal Temperament

Also abbreviated as 12TET. Divides an octave into 12 equal half-tone steps such that all 24 keys in the **Circle Of Fifths** share same pitches (frequencies) over all octaves. This allows for compositions to be transposed freely. Without 12TET, instruments need to be retuned for each key.

Chapter 9. Boilerplate

Legal fine print and formal stuff

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