



# USER MANUAL

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*Facebook*  
*Twitter*

# Table of Contents

<b>Introduction</b>	<b>1</b>
<b>ircamLAB TS2 (version 2.2)</b>	<b>2</b>
1.    Requirements	2
2.    Authorization	3
3.    Feature Comparison	5
4.    Interface Overview	6
5.    Working with Documents	12
6.    Sonogram / Waveform Views	15
7.    Working with Audio Files	21
8.    Edit Functions	25
9.    Select Regions / Navigation	26
10.   Working with Effects	28
11.   Working with Automation	33
12.   Automation Panel	35
13.   Master Panel	37
14.   Plug-in Section	40
<b>Appendix</b>	<b>42</b>
1.    Key Commands	42
<b>Credits</b>	<b>46</b>

## Introduction

TS2 sets a new industry standard as an audio editor by ircamLAB for audio transformations and enhancement. It offers a comprehensive suite of processing tools focused on the acclaimed “SuperVP” engine to manage complex audio issues with unparalleled accuracy.

Post-Production professionals, audio engineers, and podcast editors alike use TS2 to transform recordings in to a final production file. This user guide provides an extensive overview of quick access authorization and setup, and all the application features and functions.

# ircamLAB TS2 (version 2.2)

## 1. Requirements



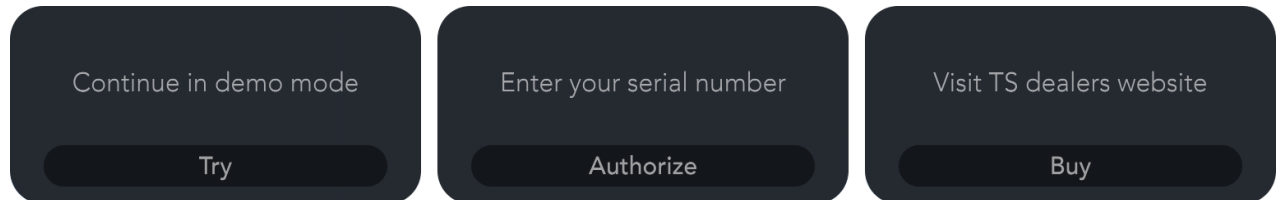
<b>OS</b>	macOS 10.10 or later
<b>CPU</b>	Intel 64 bit
<b>RAM</b>	8GB or high recommended
<b>Display</b>	1024x768 or higher
<b>Formats</b>	64 bit: Standalone



<b>OS</b>	Windows 7 or later
<b>CPU</b>	Intel/AMD CPU with SSE2
<b>RAM</b>	8GB or higher recommended
<b>Display</b>	1024x768 or higher
<b>Formats</b>	64 bit: Standalone

## 2. Authorization

Upon launching the application you will be presented with the authorization screen...



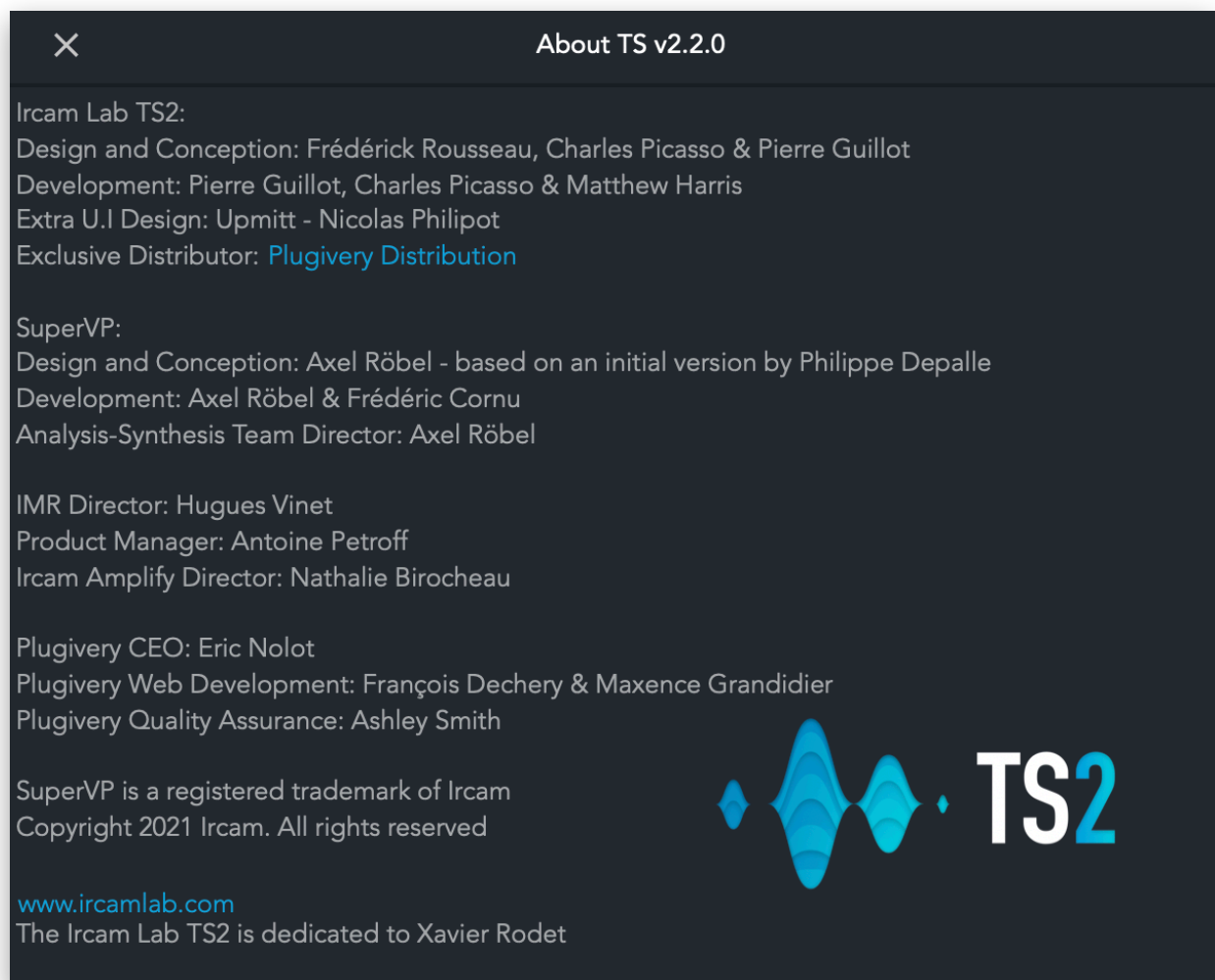
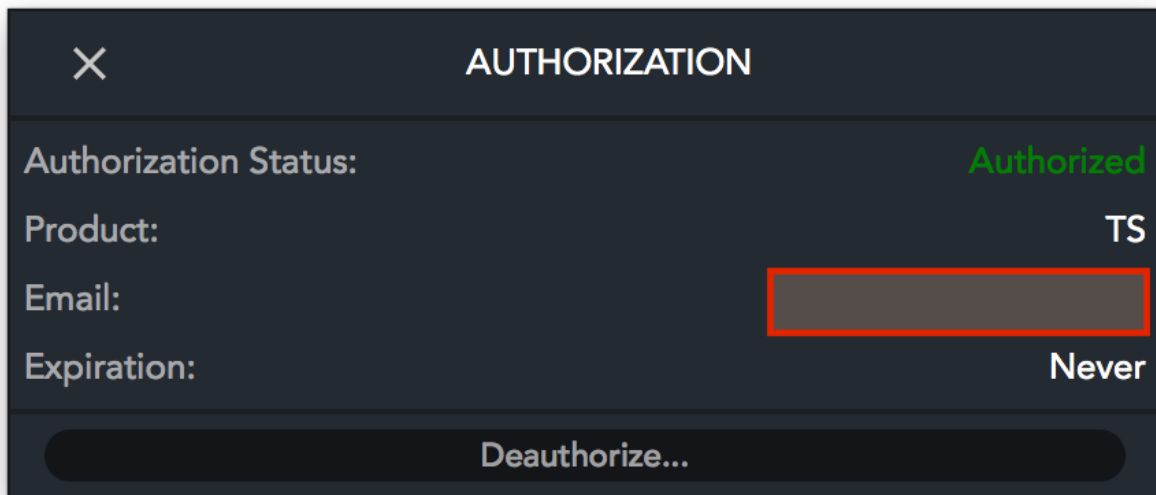
Here you may proceed to run the application in demo mode with restrictions (noted below), enter your serial number provided in your purchase order receipt, or visit Plugiverty Distribution for listed dealers to purchase from.

Selecting to Authorize will open the following window (also available from the TS menu > Authorize)...



Once you have entered your serial number, the application will now be authorized for use.

Purchase provides authorization for up-to 3 computers, and you may deauthorize a computer at any time from the Authorization window...



### 3. Feature Comparison

FEATURES	TS2	TS
Transpose & Stretching	X	X
Remix	X	X
Spectral Clipping	X	
Real-Time Recording	X	X
Full Audio Editing & Crossfade	X	
Automation	X	
MIDI CC Assignable Control	X	X
Real-Time Sonogram	X	
Multiple Audio Files & Regions	X	
Multichannel Audio Formats	X	
Multiple Work Documents	X	
Cut, Copy, & Paste	X	
VST/AU Plug-in Hosting	X	
Volume, Pan, Mid/Side	X	Volume Only
Command Line Export	X	

## 4. Interface Overview



The TS interface is comprised of 6 main sections (Transport, Panels Selector, Audio Sequencer, Sonogram View, Automation View, and Selector Display).

## Transport

This section displays general transport controls (RTZ, Play/Pause, Fast-Forward, Loop Playback, Record), editing of Playhead time position and Region time placement values, and provides a cursor overview for Time (Audio Sequencer view), Frequency, MIDI and Amplitude (Sonogram view), and Automation values (Automation view).



## Record

Is operated in conjunction with Play, to arm and proceed to record the live session. Once the recording ends, a dialog window prompts to save the recording on the disk.

## Loop Playback

Select an audio region or make a selection and press this button to settle loop start and end points. You may adjust these either from the Start and End time display values or whilst holding the Shift modifier key and drawing the blue area to change start and end points as wished.

## Playhead Indicators

The solid **RED** vertical line overlaid on the Waveform and Sonogram indicates the current playhead position. This indicator line updates to follow the current playhead position during playback.

The playhead position indicator will only appear in the audio sequencer window when it is within the bounds of the current selection.

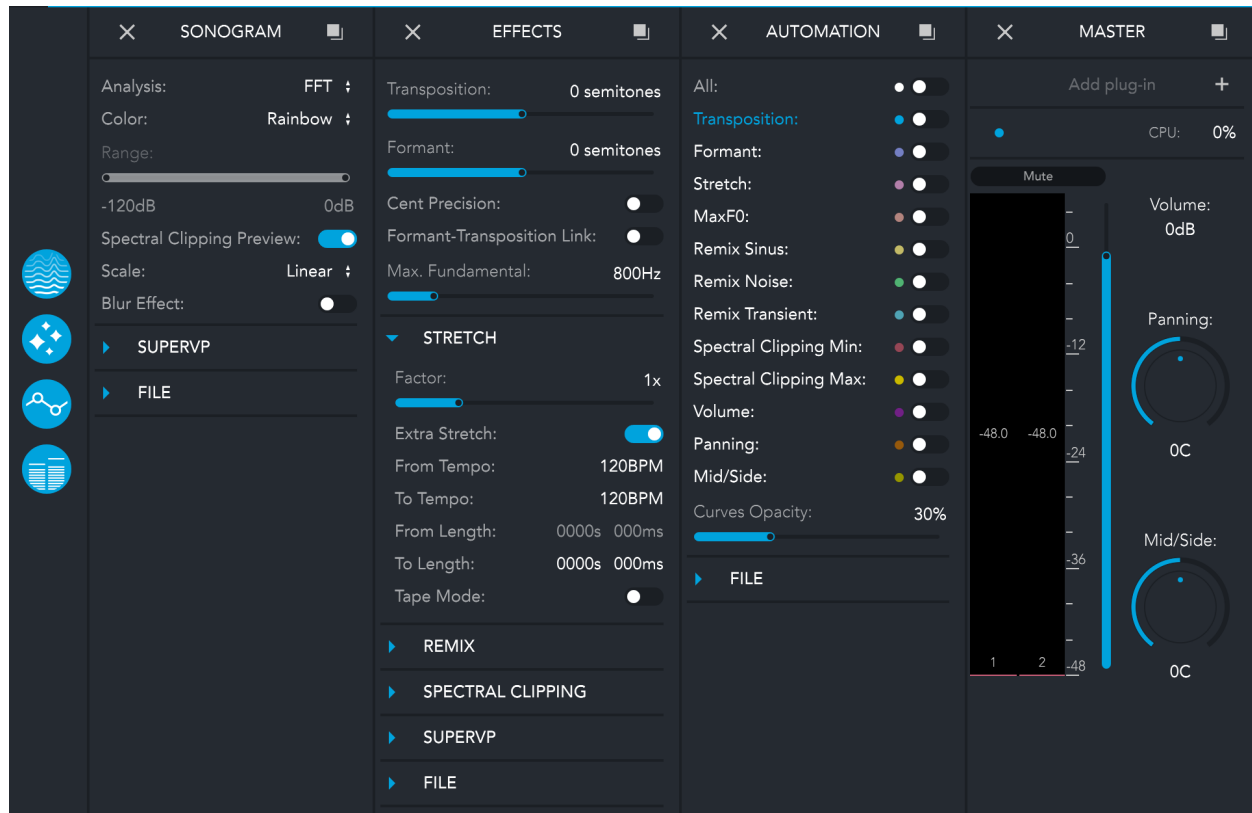
## Playhead Anchor

The solid **BLUE** vertical line overlaid on the Waveform and Spectrogram, Ruler, Loop Selection and Automation indicates the playhead start position in the Time Ruler window.



## Panel Selectors

On the left-hand side, are your panel selectors. These open the respective panels to show



parameters for the Sonogram, Effects such as time stretch and transposition, Automation, and Master panel (such; adding VST/AU plug-ins and metering).

## Audio Sequencer

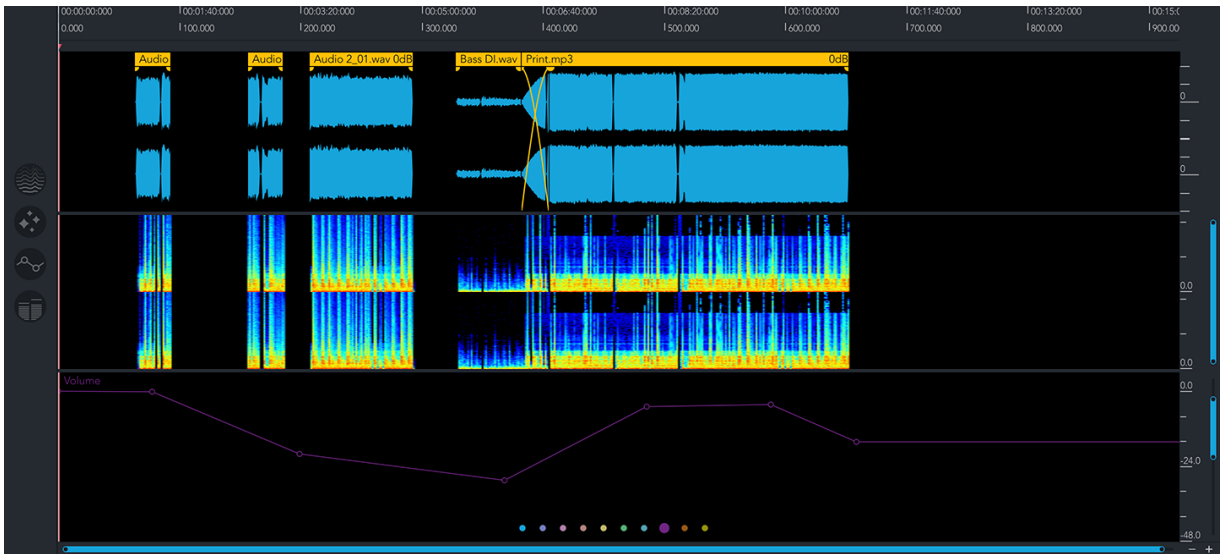
Displays audio tracks for editing (cut, copy, paste, fade/crossfade, etc.).

## Sonogram View

Displays the sonogram. A 3D visual representation of your audio source. Time (x axis), Frequency (y axis), and Amplitude (represented by the colour).

## Automation View

Displays automation for applying real-time automations to your tracks, such as transposing.



## Selector Display

This section displays options for selecting audio channels for view, the section view selectors for opening the main edit and view panes (Audio Sequencer, Sonogram View, Automation View), CPU display, and toggle options for selecting MIDI Learn, and both Ripple and Snap audio region features...



## MIDI

Toggles MIDI Learn on/off for select parameters available in the Effects and Master panels.

Select a highlighted **BLUE** parameter to turn **GREEN**, and with your controller adjust a knob/fader to assign it a MIDI CC value for control.

Right click on the knob/fader to display a dropdown menu with the MIDI mapping information and the possibility to remove the connection.

You may also show the MIDI MAP window for an overview of all assignments...

MIDI MAP								
ID	Parameter	Device	Channel	CC Number	Min	Max	Status	Remove
1	Transposition				-2400	2400	Not Associated	
2	Formant				-2400	2400	Not Associated	
3	Max Fundamental				0	5000	Not Associated	
4	Stretch Factor				0.25	100	Not Associated	
5	Remix Sinus				0	100	Not Associated	
6	Remix Noise				0	100	Not Associated	
7	Remix Transient				0	100	Not Associated	
8	Volume				-120	24	Not Associated	
9	Panning				-100	100	Not Associated	
10	Mid Side				-100	100	Not Associated	

## Snap

Activate or deactivate the magnetism between regions when moving them.

From TS2 Menu, select Edit... > Snap Mode, or click the button for toggling on/off.

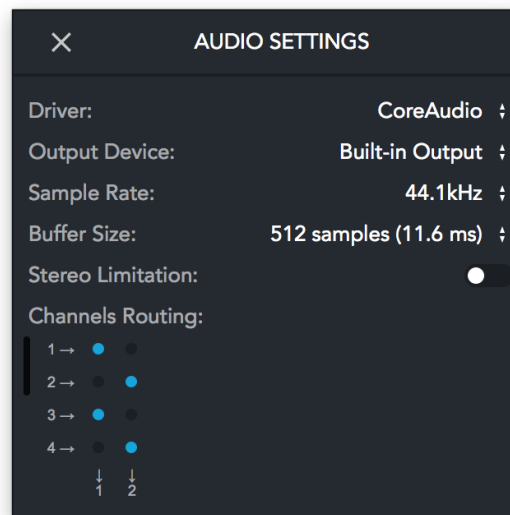
## Ripple

Shift all the regions after the playhead position to the right when inserting new regions, and to the left when deleting regions.

From TS2 Menu, select Edit... > Mode Ripple, or click the button for toggling on/off.

## Audio Settings Window

The Audio Settings Window (accessed from the application's menu) allows for setting your audio preferences, such as Driver, Output Device, Buffer Size and Sample Rate. It also provides channel routing for multi-output audio interfaces...



## Stereo Limitation

For backward compatibility with documents created with previous versions of the TS2 application, you can choose to force the application into stereo format compatibility mode with the stereo limitation option.

When the stereo limitation is active, only the first two channels of the audio regions are processed by the application. In this case, the meters only show the first two channels (and only the first two channels are accessible on the channel routing option).

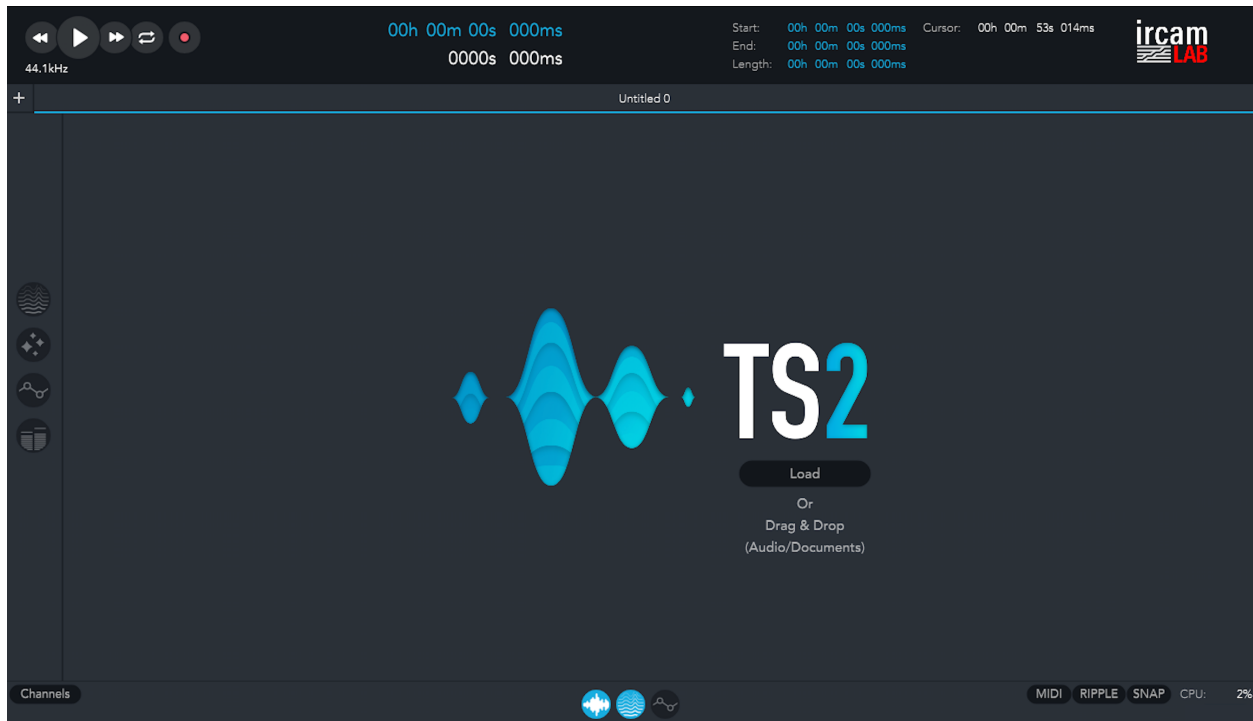
\* You can still import multichannel audio files into the document, and all channels are still shown in the waveform and sonogram panel.

## **Channel Routing**

A maximum of 4 channels are displayed in the routing option at the same time for visibility. In case of more than 4 channel audio regions, you can scroll between all the channels using the scroll bar at the left of the routing option.

## 5. Working with Documents

Upon launching the application for the first time (default state), you will be presented with this screen...



Here you may click to Load a previously created Document, load audio files, or drag/drop audio files to the interface to create a new Document. Multiple documents may be loaded in the application.

Drag and drop or clicking the Load button prompts a dialogue window to open previously created documents and/or audio files.

### Open Documents

TS2 supports opening unlimited documents. Documents may be opened from the initial load screen, File menu, or via the applicable shortcut shown in the Appendix at the end of the manual.

### Create New Document

To create a new document in TS2 you may use the File menu, shortcut, or click the “+” icon to the top left of the screen (underneath the Transport pane).

## Save & Save As Document

Save and Save As operations are available from the File menu and typical application modifier shortcuts detailed in the key commands appendix.

## Consolidate Documents

This option found in the in the File menu allows for the export of all audio files & TS2 documents within your session.

This process will ask you to save any unnamed documents and consolidate all audio files from the current document into a directory folder, placing that next to your saved document file.

## Close Document

To close a document in TS2 us the following methods:

1. Open the File menu and select “Close document”.
2. Single-click on the ‘X’ button in the file tab display.

## Export Audio

To export your audio from the selected Document, you may chose File > Export.

This option opens the following window where you may set a Time range, either:

**Global** - for the entire session.

**Selection** - for your selected region(s) or selected audio.

**Custom** - for selecting a custom range for export. This requires you enter values for Start, End, or Length and “press enter” for the Time Range to change to Custom.

The Export Audio window also allows you to select your Bit Depth (8bit-32bit), Sample Rate\* (44.1kHz-192kHz), and whether you wish to automatically open your exported audio in a new document.

Audio file type format is selectable for WAV, AIFF, FLAC, and Ogg-vorbis.



With the “Separate mono audio files” option activated, each channel is exported to a separate mono audio file (the channel number is appended to the name of each audio file).

If stereo limitation is selected on the audio settings, only the first 2 channels are processed by the audio export.

*\* Default export settings are 48kHz, 24-bit (WAV).*

## 6. Sonogram / Waveform Views

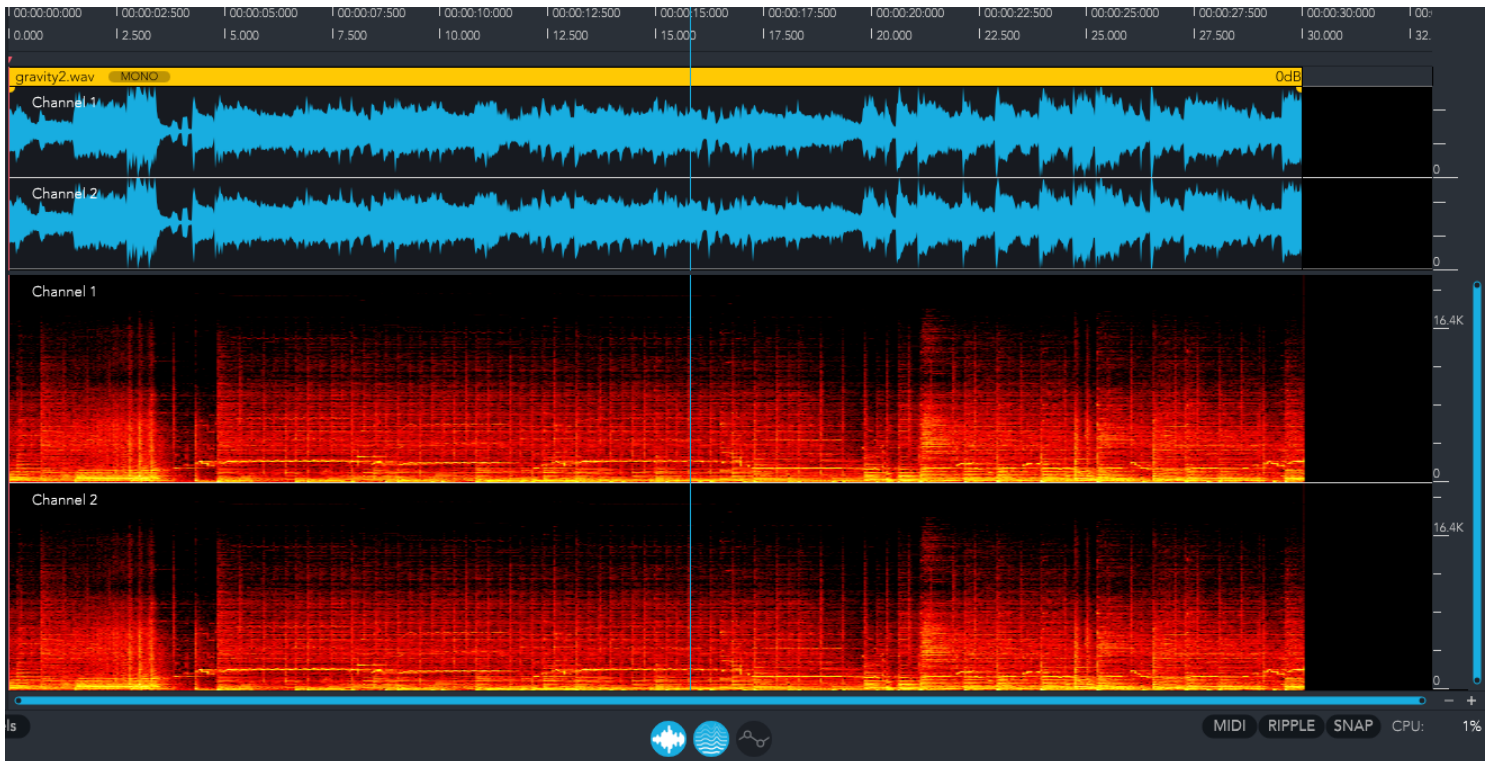
### Overview

TS2 provides 3 separate views : Waveform, Sonogram and Automation. You can select them by clicking on the respective icons (Selector Display).



The sonogram allows you to visualize the amplitude information in the frequency domain of an audio recording over time.

The waveform allows you to visualize the signal amplitude information of an audio recording over time.





TS2 features a rich visual environment for editing and visualizing audio. The central focus of the interface is the Sonogram and the Waveform.

Adjust the vertical window size, view channels (L+R), Sonogram type and energy range value in the lower contextual menu.

## **Sonogram Settings**

### **Energy Color**

The amplitude of frequency content (energy) is indicated by variations in color in the Sonogram.

The color fader (to the left in the lower tab display) shows the color being used to represent a given amplitude value (-120dB to 0dB).

You can change the Visual aspect by selecting in the color menu and one of the 3 options (Rainbow, B/W or Hot).

### **Settings**

The TS2 Sonogram is highly configurable, you can adjust the default configuration, load a preset or save your own preset in the Sonogram Menu.

The Sonogram Settings window can be opened from the “Menus Selector” display on the left of TS2, clicking on the Sonogram icon.

### **Sonogram Analysis Type**

TS2 offers different methods for displaying the Sonogram. TS2’s advanced Real-Time Sonogram modes allow you to see sharper time (horizontal) and frequency (vertical) resolution simultaneously.

Menu content : FFT - LPC - True Env - Reassigned Spectrum

### **Window Size**

The greater the FFT size, the greater the frequency resolution.

Choosing a larger number here will make time events less sharply defined because of the way this type of processing is done.

## Frequency Scale

Using different frequency scales can help you see useful information more easily.

Different scales have different characteristics for displaying the vertical (frequency) information in the Sonogram display.

Frequency Scale Type	Descripton
Linear	Displays frequencies spread out in a uniform way. This is most useful when you want to analyze higher frequencies.
Logarithmic	This scale puts more attention on lower frequencies.

## Rulers

Right-clicking on the frequency ruler will zoom the frequency scale.

You may select the following options in the Sonogram Menu...

### Linear:

Linear scale means that Hertz are linearly spaced on a screen. 0Hz to Nyquist frequency.

### Log:

In this mode, different octaves occupy equal screen space.

## Spectral Clipping Preview

The spectral clipping preview option allows the visualization of the spectral clipping effect in the frequency domain.

As the spectral clipping filter is a complex frequency domain effect, the preview facilitates the understanding and control of the parameters.

## Save & Load Snapshot Setting

You can save individual sonogram setup and be able to reload for comparison.

## Waveform Display

The single stereo waveform drawn in the window represents all audio files present in the current document. The waveform drawing is normalized to allow for consistent vertical resolution when working with selections of varying amplitude.

## Sonograms

Sonograms are visual representations of the spectral contents of a sound : the distribution of the signal energy over frequency, and how this energy distribution evolves in time.

This section gives an overview of the various types of sonograms available in TS2.

Sonograms include 2 types of time/frequency representations:

1. Representations of the temporal evolution, (*FFT, Reassigned Spectrum*) of the frequency and amplitude of the energy of all components – sinusoids and noise – of the signal.
2. Temporal representations of the spectral envelope of the signal (*LPC, True Envelope, Discrete Cepstrum*). The spectral envelope is a representation that characterises the spectral color of the signal. In other words it is a rough characterises the rough energy distribution neglecting details of individual sinusoidal components or noise.

### Analysis Types:

#### FFT (Fast Fourier Transform)

The Fast Fourier Transform decomposes the spectrum into a sum of short sections of windowed sinusoids, and represents the distribution of the energy over these components. Energy variations are represented with a contrast scale.

#### Reassigned Spectrum

The energy distribution in the spectrum is also calculated with an FFT, but the energy of the individual sinusoidal components, as well as that of the transients is reassigned to increase the frequency and time resolution. The reassigned spectrogram is especially suited for precise analysis of sinusoidal components and transients.

## **LPC (Linear Predictive Coding)**

The LPC analysis is related to a source-filter model of speech signals. It estimates the filter of a source filter model using an auto regressive filter with a filter order specified by the user. The filter is then displayed as a spectral envelope. This set of coefficients is a simplified representation of the resonator filter of the sound producing system, notably the vocal tract filter for speech.

The LPC analysis has been widely used for speech analysis but it is well known that it is well suited only for analysis of unvoiced or noise signals. For these kind of signals, the LPC analysis reveals the correct filter whenever the filter order is sufficiently high (LPC Order).

If applied to voiced signals and even if the correct filter order is specified the LPC analysis generally suffers from systematic errors and the True Envelope method discussed below should be preferred.

## **True Envelope**

The true envelope analysis is one of the most efficient spectral envelope estimation techniques. It is designed to improve the results of the LPC. The main advantage is the fact that an appropriate order of the True Envelope analysis can be derived from the fundamental frequency of the sound signal. The true envelope analysis will neglect spectral details with precision smaller than the given max frequency.

Accordingly, the true envelope order is parameterized by the maximum fundamental frequency of a given sound signal. To improve the precision, the can setup the time varying fundamental frequency of a sound signal (Max Fund. Freq) that will then provide optimal analysis resolution.

## **SuperVP**

### **Window Size**

Sets the window size in samples for the analysis.

### **Window Duration**

Sets the duration in ms/sec for the analysis.

### **Fundamental**

Sets the optimal fundamental frequency for the analysis.

### **Window Type**

Click to set the window type for analysis. Provided window types for analysis may be reviewed here - [https://en.wikipedia.org/wiki/Window\\_function](https://en.wikipedia.org/wiki/Window_function)

**Window Overlapping**

Change the window overlapping of the analysis.

**FFT Oversampling**

Change the FFT Oversampling of the analysis.

**FFT Size**

Displays the size of the FFT in samples.

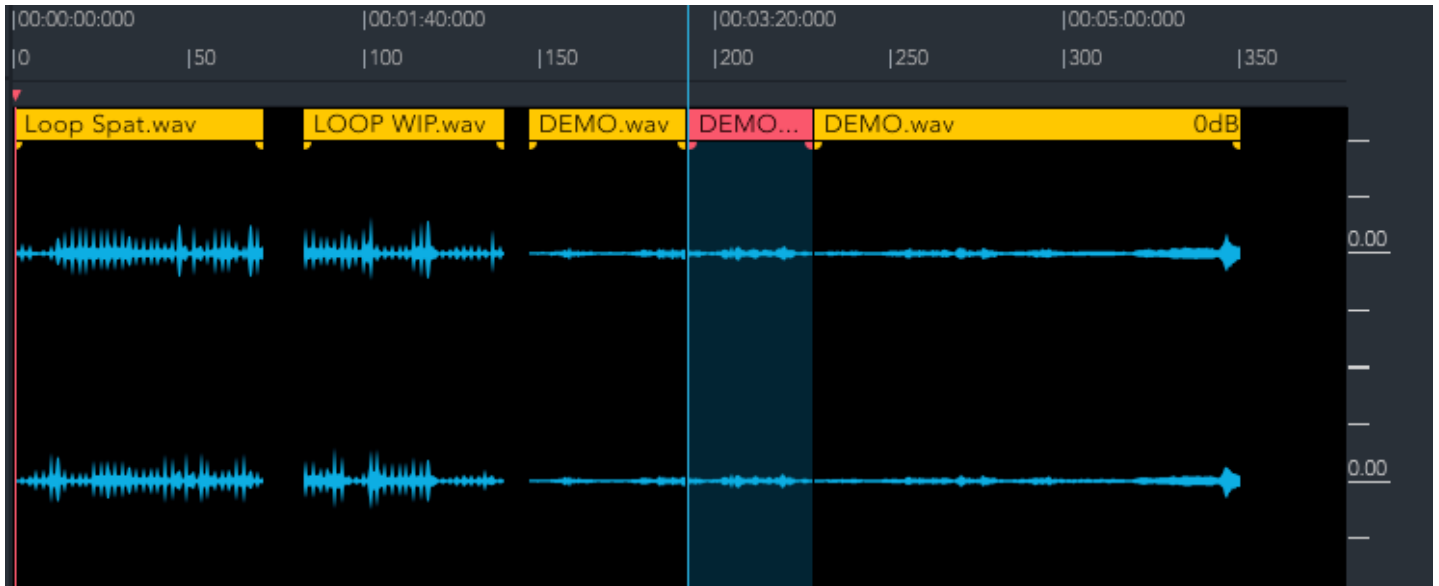
**Frequency Band**

Displays the size of the frequency band in Hertz.

## 7. Working with Audio Files

### Overview

The Audio sequencer window includes all the tools for managing & editing audio files.



### Supported Audio File Formats

The following audio file formats can be opened in the TS2:

AAC, AIFF/AIF, FLAC, M4A, MP3, OGG, WAV, WMA.

#### Supported Channel Configurations:

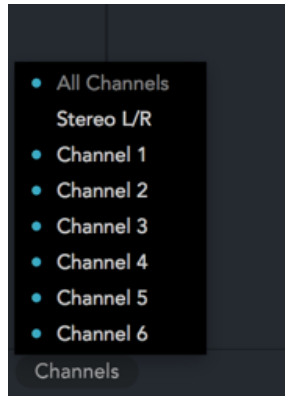
TS2 supports Mono, Stereo and multichannel (up to 256 channels) audio files. Mono files will be automatically converted into stereo on import.

With TS2.2 and above you may edit and transform different types of multichannel audio files within the same document.

The organization of audio channels for imported audio files is preserved by the application.

There is no automatic distinction between channels (for example; no distinction of an LFE channel that will be processed as any other channel).

In the lower tabbed section of the interface you can select which channels are displayed on the waveform and the sonogram views. You can visually disable one channel by single clicking on a channel selector.



## Import Audio Files

There are numerous ways to import audio in TS2, from menu operation to drag/drop support.

**Note:** Mono audio files are converted to stereo on import.

The Import Operations include:

1. Open the Edit menu and select Import Region(s).

Shortcuts: Command + I (Mac) or Ctrl + I (Windows).

2. Drag and drop an audio file in the Track window.

3. Import to a specific timeline position by clicking on the desired time in the waveform window and insert your audio file.

Shortcuts: Command+I (Mac) or Ctrl+I (Windows).

You can import unlimited audio files at once with the same functions.

## Create a Region

There are different ways to create an audio region in the waveform window.

1. Create a time selection on the waveform, click CMD + E (Mac) or CTRL + E (Windows), or Menu > Edit, and select Split region.
2. Set the Start & End values in the Time Display and perform the key command action to create the new region, or go to Menu > Edit, and select Split region.
3. Create a region from a loop : (ALT + Click on the loop tab) then use the respective key command above to create a region.

You can move, copy, paste and delete any regions.

## Zoom Tools

You can only zoom horizontally on the Waveform views, but horizontally and vertically in the Sonogram and Automation windows.

The following zoom selection tools are available in TS2:

Function	Command	Description
Zoom In	CMD + = (Mac) CTRL + = (Windows)	Zooms in on the time ruler by clicking & sliding vertically.
Zoom Out	CMD + - (Mac) CTRL + - (Windows)	Zooms out on the time ruler by click & slide vertically
Zoom to Selection	CMD + Click + Drag (Mac) Ctrl + Click + Drag (Win)	Zooms to fill the selection by the Time Ruler.
Zoom to Whole File	Double Click	Resets zoom time to default.
Shift the Zoom	SHIFT + Click + Drag	Shifts the zooms range while preserving the zoom factor.

## Time Slider

The horizontal slider in the lower part of the Sonogram display controls the zoom level of the time ruler.

## Time Selection Tools

The time selection tool selects a range of time within the file (horizontally within the waveform window).

There are a number of ways to create a time selection in the TS2:

1. Select a range of time within the file on the waveform window.
2. Set the Start and End time in the time readout display.
3. By clicking in real time on : I for start point & O for end point.



## Drag Tools

When zoomed in on an area, the Drag Tool can be used to move Audio Regions through the time range by clicking and dragging your region along the time ruler. Or, by SHIFT + Clicking and dragging the slider in the lower part of the Sonogram display.

## Fade & CrossFade Tools

Fade handles to the side of each region can be used to apply a gradual increase or decrease to gain.

A constant power fade type is available only at this time.

1. Create a fade by moving the yellow circle nodes (top left) on the region for Fade In and (top right) for Fade Out.
2. To create a crossfade you need two separates actions:

Create a Fade In on the selected region.

Drag the selected region on to the previous audio file to create the crossfade.

Crossfades must be between 2 separate regions, A & B.

The Fade In should be done on the region “B” to initiate the crossfade.

Crossfade in & out points are adjustable separately using the yellow circle nodes.



## 8. Edit Functions

### Undo / Redo

TS2 includes an unlimited undo & redo list.

### Additional Functions

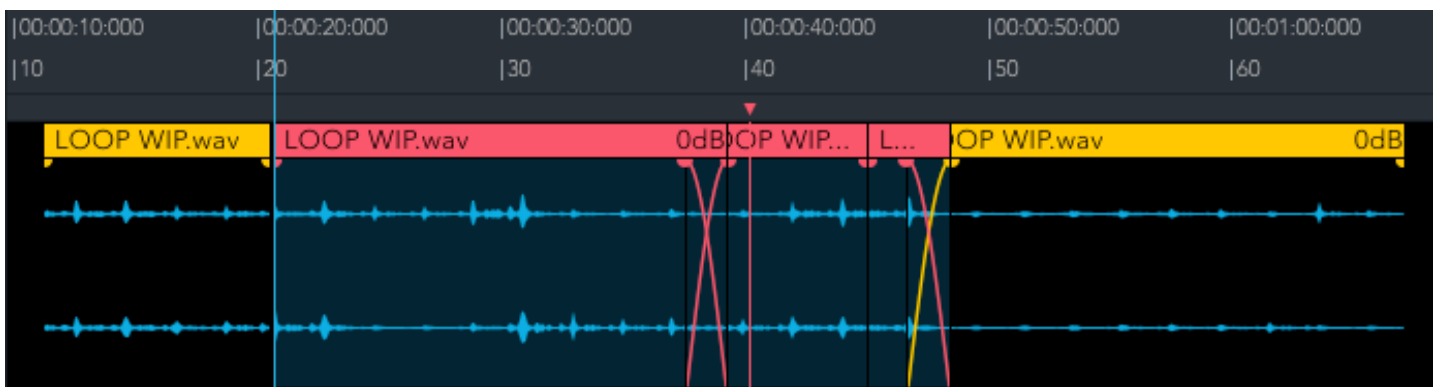
TS2 includes the following Editing functions:

Function	Command	Description
Insert	CMD + I (Mac) CTRL + I (Windows)	Insert an audio file at a specific time value set by the playhead position.
Delete	Backspace	Deletes selected audio files and automation node points.
Cut	CMD + X (Mac) CTRL + X (Windows)	Removes the currently selected audio and stores it temporarily in the clipboard.
Copy	CMD + C (Mac) CTRL + C (Windows)	Makes a copy of the currently selected audio or automation node to the Clipboard.
Paste	CMD + V (Mac) CTRL + V (Windows)	Places audio or automation nodes that have been stored in the Clipboard at the current playhead point.
Split	CMD + E (Mac) CTRL + E (Windows)	<ol style="list-style-type: none"><li>1. You can create a new audio file region from a selection or at the play cursor position.</li><li>2. For automaton, you can add start and end point nodes for a selection.</li></ol> <p><b>Note:</b> You'll need to make a selection in the automation track lane.</p>
Train Regions	CMD + T (Mac) CTRL + T (Windows)	Removes silence between selected regions

## 9. Select Regions / Navigation

There are multiple different ways to select regions, as:

Function	Command	Description
Undo	CMD + Z (Mac) CTRL + Z (Windows)	Undoes the last performed action.
Redo	CMD + SHIFT + Z (Mac) CTRL + SHIFT + Z (Windows)	Redoes the last performed action.
Function	Command	Description
Select All	CMD + A (Mac) CTRL + A (Windows)	Selects all region in the timeline.
Select Multiple Regions	SHIFT + Click a Region	Select multiple regions.
Click Select	Use Left/Right keyboard arrows and hold SHIFT + Left/Right	Holding SHIFT and using the Left or Right keyboard arrows will select a region up-to its start or end bounds.

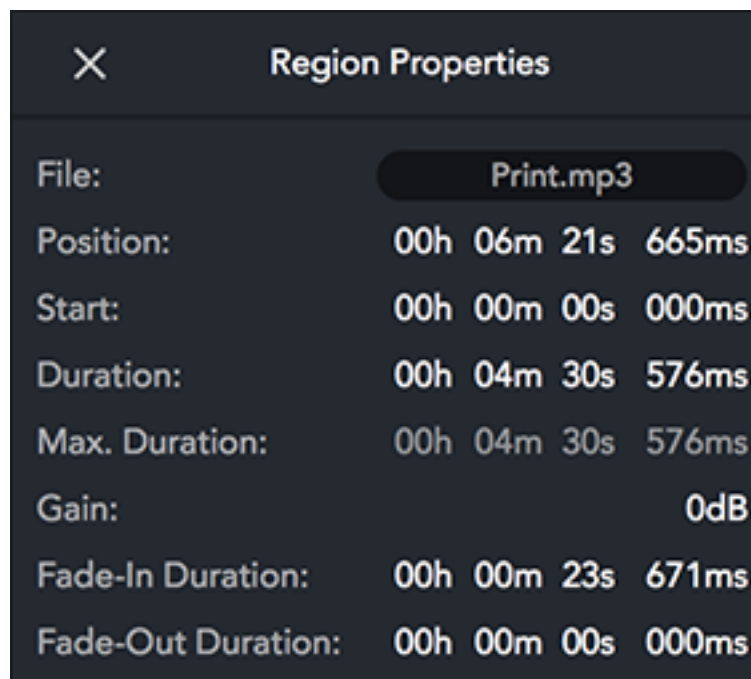


## Region Properties / Contextual Menu

Right clicking in the Audio Sequencer will display a contextual menu with multiple functions such as undo/redo, insert region, cut, copy, paste, among others, and Region Properties.

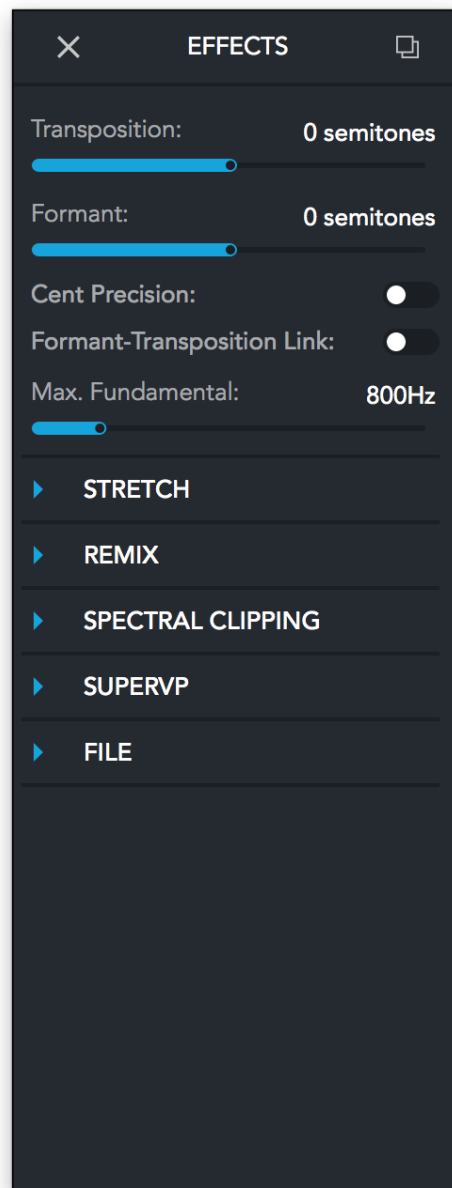
Selecting an audio region and selecting Region Properties will display a window showing said regions properties (Position, Start, End, Gain, and Fades).

In this window you may click the audio file name and replace the audio (in place) in the timeline. It will essentially spot the audio to the same position and length. You may then adjust the region bounds if you wish from a longer audio file if inserted.



## 10. Working with Effects

The Effects panel uses the **SuperVP™** audio processing algorithm, to allow for independent control over the length and pitch of your audio. It is useful for transposing or stretching audio to fit in a mix better.



## SuperVP

SuperVP™ is a world-class time-stretching and pitch-shifting algorithm. You can easily change the pitch of a single instrument, voice, or entire ensemble while preserving the timing and acoustic space of the original recording.

SuperVP is designed to preserve the natural timbral qualities of the original file, even when applying extreme pitch shifts or Stretching Fx.

You can adjust the SuperVP engine to fix the treatment quality of your rendering, Save & Load the SuperVP Command Line in the SuperVP menu in the « Effects » window.

## Transposition

Controls the amount of pitch-shifting up or down that will be applied to the audio.

The range is fixed to +/- 2400 cents (2 octaves).

## Formant

Formants are the resonant frequency components of sounds.

You can shift formants independently of pitch and time with a fixed range of +/- 2400 cents (2 octaves).

Typically you will leave the Formant Shift Strength set to 0 (full strength).

If you hear what sounds like an EQ adjustment to your audio, you can try changing the value to reduce this artefact.

To achieve special effects, for example to change the perceived gender of a human voice, try adjusting the formant to a value close than 0.

## Stretch

Determines how much the resulting audio will be stretched in time.

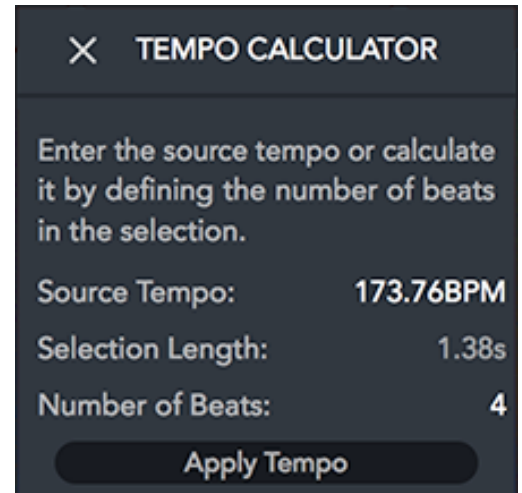
- Values between 0.25x and 1x will cause the audio to speed up without affecting pitch, resulting in a shorter audio file.
- Values between 1x and 10x will cause the audio to slow down without affecting pitch, giving you a longer audio file.
- An “Extra Stretch” option available via a radio button to increase stretch to up-to 100x

## Tempo Calculator

The “To” and “From” Tempo fields allow you to calculate or set a target tempo, to speed up or slow down audio in your document.

Clicking on the From Tempo text or BPM will open the Tempo Calculator.

Here, you may enter the source tempo or calculate it and apply the desired tempo change to the document by defining the number of beats for your audio selection.

A dark-themed dialog box titled "TEMPO CALCULATOR" with a close button (X) in the top left. The text inside says "Enter the source tempo or calculate it by defining the number of beats in the selection." Below this, there are three rows of input fields: "Source Tempo:" with the value "173.76BPM", "Selection Length:" with the value "1.38s", and "Number of Beats:" with the value "4". At the bottom, there is a button labeled "Apply Tempo".

Source Tempo:	173.76BPM
Selection Length:	1.38s
Number of Beats:	4

## Link

You can link 2 kind of functions:

1. Formant and Transposition, for a different treatment of the sounds.
2. Tape mode for simulating a tape speed action.

## Max Fundamental Frequency

Lets you adjust the Fundamental Frequency of your region. 800 Hz is set as the default value.

## Remix

Ircam have created a module to separate the Audio content. It is divided into 3 components (range 0 - 100%):

1. Sinus
2. Noise
3. Transient

## Remix Settings

You can adjust the error level to fix the level separation of each process.

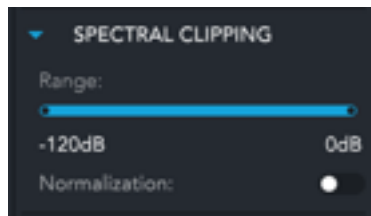
Transient release adjusts the release time of the transient process.

## Spectral Clipping

Spectral clipping is a dynamic filtering effect that performs an energy clipping process on the signal, retaining the spectral component corresponding to a specified energy range. This energy range is defined by a minimum and a maximum value in decibels.

Any spectral component with an energy below the minimum threshold is muted and the energy of the spectral components is clipped by the maximum threshold.

The spectral clipping effect is a creative tool, between a distortion and a musical filter effect, experimentation is a good way to discover the new sonic territories offered by this process (for example; on drums, guitars, vocals, etc).



### Range

The “Range” control is where the user sets the min and the max threshold. It is set on a dB scale, -120 dB is the lower limit and 0 dB is the maximum. Only the frequency parts of the signal between the min and max setting will pass through the effect.

Any signal below the Min threshold limit will be filtered as a gate effect. The higher this setting, the more low amplitude signal will be filtered.

Any signal over the Max threshold will be clipped as a saturator effect. The lower this setting, the more creative saturation will appear.

### Normalization

As part of the input signal is filtered by the effect, the global amplitude of the output signal can be much lower than the original.

Normalization preserves the energy of the input signal.

*The normalization of the spectral clipping filter is ignored by the sonogram preview.*



## **SuperVP Settings**

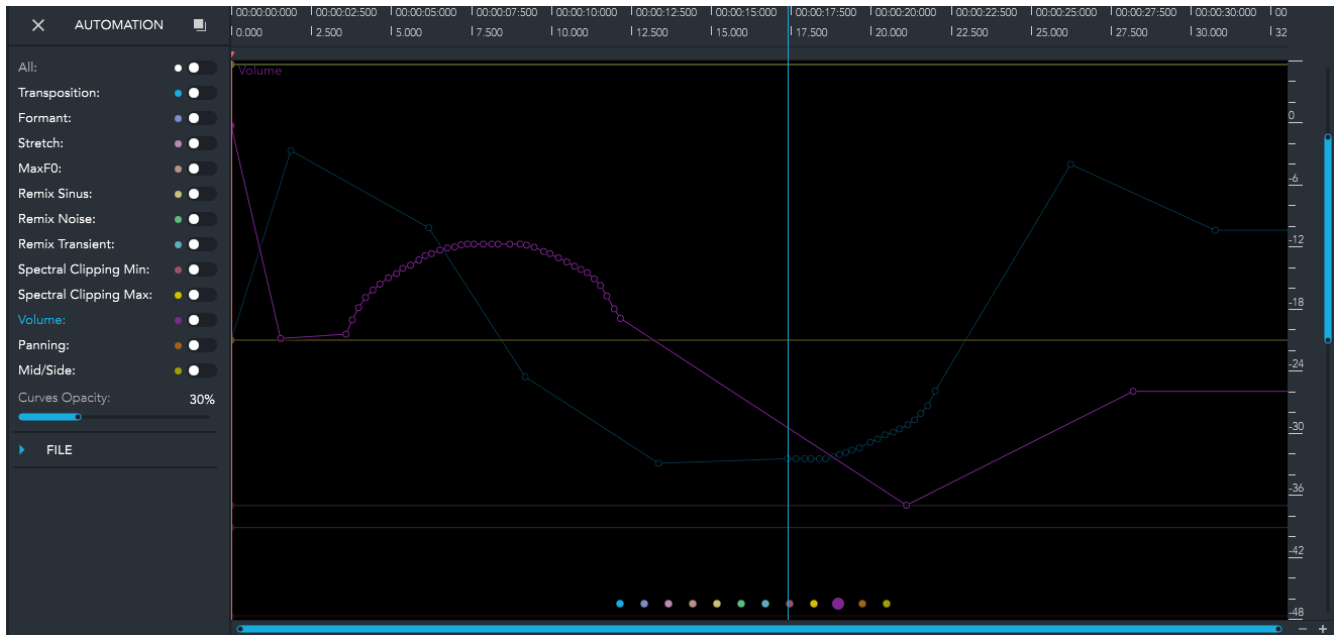
Adjust the quality of processing for treatments, and Export audio rendering.

## **Save & Load SuperVP Snapshot**

You can save & Load various « Effects » snapshots in the file menu of the effects window.

## 11. Working with Automation

The automation window allows for adjustments along two axes: Time and Specific Automation Function (for example; for Transposition, the y-axis is a frequency scale).



You can activate the view and automation on/off of each functions.

An Opacity slider lets you see one or more automation lines.

- VALUE:**
- The vertical y-axis of the contour curve represents the selected value.
  - The center of the each parameter's axis equates to default (zero crossing point).
- TIME:**
- The horizontal x-axis represents time.
  - The time format used here is determined by the time format in the transport section of the main editor window.
  - The range of the time ruler matches the length of the current selection.

## Add / Draw Nodes

Function	Command	Description
Insert Node	CMD + Click (Mac) CTRL + Click (Windows)	Select your automation curve (from the menu panel or by selecting the colour points) in the automation window.  Use the key command to add a new node to the contour curve.
Move Node	Select and Move	Move each node vertically and horizontally or double click on nodes to adjust manually the Time and Value of the automation point in the pop-up window.
Start & End Nodes	CMD + E + Click (Mac) CTRL + E + Click (Windows)	Make a selection in the Waveform view and use the command command to perform the action.  New nodes will be placed at the start and end points of your selection.

Nodes may be drawn in the Automation view simply holding the respective key/command and drawing with your mouse.

## Remove Nodes

Individual nodes can be deleted from the curve using the following methods:

- CTRL (Windows) or Option (Mac) + Click a node to delete it.
- Make a selection in the automation window to select your nodes, and press Delete/Backspace to remove.

## Reset Curve

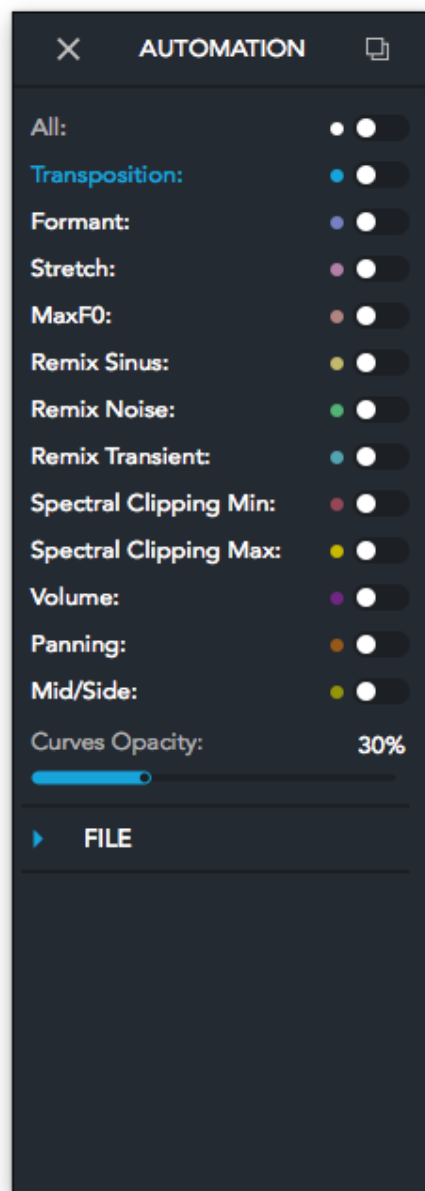
Removes all custom nodes from the curve, resetting it to default.

Two nodes are present in the default curve, one at the start and one at the end of the current selection. The default nodes are set to Default values of each parameters.

## 12. Automation Panel

### Overview

The Automation Panel provides access to selecting automation on/off for select curves, and a 'Curves Opacity' which allows the display of all curves in the Automation View.



## Select Curve

Select the applicable curve by clicking on the automation text name in the automation menu window, or by clicking on the multiple colour points in the automation window. Colour points are in the same order as the automation menu parameters and you will see their name in the Info Text section (bottom left of the UI).

## Time & Value Adjustment

Double click on the selected node and adjust the Time and Value in the pop up window on top right of the automation window.

## Modify Selected Nodes

You can select nodes by making a selection with the cursor. You have different ways to modify your selected nodes:

1. Move your selected nodes horizontally or vertically in the timeline.
2. Click + SHIFT + move the node, limited to the timeline (x-axis).
3. Click + CTRL + move, limited to the vertical amplitude (y-axis).

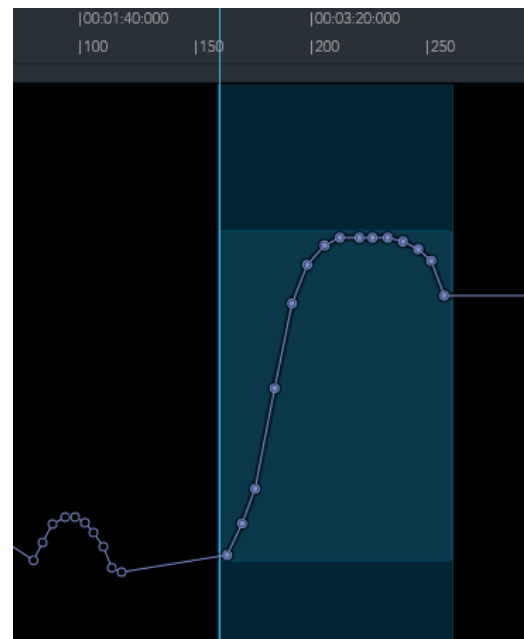
You can adjust your nodes selection in time and amplitude by clicking on the vertical and horizontal edge and side of the container box (you will see you mouse cursor change to an arrow to adjust).

## Save & Load Individual Curves

Select the desired parameters and click on Save or Load curve in the FILE automation menu.

## Save & Load All Curves

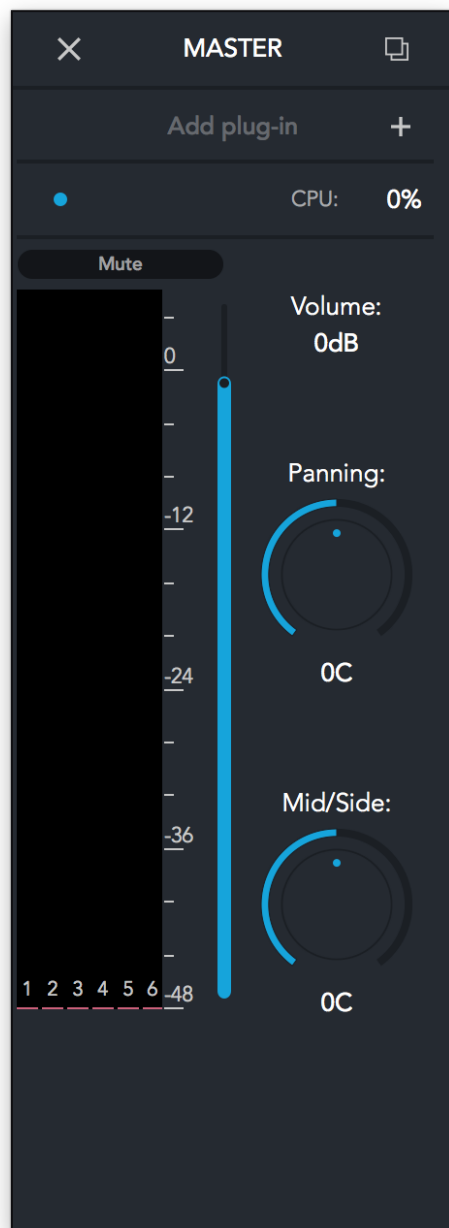
Lets you save and load all curves at once.



## 13. Master Panel

### Overview

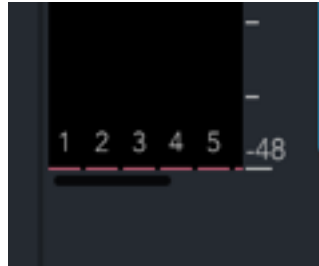
TS2's last process panel includes output functions and metering, and AU/VST plug-in insert support.



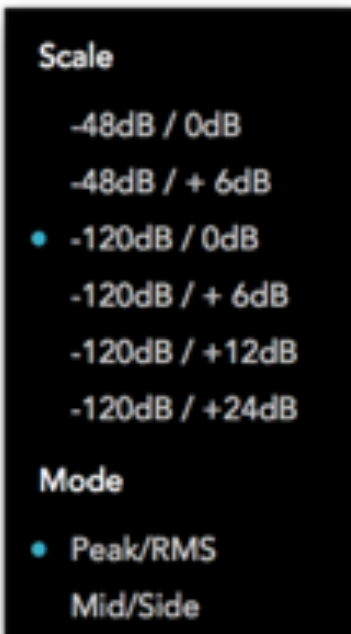
## Meter

Metering levels are displayed as peak (red) and rms (blue) in a combined display.

When the master panel is not detached (as a floating window), a maximum of 5 channels are displayed on the meter at the same time for visibility. The user can scroll between all the channels using the scroll bar under the meter and also within the meter itself (e.g. with a trackpad - swipe). The master panel can be detached and resized to display all the meters at once, and clicking the meter area will reset the held peak values.



Right clicking on the VU-meter lets you set your preferences for a minimum and maximum dB value. These options only affect the visualization of the meter.



### Scale

The first number is the low end of the meter range, and second number is the top end of the metering range.

A small range gives a better precision for loud signals, whereas a large range extends the visualization for more dynamic audio signals.

### Mode

Toggle between standard channel representation or Mid/Side.

In case of more than a stereo channel pair, only the first two channels (1 and 2) are converted to mid side and displayed.

## Volume Fader

Lets you adjust the output TS2 level. The fader scale is linked to the fader setting.

## Mid/Side

A progressive parameter control from Mono to Out of Phase (-180).

“OC” is the default value, respecting the true stereo file.

In the case of multichannel audio regions, panning and mid-side effects only affect the first two channels, other channels are not affected by these settings.

## Features :

Panning - +/- 100 (Left < > Right).

Mute - Select this button to mute the output.



## 14. Plug-in Section

### Supported Formats

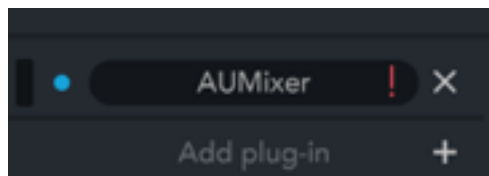
TS2 supports the use of the following plug-in formats in the “Plug-in” panel:

- VST 2 & 3 : Windows and Mac
- AU (AudioUnit): Mac Only

### Multichannel Audio Regions and Plug-ins

The exact behavior of third party plug-ins when using multichannel files can vary, depending on the number of channels supported by the plug-in.

If a plug-in does not support the audio channel layout of the document, a red exclamation mark is displayed next to the plug-in name. In this case, the application is permissive with the plug-in but it might result in artifacts such as unprocessed channels or a de-phasing of the channels.



### Insert

Click on the “+” button to show the Plug-in List Window and add a new plug-in.

**Plug-in Lists:** Displays plug-ins that have been scanned for use in the “Plug-in section”.

**Manage:** Enable different plug-in formats for use in the TS2. The enabled format to be scanned.

**Show:** Select your plug-in format view in the listing.

You can delete any plug-ins in any format you don't want to appear in the plug-in list.

## **Delete**

Click on the “x” to the right of the selected plug-in.

## **Change Order**

Click and drag up or down the Black right icon of the selected plug-in.

## **View**

Click on the Plug-in Name to view the GUI.

## **Scan and View**

You can select a specific format to scan or view.

In the Plug-in List you can delete any of them, select the View type and Scan type, and Clear all plug-ins.

# Appendix

## 1. Key Commands

Mac	Windows	Function
CMD + Q	CTRL + Q	Quits the application
CMD + N	CTRL + N	Create a new Document
CMD + O	CTRL + O	Open a Document from file
CMD + S	CTRL + S	Save the current Document
SHIFT + CMD + S	CTRL + SHIFT + S	Save the current Document as a new file
CMD + W	CTRL + W	Close the current Document
SHIFT + CMD + C	CTRL + SHIFT + C	Save the current Document with all associated files
SHIFT + CMD + E	CTRL + SHIFT + E	Export the current Document to an audio file
CMD + ,	CTRL + P	Show the audio settings panel
SHIFT + CMD + M	CTRL + SHIFT + M	Toggle MIDI learn
CMD + Z	CTRL + Z	Undo last action

SHIFT + CMD + Z	CTRL + SHIFT + Z	Redo last action
CMD + I	CTRL + I	Insert a set of region
Backspace	Backspace	Delete all selected regions
Delete	Delete	Delete all selected regions
CMD + X	CTRL + X	Cut all selected regions
CMD + C	CTRL + C	Copy all selected regions
CMD + V	CTRL + V	Paste the copied regions
CMD + E	CTRL + E	Split regions at cursor
Option + R	Alt + R	Activate or deactivate the ripple mode
Option + S	Alt + S	Activate or deactivate the snap mode
Spacebar	Spacebar	Start or stop the audio playback
CMD + L	CTRL + L	Enable or disable the loop audio playback
CMD + R	CTRL + R	Start or stop the audio recording
Q	Q	Move the playhead to the end of the document
W	W	Move the playhead to the start of the document

SHIFT + Cursor Right	SHIFT + Cursor Right	Move the playhead to the right
SHIFT + Cursor Left	SHIFT + Cursor Left	Move the playhead the left
Cursor Right	Cursor Right	Move the playhead to the next region limit
Cursor Left	Cursor Left	Move the playhead to the previous region limit
SHIFT + I	SHIFT + I	Move the playhead to the start of the selection
SHIFT + O	SHIFT + O	Move the playhead to the end of the selection
CMD + A	CTRL + A	Select all regions
SHIFT + CMD + Cursor Right	CTRL + SHIFT + Cursor Right	Move the edge of the selection to the right
SHIFT + CMD + Cursor Left	CTRL + SHIFT + Cursor Left	Move the edge of the selection to the left
CMD + Cursor Right	CTRL + Cursor Right	Move the edge of the selection to the next region limit
CMD + Cursor Left	CTRL + Cursor Left	Move the edge of the selection to the previous region limit
I	I	Reset the time selection at play head position
O	O	End the time selection at play head position
CMD + =	CTRL + =	Decrease the time zoom
CMD + -	CTRL + -	Increase the time zoom

CMD + Ctrl + F	N/A	Switch back and forth between Full Screen Mode (macOS only)
CMD + T	CTRL + T	“Train Regions” (new with v2.1.2) Removes silence between selected regions

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**TS2 is dedicated to Xavier Rodet**

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