

DSP-AudioCDBuilder

User's Manual



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Written by Stefano Daino

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Introduction

Welcome to the DSP-AudioCDBuilder User's Guide. DSP-AudioCDBuilder is the direct result of a very long experience developing Digital Audio applications for the MacOS, starting in '94 with D-SoundPRO, the powerful audio editor developed for Apple MacOS. DSP-AudioCDBuilder introduces the new dimension of real-time into the world of applications for audio mastering, turning your computer into a real time workstation for music production, plug-in hosting and audio editing. All of the above through the smoothest interface you have ever seen.

DSP-AudioCDBuilder is designed for the most professional users, however, thanks to the simple and intuitive interface, DSP-AudioCDBuilder turns out to be the ideal product for whoever has no experience in the field and would like to enter in the world of digital audio.

This User's Guide will show you all there is to know about DSP-AudioCDBuilder.

What is DSP-AudioCDBuilder?

DSP-AudioCDBuilder is an extremely powerful audio CD-ROM mastering application with extended real-time and off-line support of Audio Unit (AU) Effect plug-ins for the Apple MacOS.

DSP-AudioCDBuilder integrates CD burning that conforms to the Redbook standards for playback in any CD player. DSP-AudioCDBuilder comes also with a fully programmable AudioCD Layout, offering all the features needed to build your audio CD-ROM loading your favourites songs or even selections of audio files. It is possible to configure several non-destructive cross-fade types to create smooth transitions between audio tracks, without any audio click or abrupt change. And, as very unique feature, DSP-AudioCDBuilder allows you to setup serial chains of effects to choose from the internal list of high quality digital effects or from the Audio Unit effect plug-ins installed on your system. Being able to host AU plug-ins, DSP-AudioCDBuilder gives a tremendous additional power to your master. Even more, each track of the AudioCD Layout may have its own chain of real time non-destructive effects, and this can be different from track to track to best suite all your needs.

CD-Texts, EAN/UPC, ISRC, PQ sub-codes are supported as well. It is also possible to import/export the AudioCD layout according the DDP 2 standard.

About Third Parties AudioUnit Plug-Ins formats

DSP-AudioCDBuilder is capable to support AU effects plug-ins. These plug-ins can be used as real time modifiers or as offline edit function with real time previewing. More about this will come later on this manual.

DSP-AudioCDBuilder supports Effects Audio Unit (AU) 64 bits plug-ins.

What do I need to use DSP-AudioCDBuilder?

DSP-AudioCDBuilder works on any Apple Macintosh with an Intel or Apple Silicon (M1 or newer) microprocessors running MacOS 10.11 (El Capitan) or higher. It is a universal application, it runs natively also on Apple Silicon-based Macs.

The minimum requirements are: a CPU Intel (or M1 Apple Silicon), 4GB of

RAM, and around 50 MBytes of free space on your HD.

The audio and graphic engines of DSP-AudioCDBuilder run at 64 bits and are multithread. If present, DSP-AudioCDBuilder will use the CPU multicores.

Please consider also that the performances of DSP-AudioCDBuilder are heavily dependent by the number of plug-ins and effects that are used at the same time.

Mac standard audio interface can be used with DSP-AudioCDBuilder by CoreAudio, which is built-in in the MacOS.

DSP-AudioCDBuilder supports also all the external hardware audio interfaces if compatible with MacOS.

What do I need to know to use DSP-AudioCDBuilder?

This User's Guide assumes that you know how to operate the Macintosh and are familiar with the basic Macintosh terminology such as point, click, drag & the MacOS file system and desktop. If you aren't familiar with these terms, you should refer to the Macintosh User's Guide to learn the basic operations of using the Macintosh. This User's Guide assumes also that you know what technologies like AudioUnit and, if you are interested to use external audio devices, what Core Audio are.

Support

DSP-AudioCDBuilder official home page is:

www.DSP-Quattro.com

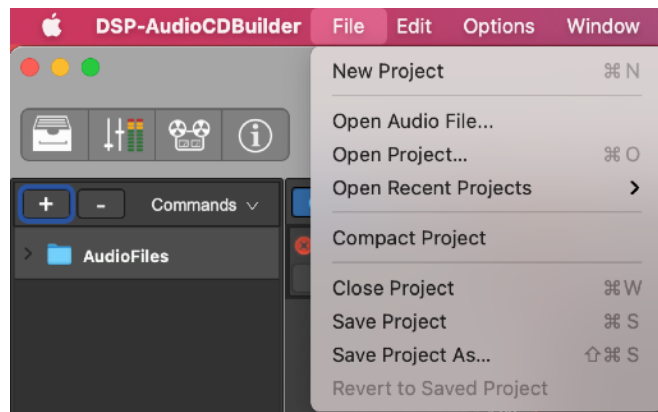
Here you can find additional information on our product.

At any time write us by e-mail at support@DSP-Quattro.com to have the answer to your technical questions or for more information regarding the use of DSP-AudioCDBuilder.

The Project

The Project is the document used by DSP-AudioCDBuilder. The Project is a container which includes all the objects that are needed to complete the mastering session. DSP-AudioCDBuilder starts creating a new Project or opening an existing Project. Closing a Project or quitting it is necessary to decide to save or discard the edits done on the current Project.

The commands to create a new Project, to load an existing or to save the current Project are on the top bar of the application, on the File menu:



where:

- **New Project (or ⌘N):** to create a new empty Project Document. The application shows a new empty Project Document window.
- **Open Audio File...:** to open an audio file into a new Project if there is not already an open Project, or on the current Project if there is already an open Project. The application shows a file browser to select one or more audio file to add on the Document Manger of the Project (more about this later in this manual).
- **Open Project... (or ⌘O):** to open an existing Project Document. The application shows a file browser asking to locate the Project Document to open.
- **Open Recent Projects:** it shows a sub menu with the list of the most recent Project Documents which the application opened, if they are still available.
- **Compact Project:** a Project Document contains also several additional files, like graphic overviews, which are not strictly necessary to open it again - it will rebuild these files when necessary. These files exist to speed-up loading times. It is convenient to use this command to delete these additional files to free HD space before to archive the Project.
- **Close Project (or ⌘W):** to close the current Project Document. The application first asks to save or discard changes, if any.
- **Save Project (or ⌘S):** to save the current Project Document replacing the source Project Document on MacOS file system.

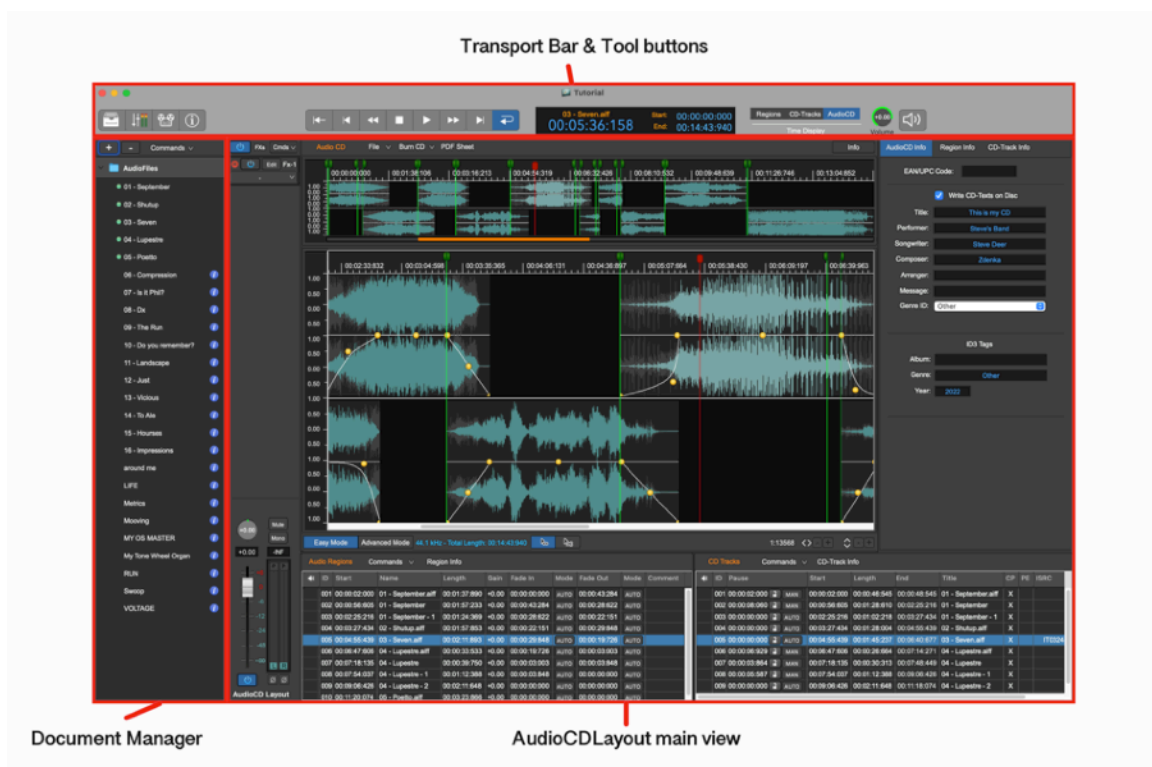
- **Save Project As...:** to save the current Project Document with a different name and, optionally, into different location. The application shows a file browser asking for the file name and the place where to save the current Project Document.
- **Revert to Saved Project:** to reload the last saved Project Document. It is similar to an immediate undo up to the last time in which the current Project Document was saved.

NOTE: calling **Revert To Saved Project**, the application clears the current Undo/Redo history. In other words, all changes made after saving the Project Document are lost.

NOTE: it is not possible to have more than one Project open at the same time. For this, opening an existing Project or doing New Project when there is already one open, the application first asks to close the current Project, also asking to save or discard changes if necessary.

The Project Document Window

Working on a Project implies the use of a main window, the worksheet. Even if the application also uses some additional accessory floating windows like custom plug-in GUIs, most of the work is done on the main Project Document Window.



The components of the worksheet are the following:

- **The Document Manager:** the Document Manager shows a list of the audio files which are open in the application.
- **The AudioCDLayout main view:** it is the main view of the worksheet. It shows the waveforms of the audio files which are part of the audioCD,

the audio Regions and CD-Tracks tables, and the audioCDLayout channel strip.

- **The Transport Bar & Tool buttons:** this view consists of the buttons to control the playback, the display to show information about current marker, audio Regions, CD-Track or playback cursor position and of the tool buttons to show/hide the views on the bottom part of the worksheet and additional tools.

More about these components in the following chapters of this manual.

NOTE: it is possible to show, hide, resize each one of the above components of the worksheet. It is possible to resize their sub views as well. Just click and drag with the mouse the border of a certain view to resize it.

Each component has its own menu commands

The top application menu bar contains only the commands for the Project Document management and for the options which are related to the application, like the preferences and the audio settings.

Menu commands are at the top of the view where they apply. This means, as an example, that the commands to make an editing on an AudioCDLayout are on top of the main AudioCDLayout view, the commands to manage the audio files loaded into the worksheet are on top of the Document Manager view, and so on.

Next chapters will deeply describe each view of the worksheet, as well as all the related menu commands.

The Project Document is a bundle

To build an audio CD-ROM, the first step is to load the audio files into the Project Document. Before to add any audio file to the AudioCDLayout, the application automatically makes a copy of the source audio file which is located on MacOS file system and save it into the Project Document bundle.

After this, the application does not touch anymore the source audio file, it starts to work on the internal copy of it.

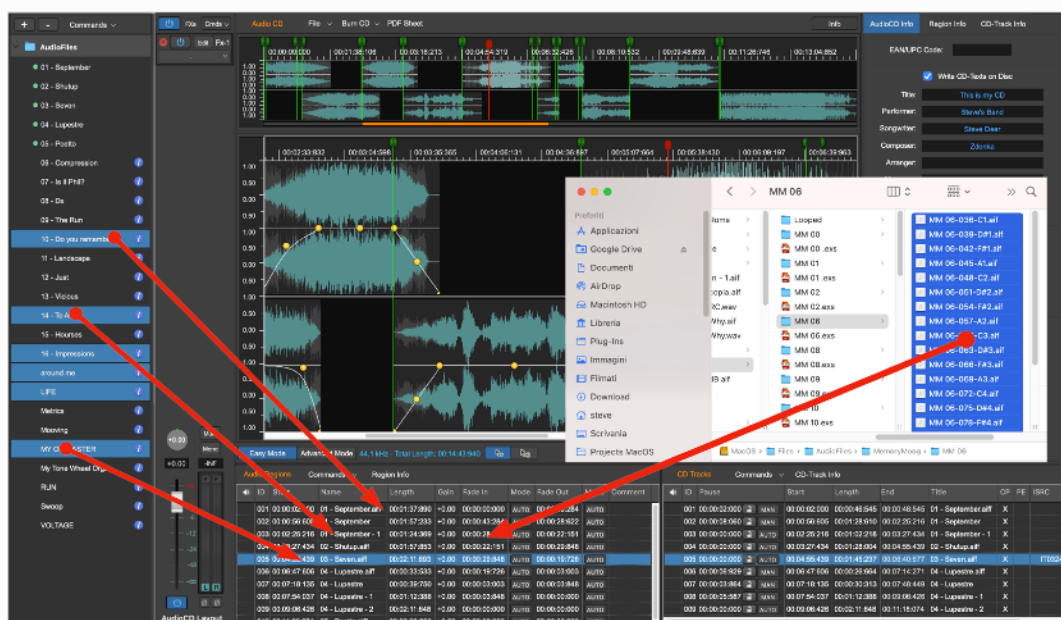
It is important to know that any further change of the source audio file on the MacOS file system does not reflect automatically to the copy which the application is using in the current Project. However there are commands to refresh the copy used by the application to be update to the last version of the source audio file.

Closing the current Project Document or quitting the application, it is necessary to save the Project in order to avoid to discard the job done.

NOTE: please consider that to be able to fully restore again the current Project Document, the application also needs that all the AU plug-ins used are available at loading time. It means that, loading again the same Project Document, these AU plug-ins must be installed on MacOS. It is also valid loading the same Project Document on a different mac. Also in this case, the Project Document has all the necessary audio files safe into its bundle, but at the same time it is necessary the same AU plug-ins used by the Project are installed also on the Mac where you wish to restore the Project. The application takes care to restore the current presets for each plug-in used into the Project by itself.

How to burn an audio CD-ROM in a few steps

As already introduced, the application is a tool to assemble and master audio CD-ROMs. The first step to achieve this is to add the audio files (or regions of audio files) to the AudioCDLayout.



DEFINITION: *The audio files appear as Audio Regions on the AudioCDLayout view*

Then, it is possible to move on the time line the Audio Regions of the AudioCDLayout graphically or entering numerical values for their settings. It is also possible to add effects on insert to each audio region or to the output of the AudioCDLayout as well. These effects can be chosen among the built-in effects of the application or the AU effect plug-ins installed on MacOS.

Moreover, it is possible to set pre-gaps/pauses between CD-Tracks and to set fade-ins, fade-outs or crossfades between an Audio Region and the next one.

The output of the AudioCDLayout can be exported as a new audio file. It is possible to export CD-Tracks as separated audio files as well. And, last but not least, it is possible to burn a physical audio CD-ROM using the internal - if any - or external CD burner device - if connected to your Mac.

The application is able to export the AudioCDLayout in DDP 2 standard format as well.

The AudioCDLayout allows to assemble an audio CD-ROM very easily and in only a few steps: in the simplest case, just add the audio files to the AudioCDLayout, the application will automatically create a CD-Track for each audio region added to the AudioCD Layout. Then, the audio CD-ROM is now ready for burning.

NOTE: the application offers also a very powerful Advanced MODE, to allow every kind of free combinations among audio regions and CD-Tracks. In

Advanced Mode, it is possible to have configurations where a single CD-Track plays several audio files or audio regions, or where several CD-Tracks play the same audio file or audio region. More about the Advanced MODE later in this manual.

Creating your first audio CD-ROM:

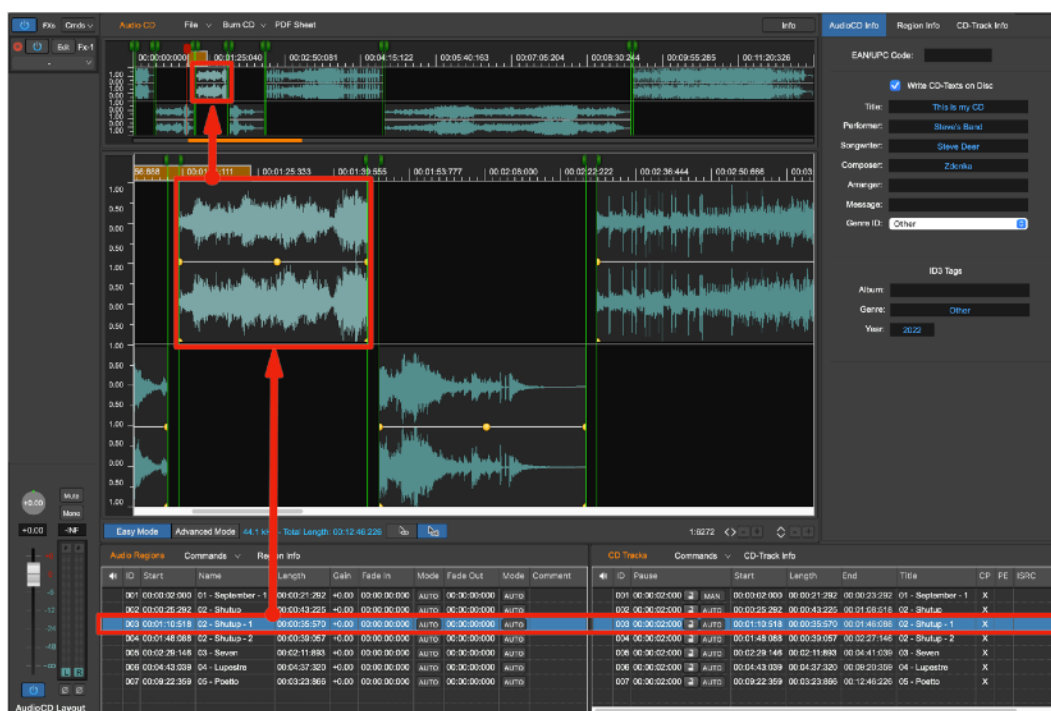
It is very easy to create professional-quality audio CD-ROMs. Just follow these a few steps:

Step 1: Add audio files to the AudioCDLayout

Run the application and add your audio files dragging them directly from the MacOS file system on an empty AudioCDLayout waveform view.

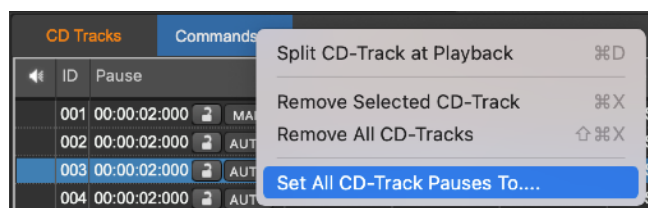
It is also possible to use the menu commands on top of the AudioCDLayout main waveform view to load new audio file on the AudioCD Layout.

When you add an audio file on the AudioCDLayout, the application creates an audio region and a CD-Track as well:



Step 2: Optionally - set preGaps between CD-Tracks

It is possible to set a pause, or pre-gap, between a CD-Track and the next one. When a CD-Player will play the audio CD-ROM, the pre-gap is seen as a countdown just before the CD-Track start.

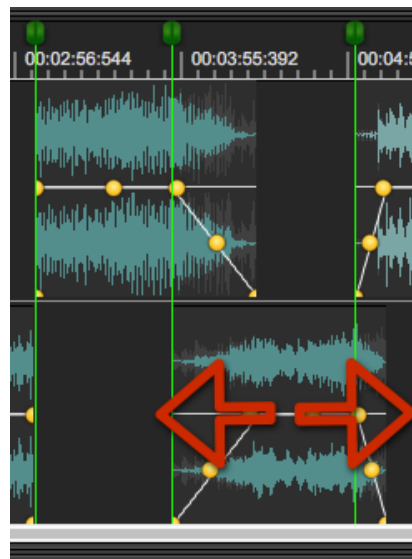


The application allows to do it by using only one command. Click on the Commands button on top of the CD-Track table, and select **Set All CD-Track Pauses to...**

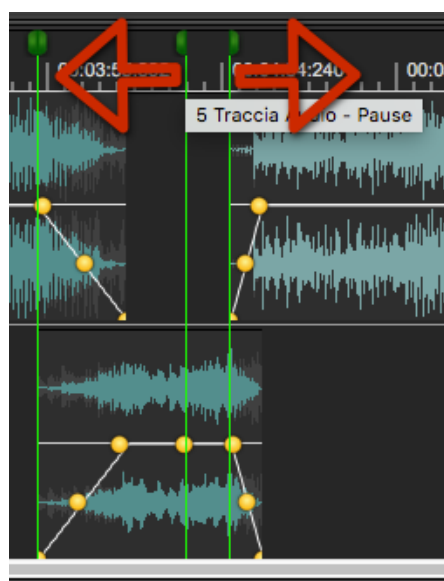
Then, enter the Pause length (the standard is 2 secs), click on OK. All the Audio Regions and CD-Tracks will move accordingly.

Step 3: Optionally - edit and adjust crossfades between Audio Regions

It is possible to set a crossfade an Audio Region and the next one, just clicking and dragging its waveform shifting it to the left or to the right along the time X-Axis. It is also possible to adjust the curves for the crossfade, to set the gain, and to trim audio region start and end points just using the mouse.



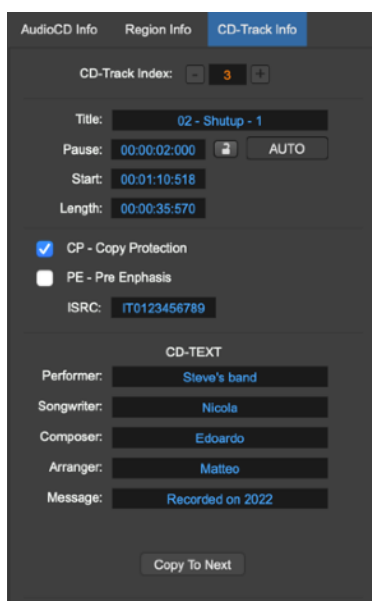
By default, setting a crossfade, the application reduces the preGap of the CD-Track corresponding to the start of the Audio Region. If needed, click and drag the left part of the header of the CD-Track marker to set the pause/preGap between the this CD-Track and the previous one:



Each CD-Track marker is composed by two sub-markers, the left half for setting the pause/preGap length, the right half for setting the position of the CD-Track start as it will appear on the audio CD-ROM.

Step 4: Optionally - Enter CD-Texts for each CD-Track and for the audio CD-ROM

Clicking on the CD-Track Info button on top of the CD-Track table, the application shows a side panel view where it is possible to enter CD-Texts. This is possible for audio CD-ROM as well.



Step 5: Optionally - Add effects

It is possible to add effects on insert to each Audio Region and/or to the AudioCDLayout channel strip, to enhance the sound of the final mix. Select the effects among the high quality internal effects of the application, or among the AU effect plug-ins from Apple or third-party manufacturers which are installed on MacOS.



Of course, it also is possible to adjust effect parameters and save and recall their settings.

Step 6: Burn an audio CD-ROM or export as DDP

Last but not least, if a CD writer device is connected to your Mac, use the internal audio CD burning engine to burn to burn a physical audio CD-ROM.

To do it, just use the BurnCD button which is on top of the AudioCD Layout waveform view:



then, the application will do all the rest...

It is also possible to export the current AudioCD Layout as DDP, a standard used by most factories producing physical audio CD-ROMs. The DDP standard defines the file format to generate an image file of an audio CD-ROM, including ISRC, PQ, EAN codes and CD-Texts.

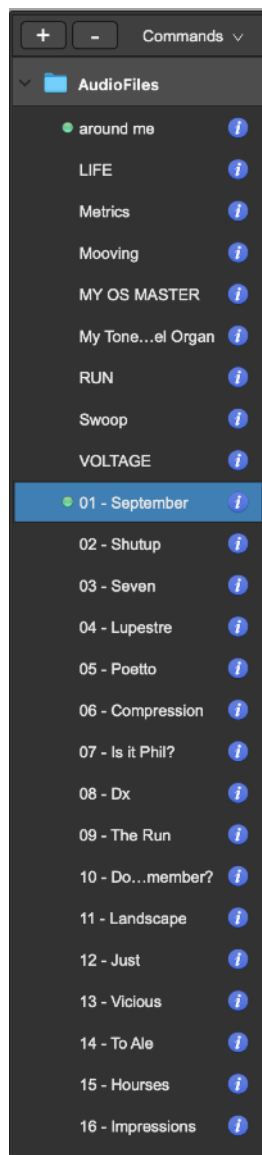
The Document Manager

On the left part of the worksheet, there is the Document Manager panel.

By default, when the application opens a new Project window, the Document Manager panel is visible. Use the leftmost button on the top of the Editor window to show/hide the Document Manager panel:



To show/hide it, you can also drag the right border of the Document Manager panel view.



The Document Manager shows a list of the audio files which are used in the application at a certain moment.

If the audio file has been already imported into the Project Document bundle, a green dot on the left of the audio file name is visible.

If an audio file on the Document Manager table has not already been imported into the Project Document bundle, there is a blue Info button on the right of the audio file name. Placing the mouse pointer on it, the application shows the file path of the source audio file. Clicking on it, the application reveals the position on the MacOS finder of that audio file.

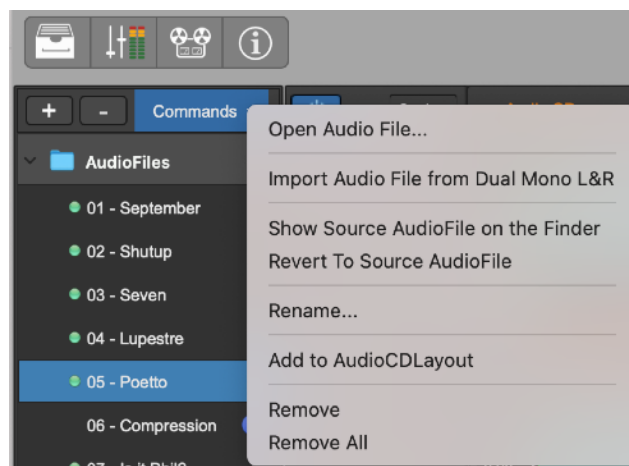
NOTE: if the audio file as not already been imported into the Project Document bundle, the Project is keeping only a reference to the source file, without copying it into the Document bundle. It means that, in the future, loading the same Project, if that source audio file is no longer present on the disk, it won't be possible to import that audio file into Project Document bundle. If this is the case, the Document Manager will show that audio file name in red.

NOTE: it is possible to re-order the list of the audio files, dragging an item up or down on the table.

Document Manager Commands

In the upper part of the Document Manager panel there two buttons, one to Add a new element on the Document Manager table, one to Remove the current selected elements from the table.

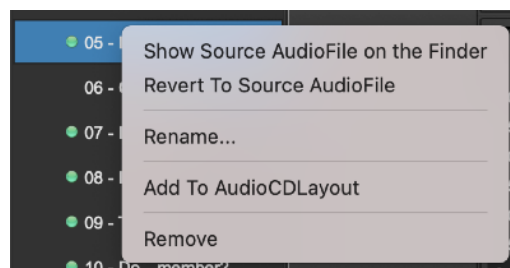
Clicking on the **Commands button** on the top of the Document Manager table, it is possible to select one of the following commands:



- **Open Audio File...:** to load an audio file from file system. The application shows a file browser to select an audio file to add to the Document Manager file table.
- **Import Audio File from Dual Mono L&R...:** to load a stereo audio file using two mono audio files, one for the left channel, one for the right channel (dual mono). The application shows a file browser asking to choose two audio files, then will add a reference to a temporary dual mono audio file to the file table.
- **Show Source File on the Finder:** to ask to the application to reveals the position on the MacOS finder of that audio file. This command is not available if there are several items selected on the table.

- **Revert To the Source Audio File:** use this command to discard any changes made after the last save command. The application reloads the last saved version of the selected audio file. This command is not available if there are several items selected on the table.
- **Rename...:** to rename the selected item. This command is not available if there are several items selected on the table.
- **Add to AudioCDLayout:** to load the selected items on the AudioCDLayout. The application appends these audio files new Audio Regions at the bottom of the Audio Regions table and creates a CD-Track for each of them.
- **Remove:** to remove the selected items from the Project Document. The application asks to confirm, because this operation cannot be undone.
- **Remove All:** to remove all the items from the table, emptying it. Before to apply the command, the application asks to confirm, because this operation cannot be undone.

It is also possible to click on a certain audio file on the file table while keeping the right button pressed to show a menu with a sub-set of the above commands:



In this case, these commands will operate only on the audio file you right-clicked with the mouse.

Using Drag&Drop to Import/Export audio files

It is possible to drag&drop audio files between MacOS file system and the Document Manager table, and from the Document Manager table and the AudioCDLayout waveform view.

A - Dragging one or more audio files from the desktop or from a folder on the file table of the Document Manager will load the file audio in the current worksheet. The result is the same as using the command **Open Audio File...** If you wish then to open these audio files on the AudioCDLayout, double click on the new file names inserted on the Document Manager table.

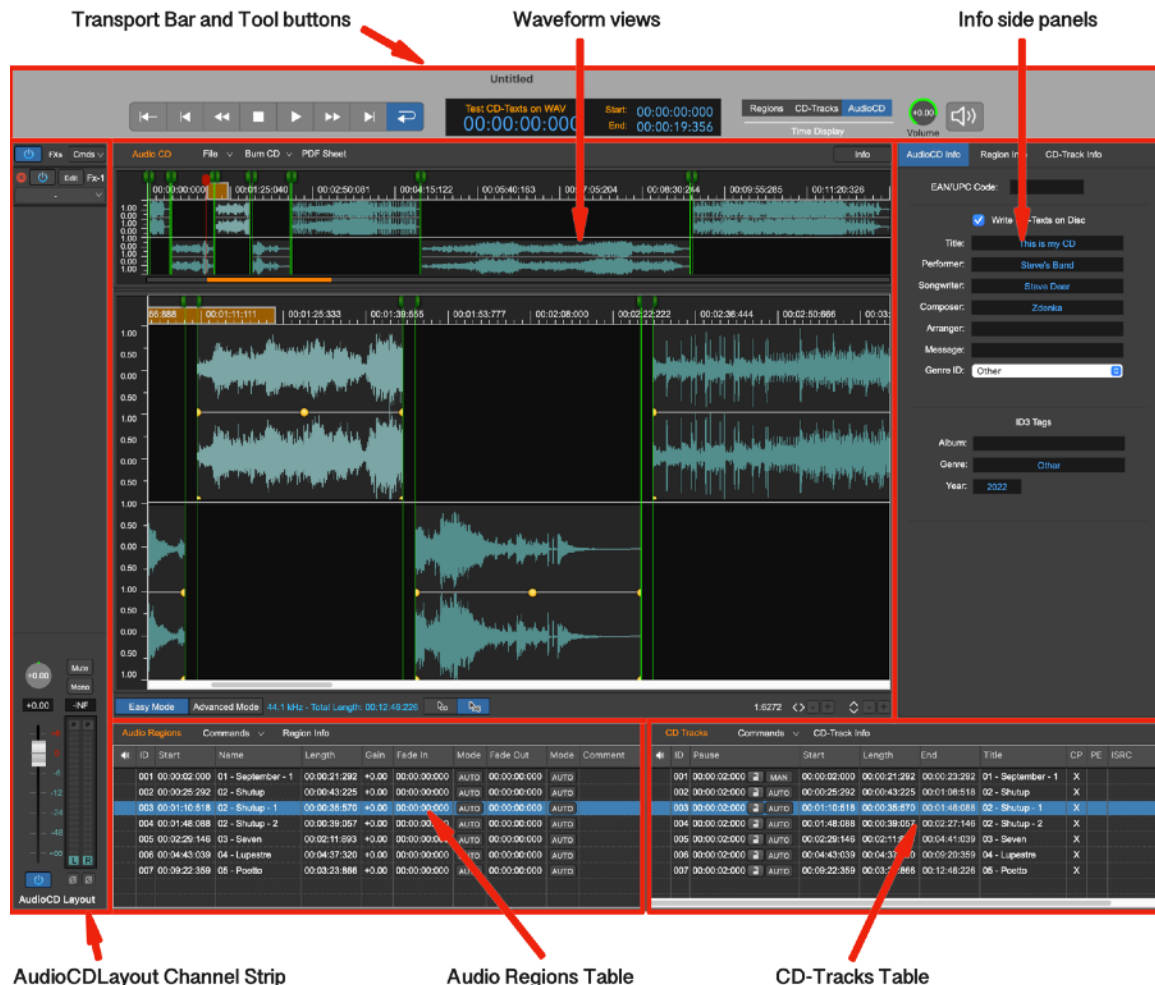
B - Dragging one or more audio files from the MacOS desktop or folder on the AudioCDLayout waveform view, the application imports the audio file into the current Project AND then loads the audio file on the AudioCDLayout, appending it as a new Audio Region.

You are highly recommended to spend some moments making some practice with the extended Drag&Drop support in the application for loading files. It is an irreplaceable tool to incredibly speed up your work.

The AudioCDLayout view

The AudioCDLayout interface offers all the tools that are needed to create and edit an audio CD-ROM: it is possible to add, to order the audio files - or audio regions -, to see their waveform graphically, it is possible to place and move CD-Track markers, to set CD-Track pauses/preGaps and crossfades between audio regions, to play the AudioCDLayout to preview your changes, and to add effect plug-ins on insert almost everywhere.

The AudioCD Layout interface consists of the following main areas:



- **The Transport Bar and Tool buttons:** this view consists of the buttons to control the playback, the display to show information about current CD-Track marker or playback cursor position and of the tool buttons to show/hide the views on the bottom part of the AudioCDLayout and additional tools and dialogs of the application.
- **The AudioCDLayout Channel Strip:** On the left part of the AudioCDLayout view there is a channel strip. Use the channel strip to set the gain, the pan-pot and the other parameters and features - as a serial chain of real-time effects - common to all Audio Regions that are part of the AudioCDLayout.

- **Waveform Views:** in the center of the AudioCDLayout view, there are two views showing the audio CD waveform and CD-Tracks markers. This is the main part of the interface. There are two waveform views: on top there is overview, which always shows the entire AudioCDLayout waveform, from start to end. Below it there is a waveform view which can be zoomed-in/out, allowing precise edits.

On the AudioCDLayout waveform view, each Audio Region is represented by its own waveform placed alternately on the upper section and lower section, and so on, one after the other one. This allows to see graphically what happens when Audio Regions overlap one each other.

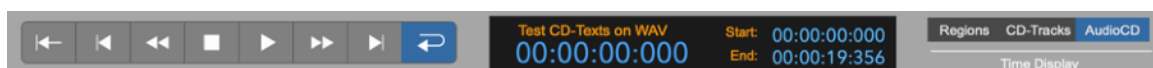
The lower waveform view area allows to place graphically the Audio Regions in the time line. It is also to set cross-fades between them, to place and move CD-Track markers for setting pre-gaps and CD-Track start locations. It is possible to zoom on any part of the AudioCDLayout time line. The scroll bar underneath the scrolling view allows to scroll the waveform view along the x-axis, ie in time. The level of zoom can be easily modified by menu commands, by the keyboard, or by the zoom buttons located in the lower right corner of the waveform view.

- **The Audio Regions Table:** this table shows information about the Audio Regions in chronological order, one on each row of the table.
- **The CD-Tracks Table:** this table shows the list of the CD-Tracks in the same order with which they appear on the audio CD-ROM, one for each row of the table. Each row displays the information of each CD-Track.
- **The Info Side Panel:** it consists of three views. It is possible to switch among these views by using the tabs in the upper part of the side panel. These views show all the settings for the audio, like CD-ROM CD-Texts, the settings for each audio region, including the effect plug-ins on insert to each audio region, the settings for each CD-Track, like the CD-Text, position, X-Fades, and more.

NOTE: It is possible to resize freely each part (waveform/overview view areas, audio regions and CD-Track tables) of the AudioCDLayout view, just clicking&dragging the borders of the views. Vertical borders can be dragged horizontally, horizontal borders can be dragged vertically.

The Transport Bar and Tool buttons

The transport controls are in the upper part of the Project window. This section consists of the transport bar and the counter displaying the position of the playback cursor as well as current Audio Region or CD-Track start/end and title.









On the left part of the control section, there is the transport bar, which consists of the buttons to control the playback:

NOTE: Also the keyboard controls the playback:

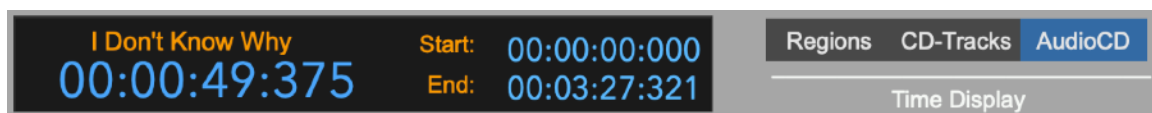
- **Space Bar:** toggles Play/Stop. If it stops, the playback cursor returns to the position where the playback started.
- **Return Key:** to stop the playback.

- **#0, #1, #2... keys on the Numeric Keypad:** pressing the key 0 on the numeric will move the playback cursor at AudioCD Layout start. Pressing key 1 will move to the first CD-Track start, pressing key 2 will move to the second CD-Track, and so on.

	To play forward at normal speed
	First click: to stop Second click: to move the playback cursor to the beginning of the audio CD.
	To play forward and reverse at double speed.
	To move the playback cursor to the next or previous CD-Track Start marker.
	To toggle On/Off the Cycle Mode. If the Cycle Mode is On, the playback cursor, reaching the end of the portion to play, jumps at start continuing to play. If Off, it stops at end.
	To toggle On/Off the preroll. If the preroll is ON, pressing the play button, the application starts to play 2 secs in advance respect the current playback position.

The Counter Display

In the central part of the Transport Bar there is the Counter Display, which shows you information regarding the playback cursor, the current audio region, or the current CD-Track, or the audio CD-ROM.



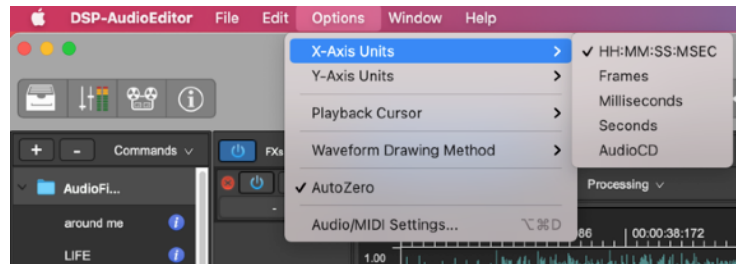
What the application shows on the display depends on which button of the group on the right of the display is turned ON:

- **Regions:** if the Regions button on the right of the display is ON, then on the left part the display shows the playback cursor position relative to the current Audio Region and, above it, its title. On the right there are the current Audio Region start and end positions, relative to the start of the AudioCDLayout.
- **CD-Track:** if the CD-Track button on the right of the display is ON, then on the left part the display shows the playback cursor position relative to

the current CD-Track and, above it, the current CD-Track title. On the right there are the current CD-Track start and end positions, relative to the start of the AudioCDLayout.

- **AudioCD:** if the AudioCD button on the right of the display is ON, then on the left part the display shows the playback cursor position relative to the start of the AudioCDLayout and, above it, the current CD-Track title. On the right there are the start and the length of the AudioCDLayout.

The default time unit is hours:minutes:seconds:milliseconds. Possible choices are Frames, Seconds, Milliseconds or AudioCD (CDDA).

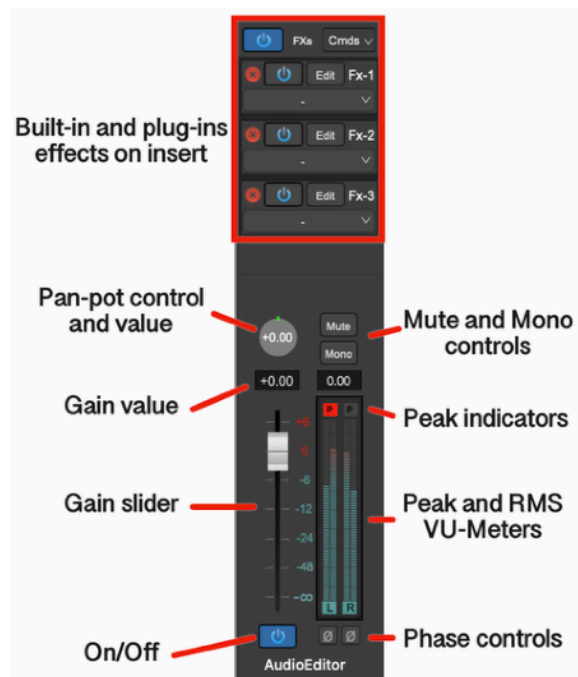


Use the menu command **Options->X-Axis Unit->...** which is on the application menu bar to make your selection.

On application Preferences, it is possible to enter the default value for X-Axis units used by the application creating new Project Documents.

The AudioCD Layout Channel Strip

On the left part of the AudioCDLayout waveform view there is a channel strip. Use the channel strip to set the gain, the pan-pot and the other parameters and features - as a serial chain of real-time effects - used by the application to play the AudioCDLayout.



On the lower part of the channel strip there are the Gain sliders and VU Meters:

The Gain sliders, Peak and RMS VU-Meters and other controls

Using the Gain Sliders and VU Meters on the channel strip is very intuitive:

Using the Gain Sliders:

- **Click&Drag:** clicking and dragging the Gain Slider knob will change the gain of the channel according to the dB scale.
- **CTRL + click:** to jump to the default +0dB value.

Using the numerical control above the Gain Slider:

- **Click:** a small dialog will prompt you to enter a new numerical value, expressed in dB (float number).

Peak and RMS Meters:

On the right of the Gain slider there are the Peak and RMS Meters. They show the peak and RMS levels of the left and right signals on output of the AudioCDLayout. The peak meters are innermost respect the RMS meters.

Peak meters show the max level of the audio signal, computed with the precision of the sample. They have a release time such that when the signal decreases, they follow smoothly. As soon as the signal increases, they immediately update the displayed value.

RMS meters show the power of the audio signal. An audio signal can have very high peak levels (even up to the distortion) but very low RMS values. In this case, they sound poor and weak. A good mastering engineer is able to rise the RMS level without causing the distortion. Usually, multi-band compressors plug-ins can help a lot to reach a good balanced result.

In the upper part of the Vu-Meters there is a number that shows the peak value in dB. This number remains fixed to the highest reached value for 3 seconds. Then, it will return to show the current maximum value. In Preferences, it is possible to set a flag to keep this value fixed to the maximum. In this case, to reset it, click on it.

Also there is a red peak level indicator that flashes if the signal reaches or exceeds 0dB. Be careful not to let these indicators flash too often because, even if the application, just like analog devices, uses a special clipping algorithm any abuse of the output levels will cause the saturation and distortion in the audio output signal.

The Panpot Rotary Control:

On top of the Gain slider there is a rotary control, the pan-pot, to set the balance between the L&R channels. Possible values are in the range [-1.0..1.0], where -1.0 means that the only the L channel will play, 0 means that the L&R output signals are equally balanced, and +1.0 that only the R channel will play.

It is also possible to click on the numerical value into the rotary control to enter the exact pan-pot value.

ON/OFF button:

It turns On/Off the audio on output from the channel strip.

Mute button:

Use this button to mute/un-mute that channel strip.

Mono button:

Use this button to mix the L&R channels into a single mono channel, which will play on both L&R channels on the channel strip output. This is very useful to verify the mono compatibility of the output audio signal.

L&R Phase Invert button:

At the bottom of each VU-Meter there is a button with a Ø sign. Turning ON this button will invert the phase of that audio channel. Use this button to check if there is a frequency cancellation when inverting the phase of one channel. These buttons are very useful when used in combination of the Mono button.

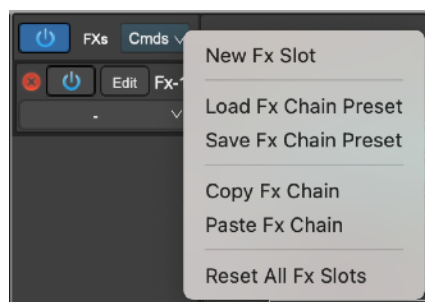
The built-in Effect and Plug-in Fx slots

On the upper part of the channel strip are the effects on insert to the AudioCDLayout output.

These effects process the output of the AudioCDLayout, ie all the Audio Regions. In other words, the application will apply this serial chain of effects when it plays the different Audio Regions which are part of AudioCD Layout.

This serial chain of FX will be rendered to file burning or exporting the AudioCDLayout, ie the application will process the audio regions thru these effects when burning an audio CD-ROM or exporting a DDP image.

Btw, when necessary, it is also possible to load different effects for each audio region. To know more about the FX on insert to each audio region, please see later in this chapter.



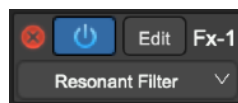
The first row on top includes a button to turn On/Off the processing of the serial chain. Clicking on the Cmds button, a popup menu appears including the commands to:

- **New Fx Slot:** to allocate a new Fx slot, appending it to the chain of effects. There is not a limit on the number of slots which can be allocated.
- **Load Fx Chain Preset:** to load from file a Fx chain previously saved using the Save Fx Chain Preset command below.

- **Save Fx Chain Preset:** to save on file the current Fx chain, including the number of Fx slots, which effect is allocated on which Fx slot, their current patch. The application shows a file browser for choosing where to save the preset on HD.
- **Copy Fx Chain:** to copy the Fx chain on the special Fx clipboard of the application. Then, it is possible to paste this Fx clipboard on another Fx chain using the command below.
- **Paste Fx Chain:** to paste the Fx chain previously copied into the special Fx clipboard of the application.
- **Reset All Fx Slots:** to empty all Fx slots on the Fx chain.

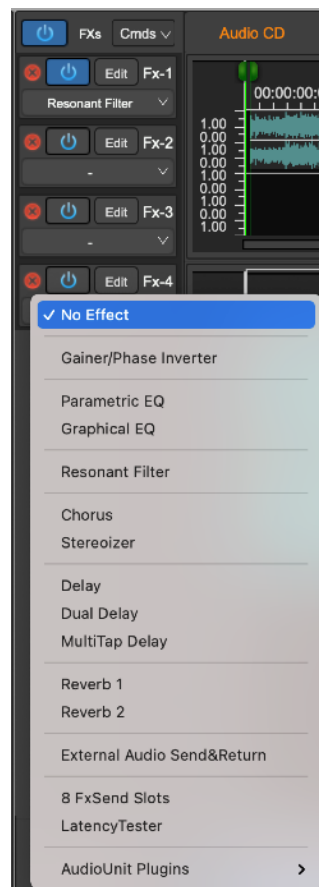
The Fx slot

By default, the application creates one FX slot.



Each Fx slot has a red cross button to remove it from the Fx chain, a button to turn it On/Off, bypassing it.

Click on the Edit button to show the custom plug-in GUI on a new floating window. Click on the same button to hide this floating window.



It is possible to load effects to choose among the high quality internal effects of the application, or among the built-in in MacOS Audio Unit effect plug-ins by Apple which are available for free, or among the commercial Audio Unit effects plug-in by third-parties manufacturers which are installed on MacOS.

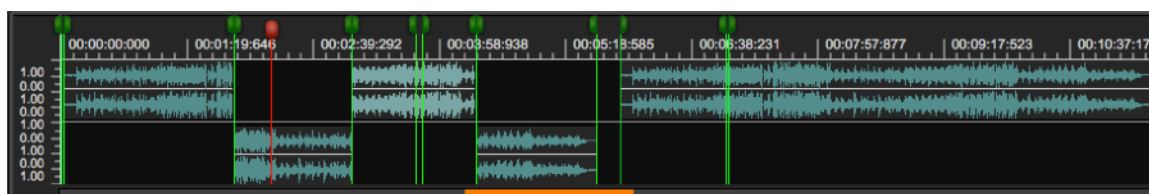
Please refer to the relevant chapter for the description of the different built-in internal effects and about how to use them.

Waveform Views

In the middle of the AudioCDLayout view there are two waveform views: the waveform overview and the main waveform view.

The AudioCD waveform overview

The upper waveform view is the overview. It always shows the complete AudioCDLayout waveform, from start to end.



This view is a waveform view without the controls to zoom in/out. It is very useful to always know which Audio Region is playing.

It is possible to use the waveform overview to make new waveform selection, move the markers or the playback cursor, and set the zoom level for the main waveform view area below.

At the top of the waveform there is the Time Ruler. The application uses the same X-Axis unit used for the Counter Display control. As described into the corresponding chapter, to set the X-Axis unit for the time ruler, use the application menu command

Options->X-Axis Units...

Possible choices are

- HH:MM:SS:MSEC (hours:minutes:seconds:milliseconds)
- Frames
- Seconds
- Milliseconds
- AudioCD (CDDA)

On the right side there is the Level Ruler, that shows the level of the signal accordingly to the Y-Axis unit. To set the Y-Axis unit, use the menu command

Options->Y-Axis Unit...

Possible choices are

- Floats, normalized into the range [-1.0..1.0[
- dB (decibel).

Clicking on the time ruler and dragging the mouse, it is possible to define a specific region of the AudioCDLayout to play. The same can be accomplished by clicking and dragging the time ruler of the main waveform view. Please refer to the next chapter describing the AudioCD Layout main waveform view to know more about it.

Below the waveform display, there is a special **Zoom Controller**, that can be used to set the zoom level of the main waveform view area. This control highlights in orange the region that the main waveform view area displays. By clicking on it and then dragging the mouse, the application sets the zoom level of the main waveform view scrolling it accordingly.

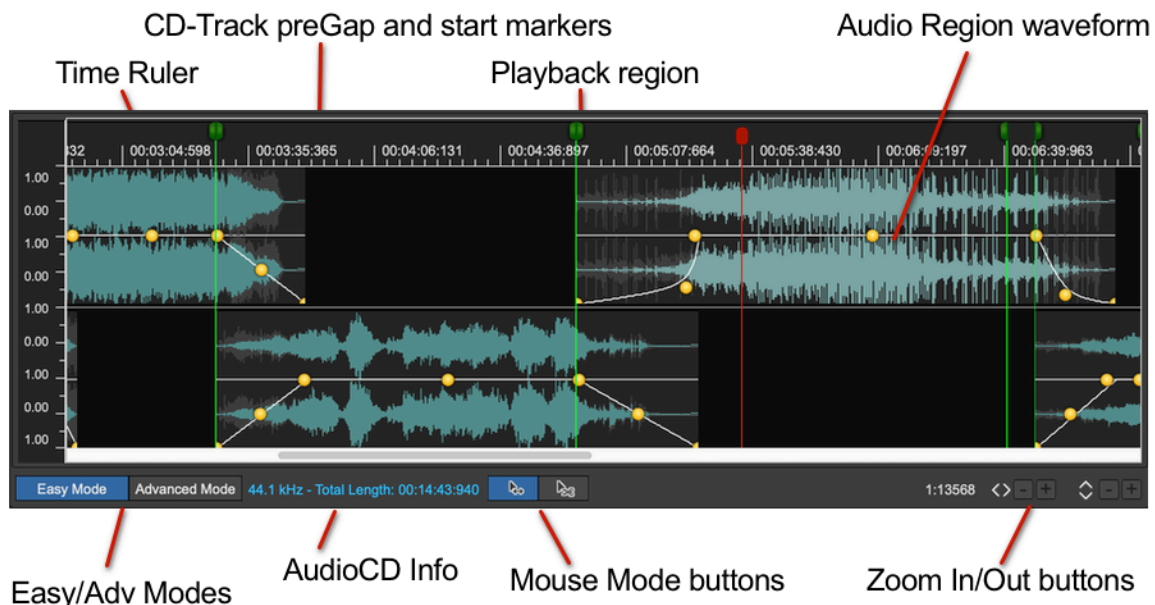
Using the Zoom Controller

It is easy to use the zoom controller:

- **hover** the mouse over the zoom controller, the mouse pointer changes to a magnifying glass.
- **clicking on it and dragging** the mouse, the control draws an orange region. Then, releasing the mouse button, the main waveform view scrolls to the position corresponding to the orange rect start, zooming up to the position corresponding to the orange rect end.
- **⌘ + mouse click and dragging**, scrolls the main waveform view to the region pointed by the mouse, without modifying the zoom level.

The AudioCD Layout main waveform view

The main waveform view area is the main workspace for working with the AudioCDLayout. On the main waveform view, it is possible to edit audio regions and CD-Track markers graphically. The application places the audio regions, alternately, between the top and bottom areas of the waveform view. The two rows are functionally identical, this design makes very easy and user friendly to edit overlapping regions.



Each Audio Region is displayed as a rectangle, containing a green waveform. Each Audio Region has also an envelope curve, to set the gain level and fade-in/out lengths and curves. CD-Track preGap/pause and start markers are displayed with a green head.

Zoom In/Out Buttons:

Exactly like the overview, the main waveform view shows the waveforms of Audio Regions. However, this view can zoom-in any part of the waveform up to the level one sample = one pixel. X and Y axis have independent zoom levels. It is possible to zoom-in the vertical axis without limits, even up to show the quantization noise in the audio file.

To zoom In/Out:

- **Use the mouse wheel:** to set the horizontal X-Axis zoom-in/out ratio. The same can be done moving vertically 2 fingers on the Apple Trackpad, if applicable. **⌘ + mouse wheel** does vertical Y-Axis zoom-in/out.
- **Use the +/- buttons:** use the +/- at the bottom right of the waveform view to zoom in/out horizontally on the X-Axis or vertically on the Y-Axis.

After zooming-in, the scroll bar lets to scroll the main waveform view to wanted position.

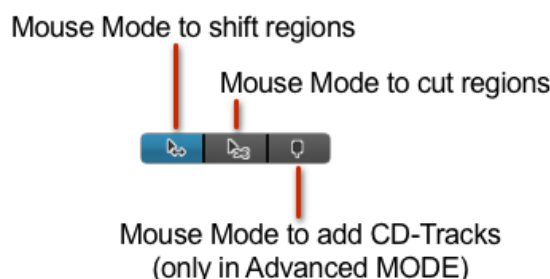
Do not forget that it is also possible to use the zoom controller of the waveform overview to zoom in/out on a certain region of the AudioCDLayout.

NOTE: it is possible to scroll the view also by **clicking and dragging** the Time Ruler **while keeping the ALT key pressed**. The effect is the same as using the scroll bar, but often it is smoother and very much more precise.

If it is playing, the Audio Editor waveform view area will scroll following the playback cursor.

Mouse Mode Buttons:

These buttons choose one of the edit pointer modes, to perform different tasks on audio regions and CD-Tracks on the main waveform view.



Depending on the AudioCD current edit mode, which can be EASY or ADVANCED (more about this later on this manual), there are two or three mouse edit modes:

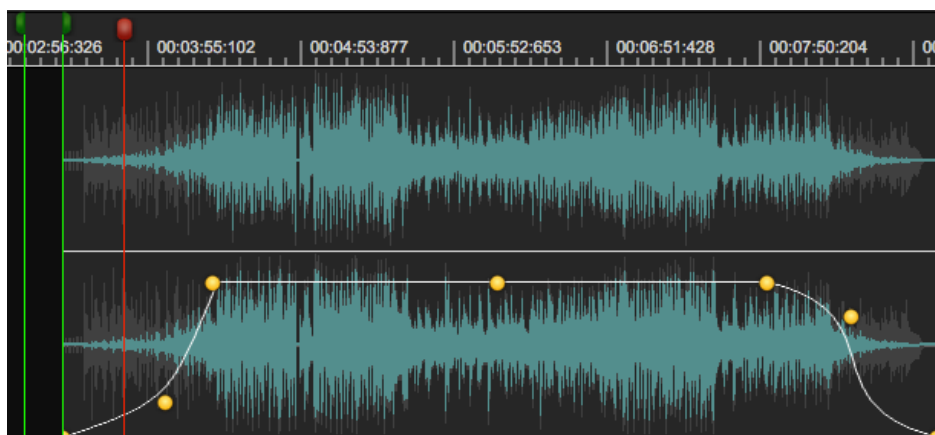
- **Audio Region Shifter:** in this mode, clicking on an audio region waveform and dragging the mouse, shifts that audio region forward or backward along the time axis.
- **Audio Region Scissor:** in this mode, clicking on an audio region waveform, the application splits that audio region in two audio regions on that position. The application also creates a new CD-Track at split point, where the second audio region starts. All other audio regions and CD-Tracks remain unaffected.
- **CD-Track Scissor (available only if the AudioCD is on ADVANCED edit Mode):** in this mode, clicking on an Audio Region waveform, the application splits the CD-Track in two CD-Tracks on that position, adding a CD-Track marker. Other Audio Regions and CD-Tracks remain unaffected.

NOTE: While the mouse mode is in Regions Shifter mode, press the ^ key to switch momentarily to the Region Scissor Mode.

NOTE: more about the AudioCD EASY and ADVANCED edit modes later in this manual.

The Audio Region Waveform view:

Each Audio Region loaded in the AudioCDLayout appears in the main waveform view and in the Audio Region table. The main waveform view displays the waveforms of each Audio Region chronologically from left to right, in the upper or lower half of the view area alternately, to make it easier to view any overlapping areas between two regions.



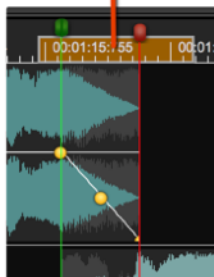
Each Audio Region waveform view has its own envelope curve for the gain level, with parameters to set the attack and decay times and the shape of the curves, and the gain level. It is also possible to edit Audio Regions, resizing them, trimming start and end, shifting them back and forth in time, splitting, and very much more. More about this later in this chapter.

The Playback Cycle:

It is possible to loop (or cycle) a region of the AudioCD Layout, so that the application plays only that region. This is useful to preview a specific region, like a crossfade between Audio Regions, or how the audio at CD-Track start plays. It is possible to set a cycle region using one of the two time rulers, the

one on the AudioCDLayout waveform overview and the one on the AudioCDLayout main waveform view.

Cycle Region



- **to set a Playback cycle region:** click on the time ruler of the overview or main waveform views and drag the mouse from the wanted cycle start to end.
- **to remove the Playback cycle region:** Click anywhere on the time ruler outside the current playback cycle region.

If there is a Playback cycle region, the application plays only that region. If the cycle button on the transport bar is ON, as soon as the playback cursor reaches the end of the cycle region, it jumps back to cycle region start without any interruption. If the cycle button on the transport bar is OFF, the playback stops as soon as it reaches the cycle region end.

The Time Ruler:

Above the waveform there is the Time Ruler. To set the X-Axis unit for the time ruler, use the application menu command

Options->X-Axis Units...

Possible choices are

- HH:MM:SS:MSEC (hours:minutes:seconds:milliseconds)
- Frames
- Seconds
- Milliseconds
- AudioCD (CDDA)

On Time Ruler the application draws also the heads of CD-Track markers (the green markers), each one of these is constituted by two sub-markers, the preGap/pause and start CD-Track markers. The playback cursor is the red marker. More about CD-Track markers later in this chapter.

The Audio Regions table and Audio Region Info view

Audio Regions table shows the audio files - or audio file regions - which constitute the AudioCD, one for each row of the table:

Audio Regions are listed chronologically, from top to bottom, identified by an ID#. Selecting an Audio Region in the Audio Region table, the same Audio Region is also selected on the AudioCDLayout waveform view.

NOTE: it is possible to **reorder Audio Regions** by clicking and dragging them up or down. **Alt-click** and drag to **duplicate that audio region**.

Audio Regions Commands ▾ Region Info										
🔊	ID	Start	Name	Length	Gain	Fade In	Mode	Fade Out	Mode	Comment
	001	00:00:02:000	01 - September.aiff	00:01:37:890	+0.00	00:00:00:000	AUTO	00:00:43:284	AUTO	This is t...irst song
	002	00:00:56:605	01 - September	00:01:57:233	+0.00	00:00:43:284	MAN	00:00:28:622	AUTO	
	003	00:02:25:216	01 - September - 1	00:01:24:369	+0.00	00:00:28:622	AUTO	00:00:22:151	MAN	
	004	00:03:27:434	02 - Shutup.aiff	00:01:57:853	+0.00	00:00:22:151	AUTO	00:00:29:848	AUTO	
	005	00:04:55:439	03 - Seven.aiff	00:02:11:893	+0.00	00:00:29:848	MAN	00:00:19:726	MAN	
	006	00:06:47:606	04 - Lupestre.aiff	00:00:33:533	+0.00	00:00:19:726	MAN	00:00:03:003	AUTO	
	007	00:07:18:135	04 - Lupestre	00:00:39:750	+0.00	00:00:03:003	MAN	00:00:03:848	AUTO	
	008	00:07:54:037	04 - Lupestre - 1	00:01:12:388	+0.00	00:00:03:848	AUTO	00:00:00:000	AUTO	
	009	00:09:06:426	04 - Lupestre - 2	00:02:11:648	+0.00	00:00:00:000	AUTO	00:00:00:000	AUTO	

NOTE: it is also possible to **change the order of the columns of the table** by clicking and dragging the column header to left or right. It is possible to **resize each column width** by dragging its left or right header border as well.

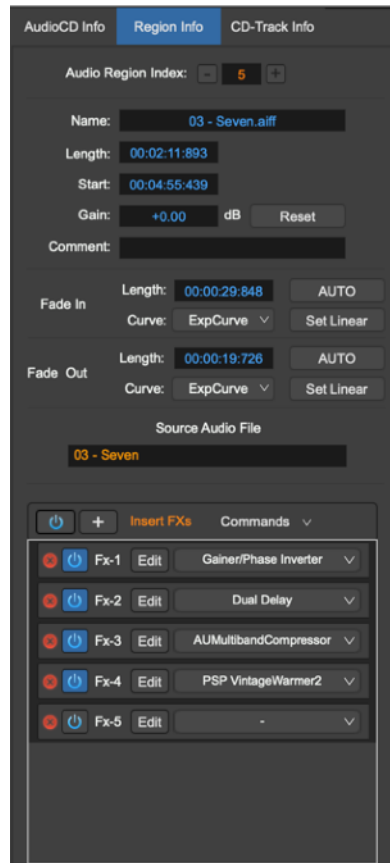
The Audio Regions table displays the following information about each audio region:

- The *Speaker* icon shows which region is currently playing.
- *Start* time of that audio region (expressed in the units used also by the time ruler)
- Audio region *Name*
- Audio region *Length* (expressed in same units also used by time ruler)
- Audio region *Gain* level (dB)
- *FadeIn* Length (expressed in same units also used by time ruler)
- FadeIn *Auto/Manual* mode (see the details about this later in this chapter)
- *FadeOut* Length (expressed in same units also used by time ruler)
- FadeOut *Auto/Manual* mode (see the details about this later in this chapter)
- *Comment*

The Audio Region Info view:

To show the Region Info view,

- Double-click on an Audio Region row of which you wish to know or edit info.
- Select the Audio Region, then click on the Region Info button on top of the Audio Regions table.
- Click on the “Info” button among the Tool buttons which are on the left part of the Transport Bar and Tool buttons in the upper part of the worksheet. Then, click on the Region Info tab.



The Info side panel, under the Region Info view tab, allows you to view and edit information about the currently selected region and its source audio file. Some of these fields are editable, some are not.

The + and - buttons which are on the upper section of the the Info side panel allow you to switch between the Audio Regions on the list. This is very useful to edit a particular parameter on an Audio Region and then the same parameter on the others.

To close the Region Info view, click again on the same button used to show it.

The Region Info view displays the following information:

- **Name:** it is the audio region name. It is an editable field, just double click on it and type the new name.
- **Length:** the audio region length (expressed in same units also used by time ruler). It is an editable field.
- **Start:** the audio region start expressed as offset from the AudioCDLayout start. It is an editable field, double click on it and type the new value. In case, the application automatically corrects the new value in the allowed range.
- **Gain:** the audio region Gain level, expressed in dB. It is an editable field, double click on it and type the new Gain. In case, the application automatically corrects the new value in the allowed range.

- **Gain Reset:** to reset the Gain to +0dB.
- **Comment:** it is the Comment text for that audio region. It is an editable field, double click on it and type the text.
- **Fade-In Length and Curve:** the Audio Region Fade-In time and its curve shape. To edit the value of the fade length, double click on it and type the new value. In case, the application automatically corrects the new value in the allowed range.
- **Fade-In Set Linear:** to reset the Fade-In shape to linear curve.
- **Fade-In Auto Mode:** to switch ON/OFF the auto mode for that Fade-In. More about the Auto Mode for cross-fades later in this chapter.
- **Fade-Out Length and Curve:** the audio region Fade-Out time and its curve shape. To edit the value of the fade length, double click on it and type the new value. In case, the application automatically corrects the new value in the allowed range.
- **Fade-Out Set Linear:** to reset the Fade-Out shape to linear curve.
- **Fade-Out Auto Mode:** switch ON/OFF the auto mode for that Fade-Out. More about the Auto Mode for cross-fades later in this chapter.
- **Audio File:** it is the name of the source audio file.

At the bottom of the Region Info view, there is a section to load, edit and manage to the AU plug-ins and/or internal effects on insert to that Audio Region only. These effects process the output of only that audio region.

This serial chain of Effects will be also rendered to file burning or exporting the AudioCD Layout, ie the application will process the audio region thru these effects when burning an audio CD-ROM or exporting a DDP image.

It is possible to add any number of Fx slots. Use the + button on top of the Insert Fx table to add a new empty slot. To remove a slot, click on the red close button on the slot to remove.

It is possible to load effects to choose among the high quality internal effects of the application, or among the built-in in MacOS Audio Unit effect plug-ins by Apple which are available for free, or among the commercial Audio Unit effects plug-in by third-parties manufacturers which are installed on MacOS.

Refer to the previous chapter about built-in Effect and Plug-in Fx slots for the complete description of the commands for using Fx slots, the preset management and for loading Fx.

Please refer to next chapters to know how to work with the Region list and how to add, remove, edit Regions on the AudioCDLayout.

The CD-Tracks Table and CD-Track Info view

The CD-Tracks table shows the CD-Tracks as they will appear on the audio CD-ROM. It shows information about each CD-Track, one for each row of the table.

Selecting an Audio Region on the Audio Regions Table, the corresponding CD-Track will be also selected on the CD-Tracks table.

CD Tracks Commands ▾ CD-Track Info										
⏮	ID	Pause		Start	Length	End	Title	CP	PE	ISRC
	004	00:00:00:000	AUTO	00:03:27:434	00:01:28:004	00:04:55:439	02 - Shutup.aiff	X		
	005	00:00:00:000	AUTO	00:04:55:439	00:01:45:237	00:06:40:677	03 - Seven.aiff	X		IT0324567890 Enjoy
	006	00:00:06:929	MAN	00:06:47:606	00:00:26:664	00:07:14:271	04 - Lupestre.aiff	X		
	007	00:00:03:864	MAN	00:07:18:135	00:00:30:313	00:07:48:449	04 - Lupestre	X		

NOTE: it is also possible to **change the order of the columns of the table** by clicking and dragging the column header on left or right. It is possible to **resize each column width** by dragging its left or right header border as well.

The CD-Tracks table displays the following information about each CD-Track:

- The *ID* is the index for that CD-Track.
- CD-Track *Pause* (expressed in same units also used by time ruler)
- CD-Track *Lock/Unlock* icon. Shows if it is possible to set the pause length (unlocked) or not (locked). See the details about this later in this chapter.
- CD-Track *Auto/Manual* mode. See the details about this later in this chapter.
- CD-Track *Start* (expressed in same units also used by time ruler). It is the offset from the audio CD-ROM start.
- CD-Track *Name*
- CD-Track *Length* (expressed in time or samples unit)
- CD-Track *CP* - *Copy Protection* flag ON/OFF (it is and practically obsolete flag on Redbook Standard)
- CD-Track *PE* - *Pre-Emphasis* flag ON/OFF (it is and practically obsolete flag on Redbook Standard)
- CD-Track *ISRC code*
- CD-Track *Message*

The Info side panel, under the CD-Track Info view tab, allows you to view and edit information about the currently selected CD-Track. Some of these fields are editable, some are not.

To show the CD-Track Info view:

- Double-click on a CD-Track row of which you wish to know or edit info.
- Select the CD-Track, then click on the CD-Track Info button on top of the CD-Tracks table.

- Click on the “Info” button among the Tool buttons which are on the left part of the Transport Bar and Tool buttons in the upper part of the worksheet. Then, click on the CD-Track Info tab.

The + and - buttons which are on the upper section of the the Info side panel allow you to switch between the CD-Tracks on the list. This is very useful to edit a particular parameter on a CD-Track and then the same parameter on the others.

To close the CD-Track Info view, click again on the same button used to show it.

The CD-Track Info view displays the following information:

- **Title:** it is the CD-Track title. It is an editable field, double click on it and type the new title.
- **Pause:** the CD-Track PreGap/Pause. It is an editable field, double click on it and enter the new value for the CD-Track Pause. **NOTE:** the pause in front of the first CD-Track is fixed to the Redbook Standard value of 2 seconds.
- **Pause Auto Mode:** switch ON/OFF the auto mode for that CD-Track Pause. More about the Auto Mode for setting the Pause length later in this chapter.
- **Pause Lock/Unlock:** Lock/Unlock the CD-Track Pause length. If locked, it is not possible to enter a new value of the CD-Track pause, and it is not possible to engage the Pause Auto Mode.

- **Start:** the CD-Track start position expressed as time or samples offset from the AudioCD Layout start. It is an editable field, double click on it and enter the new value. In case, the application automatically corrects the new value in the allowed range.
- **Length:** the CD-Track length expressed in the units used also by the time ruler. It is an editable field, double click on it and enter the new value. In case, the application automatically corrects the new value in the allowed range.
- **CP - Copy Protection:** switch ON/OFF the Copy Protection flag for that CD-Track. This info will be written on the audio CD-ROM during the CD Burning process. **NOTE:** this is a practically obsolete flag of the Redbook Standard. Most CD-Players do not take care of it.
- **PE - Pre Emphasis:** switch ON/OFF the Pre-Emphasis flag for that CD-Track. This info will be written on the audio CD-ROM during the CD Burning process. **NOTE:** this is a practically obsolete flag of the Redbook Standard. Most CD-Players do not take care of it.
- **ISRC:** it is the ISRC code of the CD-Track. It is an editable field, double click on it and enter the new value. The application checks if the new code has an acceptable format and if it fails it will show a warning dialog refusing the new code. If the ISRC code is not an empty string, it will be written on the audio CD-ROM during the CD Burning process.
- **CD-Text:** They are editable fields, click and enter the CD-Text strings for the current CD-Track, they will be written on audio CD-ROM during the CD Burning process.

Please read next chapters to know how to work with the AudioCD Layout Regions and CD-Tracks and how to add, remove, edit CD-Tracks.

The AudioCD Info view

Similarly to how described for Audio Regions and CD-Tracks Info, the AudioCD Info view is a subview of the Info side panel, under the AudioCD Info view tab. On the AudioCD Info view, the application allows you to enter also the **EAN/UPC** sub-code and **CD-Text** strings for the Audio CD-ROM.

To show the AudioCD Info view:

- Click on the AudioCD Info button on top of the AudioCD waveform view.
- Click on the “Info” button among the Tool buttons which are on the left part of the Transport Bar and Tool buttons in the upper part of the worksheet. Then, click on the AudioCD Info tab.

To close the AudioCD Info view, click again on the same button used to show it.

The CD-Track Info view displays the following information:

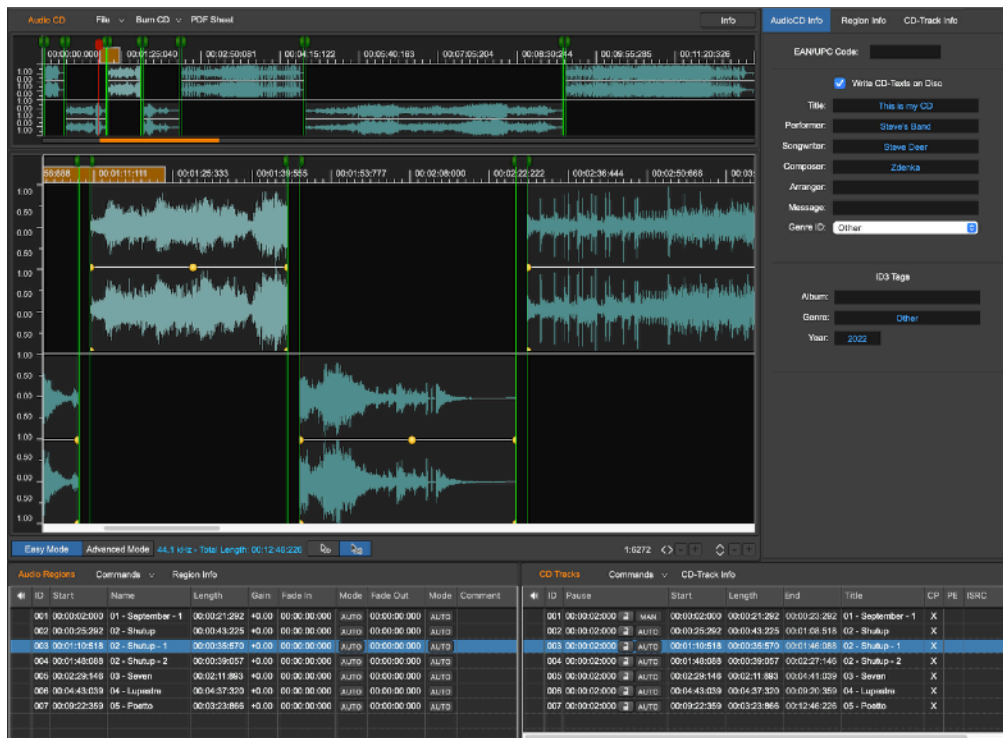
- **EAN/UPC Code:** this is the EAN/UPC sub-code for the audio CD-ROM. It should be a string of 12 or 13 numerical digits.

- **CD-Text:** They are editable fields, click and enter the CD-Text strings for the current CD-Track, they will be written on audio CD-ROM during the CD Burning process if the **Write CD-Texts on Disc** flag is ON.

AudioCD Info	Region Info	CD-Track Info
EAN/UPC Code: 900123456789		
<input checked="" type="checkbox"/> Write CD-Texts on Disc		
Title:	This is my CD	
Performer:	Steve's Band	
Songwriter:	Steve Deer	
Composer:	Zdenka	
Arranger:	Nicola, Edoardo, Matteo	
Message:	This is a tutorial	
Genre ID:	Other	
ID3 Tags		
Album:	Songs from deep space	
Genre:	Other	
Year:	2022	

Working with the AudioCD Layout

Audio files - or regions of audio files - and CD tracks are the elements which constitute your audio CD. The application creates one Audio Region and one CD-Track automatically when an audio file is added to the AudioCDLayout.



To describe how the AudioCDLayout works, let's introduce the following definitions:

- **Audio files:** audio files are the source material for the audio regions used by the AudioCDLayout.
- **Audio Regions:** adding an audio file to a AudioCDLayout, the application creates an *audio region* automatically. This *audio region* can address the entire source audio file or any section of the audio file. Editing an *audio region* on the waveform view or in the Audio Regions table of the AudioCDLayout, the changes concern only the *audio region*, not the source audio file.
- **CD-Tracks:** adding an audio file to a AudioCD Layout, the application, in correspondence to the new Audio Region, automatically creates also a CD-Track. CD-Tracks are the "tracks" which a CD-Player will show to the user selecting a track number on its display or pressing the forward/backward buttons when playing the audio CD-ROM.

NOTE: the application allows an Advanced Mode to work with the AudioCDLayout. In Advanced Mode, a CD-Track can include several Audio Regions, or several CD-Tracks can play sections of the same Audio Region as well. In other words, it's possible to combine several audio files into one CD-Track, or create several CD-Tracks which use only one audio file (very useful creating Audio CD-ROMs from a live recording).

Easy and Advanced Modes

There are two operational Modes to work on the AudioCDLayout: the Easy and the Advanced mode. The difference between these two modes is the allowed relationship between Audio Regions and CD-Tracks.

AudioCD Layout EASY Mode

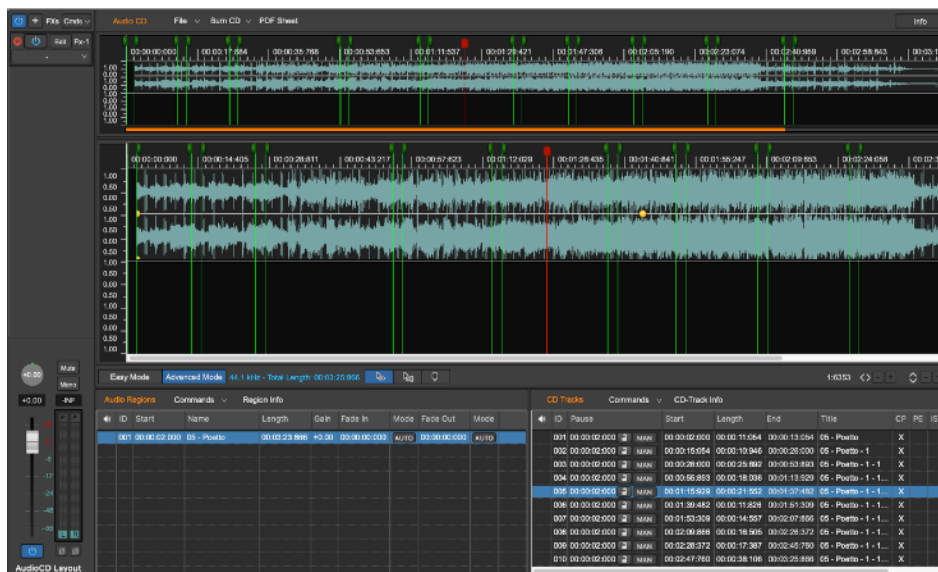
In the **EASY MODE**, the relationship between audio regions and CD-Tracks is fixed to one-to-one (1:1). This means that it is possible to have only the configuration where to one Audio Region (or audio file) corresponds one CD-Track - which will be the track that a CD-Player shows playing that Audio Region (ie song on the audio CD-ROM).

In the Easy mode, clicking on an Audio Region waveform and dragging it, shifting it in time, the corresponding CD-Track shifts as well. And, clicking on a CD-Track start marker and dragging it, shifting it in time, the corresponding Audio Region will shift as well.

NOTE: in the Easy Mode, it is also possible to place several CD-Tracks on the same source audio file (useful to make audioCD ROMs from live recording) using the scissor mouse mode. Using the scissor, the application splits the source audio file (or Audio Region) into two Audio Regions, creating a new CD-Track at the beginning of the new second Audio Region. More about the mouse modes later in this chapter.

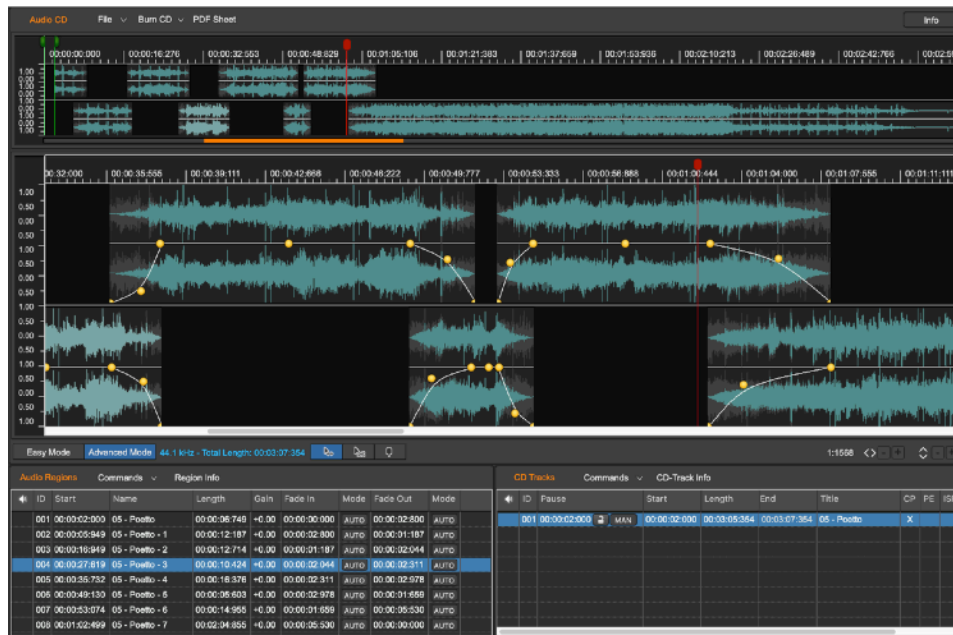
AudioCD Layout Advanced Mode

In the **ADVANCED MODE**, the relationship between Audio Regions and CD-Tracks is free, there is not a fixed relationship between the number of Audio Regions and CD-Tracks, which can be different (n:m). This means that it is possible to have configurations where several CD-Tracks markers are placed on only one Audio Region (or audio file), or where a single CD-Track extends over several audio regions.



In the figure above, as an example, there is only 1 source audio file (or audio region) on which there are several CD-Tracks markers.

In the figure below, as another example, therein only 1 CD-Track which will play several audio files (or Audio Regions):



In this case, clicking on an Audio Region waveform and dragging it, shifting it in time, the corresponding CD-Track shifts as well, as it happens on Easy Mode, too. BUT, clicking on a CD-Track start marker and dragging it to shift it in time, the underneath Audio Region does NOT shift accordingly. This allows complex configurations where it is possible to place CD-Track start markers freely, without the restriction to be always at the beginning of the underneath Audio Regions, as it always is in Easy Mode.

Please note that it is highly recommended to step from the Easy to the Advanced Mode only if it is STRICTLY necessary to place CD-Track start markers freely, in positions which are different from the beginning of an Audio Region or audio file start. In most cases the Easy mode is sufficient, and guarantees a clear, easy and linked 1:1 correspondence between Audio Regions and CD-Tracks. In the Easy Mode, the application adjusts CD-Track start positions accordingly to the underneath Audio Regions automatically. In Advanced Mode, this correspondence can be broken and, if it is not due an intentional action, it may bring to unwanted results.

NOTE: stepping from Easy Mode to Advanced Mode, an additional mouse mode is possible, the CD-Track marker mouse mode. In this additional mode it is possible to click on the AudioCD Layout waveform view to add CD-Track start markers freely over Audio Regions, without any restriction on their positions or number. More about the mouse modes later in this chapter.

NOTE: switching back from Advanced Mode to Easy mode, it may happen that the current AudioCDLayout is not compliant to the restrictions of the Easy Mode. As an example, it happens when there are several CD-Tracks belonging to the same Audio Region. In these cases, the application warns you and adjusts the current AudioCDLayout moving, removing or adding CDTrack start markers to be compliant with the Easy Mode. If the result is not acceptable, it is possible to undo the operation to return to the Advanced Mode and to the AudioCD Layout as it was just before to switch to the Easy Mode.

Working with AudioCD Layout Regions

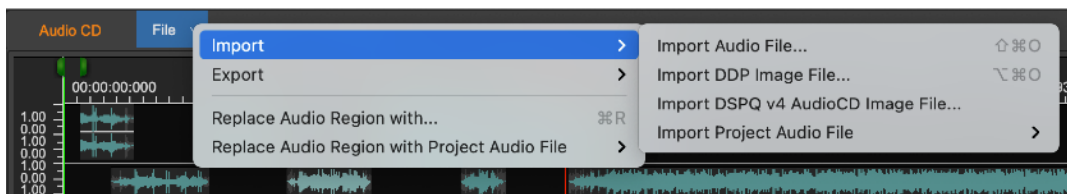
It is possible to copy, reorder, trim, split, adjust the gain curve shape of each Audio Region. It is also possible to play all, or any part, of the AudioCDLayout to immediately hear the results of the changes made.

Adding an audio file or Audio Region to the AudioCD Layout

- **From the Document Manager table:** drag&drop a title of an audio file from the Document Manager table over the waveform view area of the AudioCDLayout. In this case, the application uses all the source audio file for adding the new Audio Region on the Audio Regions table. The application adds a new CD-Track on the CD-Tracks table and a new waveform on the AudioCDLayout waveform view area as well.
- **Directly from the MacOS finder:** drag&drop one or more audio files from the MacOS finder over the AudioCDLayout row on the Document Manager table or on the AudioCDLayout waveform view of the AudioCDLayout. In this case, the application uses all the source audio file for adding the new Audio Region on the Audio Regions table. The application adds a new CD-Track on the CD-Tracks table and a new waveform on the AudioCD waveform view area as well.
- **By Menu Commands:**

A) menu commands on the AudioCDLayout:

- click on the File button on top of the AudioCDLayout waveform view, the following menu appears:

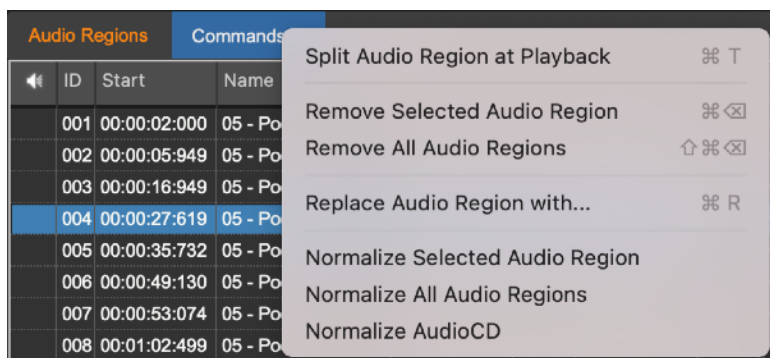


- **Import Audio File... (or ⌘O):** the application shows a file browser for choosing one or more audio files from the MacOS file system. Then, the application uses these audio files to create new Audio Regions on the AudioCDLayout table and, for each new Audio Region, one CD-Track on the CD-Tracks table and a new waveform on the AudioCDLayout waveform view.
- **Import DDP Image File... (or ⌘O):** the application shows a file browser to locate on the MacOS file system the folder containing the DDP files to import. Just navigate to locate the folder, the application will check the integrity of the files and will create a new AudioCDLayout accordingly to what saved on DDP files.
- **Import DSPQ v4 AudioCD image File...:** use this command to import an audio CD-ROM image file saved by version 4.x of DSP-Quattro. The application shows a file browser to locate on the MacOS file system the image file to import. Then, it will create a new AudioCDLayout accordingly to what saved.

- **Import Project Audio File:** in correspondence of this menu item the application shows a sub menu where it lists all the audio file loaded into the current Project. Selecting one of these audio files, the application will create a new Audio Region on the AudioCDLayout using all the source audio file. It adds a new CD-Track on the CD-Tracks table and a new waveform on the AudioCDLayout waveform view as well.

NOTE: All the audio files loaded on the AudioCDLayout must have the same sample rate.

Removing an Audio Region from the AudioCD Layout:



To remove an audio region from the AudioCDLayout, first select it on the Audio Regions list on the Audio Regions table (or click on its waveform on the AudioCDLayout waveform view), then click on the Commands button on top of the Audio Regions table and use the menu command **Remove Selected Audio Region** (or press ⌘ + backspace).

If you need to clear the AudioCDLayout, use the menu command **Remove All Regions** (or press ⇧ ⌘ + backspace).

Changing the order or duplicate an Audio Region on the AudioCDLayout:

Selecting an Audio Region on the Audio Regions table, the application selects the same region on the AudioCDLayout waveform view.

To change the order of audio regions, use the Audio Regions table. First select the Audio Region on the Audio Regions table or on the AudioCDLayout waveform view, then click the row on the table - except for the speaker column - and drag the row up or down on the Audio Regions table up to reach the destination row.

NOTE: It is also possible *to duplicate the audio region*, just keeping the alt key pressed when releasing the mouse button on the destination row.

NOTE: The application will reset any cross-fade between the Audio Region to re-order and and previous and next Audio Regions, if any.

The AudioCD Layout Mouse Modes

In the EASY mode, at the bottom of the AudioCDLayout waveform view, there are two buttons to set the mouse modes.



- **Shifter Mode** (the default mouse mode, the left button): when the mouse pointer is in Shifter Mode, clicking and dragging the waveform of an Audio Region on the AudioCDLayout waveform view, that audio region shifts back and forth on the time line accordingly, and the CD-Tracks and Audio Regions which are after that Audio Region will also shift.
- **Scissor Mode** (the right button in EASY Mode): when the mouse pointer is in Scissor Mode, clicking the waveform of an audio region on the AudioCDLayout waveform view, the application splits that Audio Region into two Audio Regions. The application also adds a CD-Track marker at the start of the new Audio Region, which is also the split point.

NOTE: it is possible to switch temporary between shifter and scissor mouse modes pressing the **ALT key** before to click with the mouse on a certain position of the waveform of an Audio Region. Releasing the **ALT key** returns to the shifter mouse mode.

In **ADVANCED** mode, there is one more option:



- **CD-Track Start Marker Mode** (the right button, available only in ADVANCED Mode): when the mouse pointer is in CD-Track Start Marker Mode, clicking on the waveform of an Audio Region on the AudioCDLayout waveform view, the application adds a CD-Track start marker on that position, without splitting the underneath Audio Region. The application also sets the preGap of the new CD-Track to the default value (it is possible to set it on Preferences). If for any reason the operation is not possible (as an example, it is not possible to place a CD-Track marker on a cross-fade between Audio Regions), the application shows a warning.

Editing the gain envelope of an Audio Region

There are two ways to edit the parameters of an Audio Region of the AudioCDLayout:

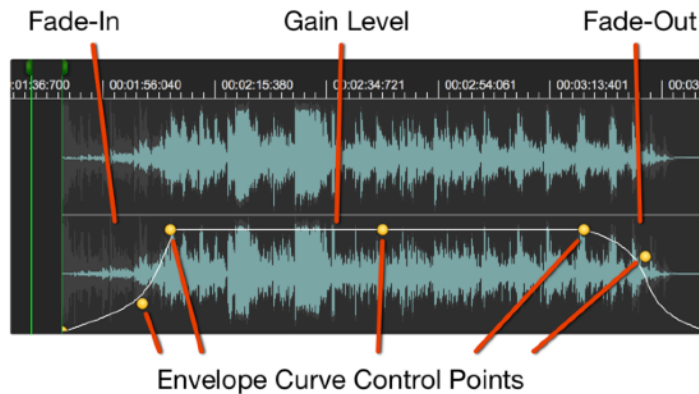
- **Numerically**, using the Audio Region Info view
- **Graphically**, using the AudioCDLayout waveform view area.

As described in previous chapters, adding an audio file to a AudioCDLayout, the application automatically creates an Audio Region. The application shows this new audio region as a new row on the Audio Regions table and as a new graphical waveform item on the AudioCDLayout waveform view area.

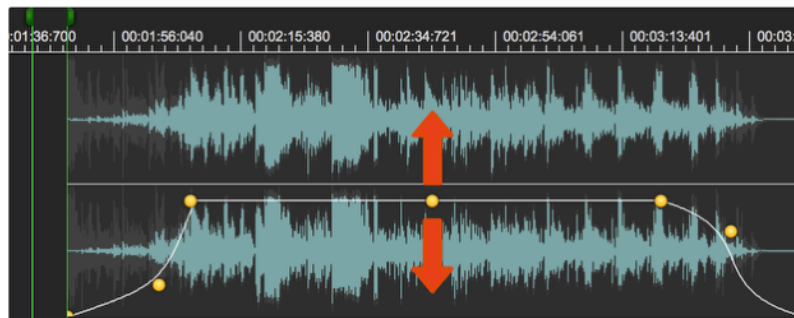
To edit an Audio Region numerically, use the Region Info button on top of the Audio Regions table to open the Audio Region Info side panel as described in the previous chapter about the Audio Regions table and Audio Region Info view.

To edit an Audio Region graphically, use the Audio Region waveform on the AudioCDLayout waveform view:

- *Editing the gain value of an Audio Region*



To set the gain level of an Audio Region, click and drag up or down the Gain level control point of the Audio Region envelope curve:

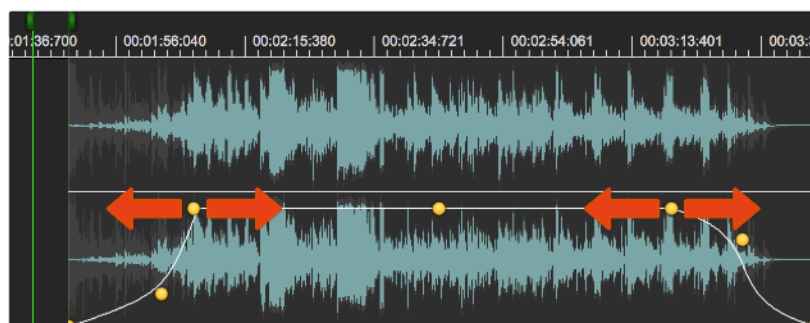


The Audio Regions table updates the Gain dB value of that Audio Region in real time. The application updates in real time also the Gain value on the Audio Region Info view as well.

NOTE: editing stereo audio files, Gain envelope curve and control points for the left and right channels are linked. Editing the envelope curve or a control point reflects in Gain changes for both channels.

- Editing the Fade-In or Fade-Out length of an Audio Region

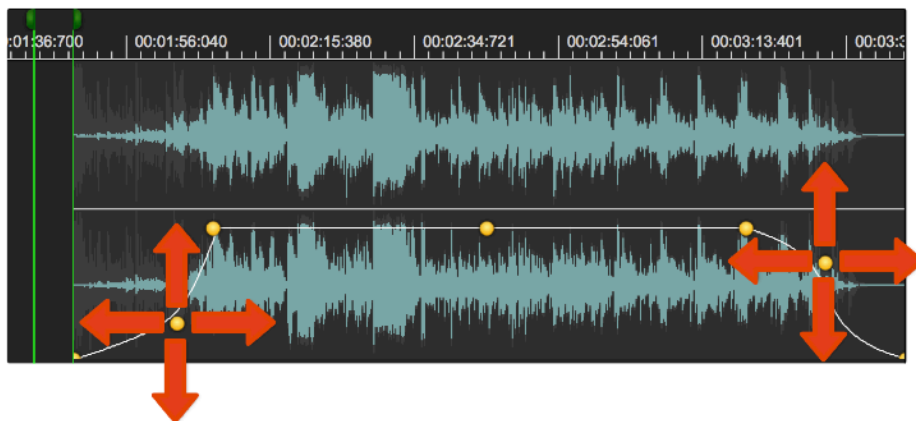
To set the fade-in or fade-out length of an audio region, click and drag left or right the Fade-In or Fade-Out length control points of the audio region envelope curve (the control point on the left border of the audio region waveform sets the fade-in length, the one on the right border sets the fade-out length):



the application changes the Fade In/Out times accordingly. As expected, also the Audio Regions table and the Audio Region Info view update the Fade In/Out values in real time.

- Editing the shape of the Fade-In or Fade-Out curve of an audio region

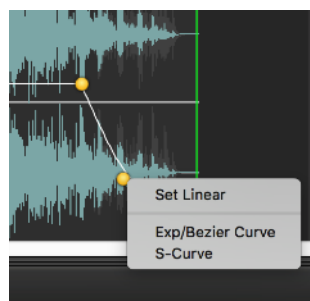
To change the shape of the fade-in or fade-out curve of an audio region, click and drag left or right the Fade-In or Fade-Out shape control points of the audio region envelope curve (the control point on the left border of the audio region waveform sets the shape of the fade-in curve, the one on the right border sets the shape of the fade-out curve):



the application allows two different types of shapes for the Fade-In/Out curve:

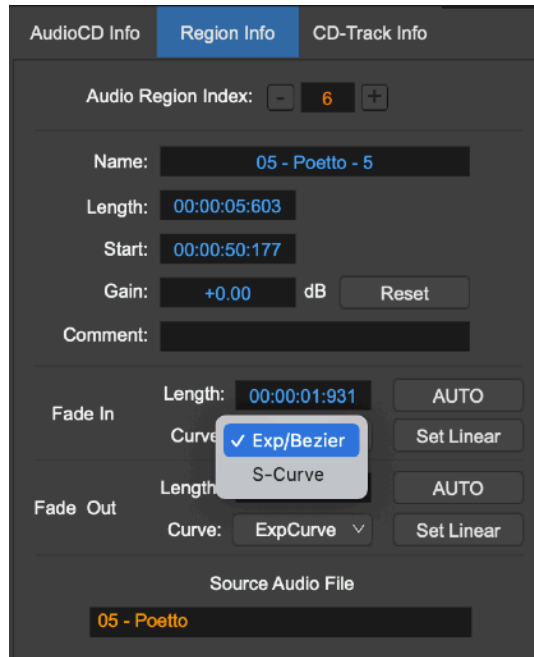
- **Exponential/Bezier** type: in this case the shape control point can move on all directions, setting all the shapes ranging from logarithmic, linear, exponential.
- **S-Curve** type: in this case the shape control point can move only up or down, the shape is convex, linear or concave according to the vertical position of the shape control point.

To set the type of the shape, right-mouse click on the shape control point, the application shows a popup menu with the command:



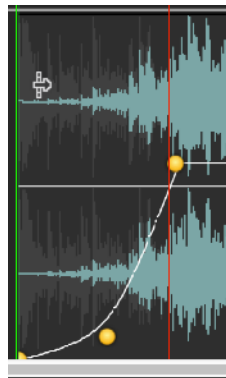
It is also possible to edit the shape clicking on the Curve button on the Audio Region Info view, the application shows a popup menu with the two possible options

NOTE: the “Set Linear” command on the popup menu of the shape control point or button on the Audio Region Info view, sets the shape curve to linear.



Trimming the start and end points of an audio region

If the AudioCDLayout is in Shifter Mouse Mode, placing the mouse pointer near to the left or right borders of an Audio Region waveform, after a few seconds, it changes its shape, becoming the tool for trimming:



Then, clicking and dragging it in the direction of the middle of the Audio Region waveform, the application modifies the Audio Region start position (trimming the Audio Region waveform left border) or Audio Region end position (trimming the Audio Region waveform right border) accordingly to the right or left movements of the mouse.

All the CD-Tracks and Audio Regions which are after that Audio Region move accordingly to the change of the Audio Region length.

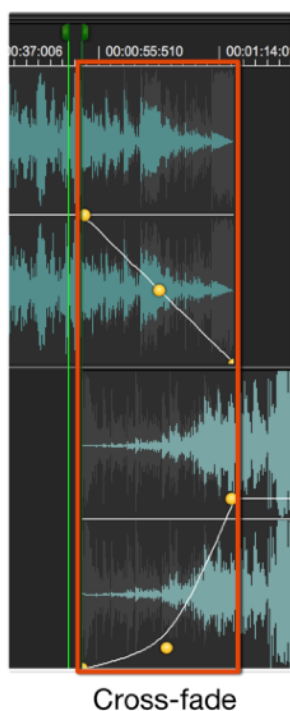
The AUTO MODE for Audio Region Fade-In/Out

On the Audio Regions table, after the Fade-In and Fade-Out columns, there are the MODE columns, respectively the Fade-In MODE and Fade-Out MODE:

Audio Regions										
Commands			Region Info							
🔊	ID	Start	Name	Length	Gain	Fade In	Mode	Fade Out	Mode	C
	001	00:00:02:000	05 - Poetto	00:00:06:749	+0.00	00:00:00:000	AUTO	00:00:02:800	AUTO	
	002	00:00:05:949	05 - Poetto - 1	00:00:12:187	+0.00	00:00:02:800	AUTO	00:00:01:187	MAN	
	003	00:00:16:949	05 - Poetto - 2	00:00:12:714	+0.00	00:00:01:187	MAN	00:00:02:044	AUTO	
	004	00:00:27:649	05 - Poetto - 3	00:00:10:434	+0.00	00:00:02:044	AUTO	00:00:03:244	AUTO	

The Fade MODE sets the rule for changing the cross-fade between two Audio Regions when one of them shifts and overlaps the other one.

If the AudioCDLayout is in Shifter Mouse Mode, clicking on an Audio Region waveform and dragging the mouse to the left, the application shifts that Audio Region back along the time x-axis. If the Audio Region begins to overlap the previous one, then there will be a cross-fade region.



Then, for what concerns the Audio Region which is shifting backward in time, if:

- **Fade-In Auto MODE is ON:** the application automatically sets the Fade-In length to the length of the overlapping section.
- **Fade-In Auto MODE is OFF:** shifting the audio region to overlap the previous one will not affect the Fade-In length previously set.

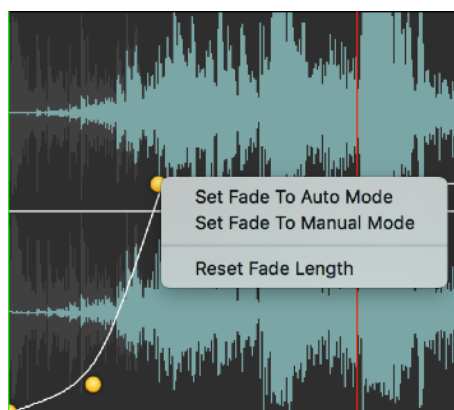
At the same time, considering the previous audio region which stays on its position:

- **Fade-Out Auto MODE is ON:** the application automatically sets the Fade-Out length to the length of the overlapping section.
- **Fade-Out Auto MODE is OFF:** the audio region Fade-Out length does not change.

By default, the application turns ON the Fade-In and Fade-Out Auto MODES when creating Audio Regions on the AudioCD Layout.

To Turn ON/OFF the Auto MODE for the Fade-In or Fade-Out of a certain Audio Region, click on the AUTO/MAN button on the Audio Regions table, or on the AUTO/MAN button on the Audio Region Info view, in correspondence to that Audio Region.

It is also possible to Turn ON/OFF the Audio MODE by clicking on the Fade-In or Fade-Out control points with the right mouse button, In this case, the application shows the following a popup menu:



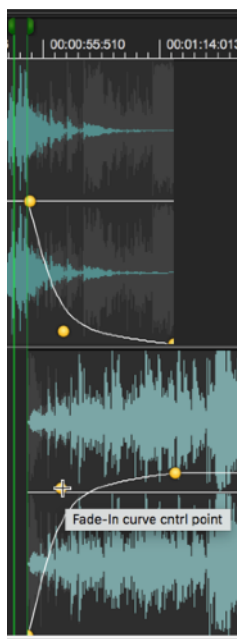
NOTE: dragging the Fade-In or Fade-Out control points of the Audio Region envelope curve, as soon as the fade-in or fade-out length changes (without shifting the underlying Audio Region), the corresponding Fade-In or Fade-Out Fade MODE automatically switches to OFF.

The AUTO mode is a very powerful tool for doing cross-fades. Having the Auto Modes turned ON, the application automatically sets the cross-fades between audio regions, and the resulting AudioCDLayout will play smoothly when two audio regions overlap. If necessary, turning OFF Auto modes, it is always possible to set the lengths of fade-in and fade-out independently to better meet the specific needs, of course.

Setting Equal Power curves for cross-fades between audio regions

By default, each fade-in/out curve slope is independent from the others, even in the case of overlapping cross-fades. There is an option to make these linked, the **EQUAL POWER curve slope Cross-fade mode**.

If the Cross-fade AUTO mode is ON, **keeping the SHIFT key** pressed while clicking and dragging the fade-in or fade-out shape control to set the shape of one the fade curves, then also the other fade curve follows such that the sum of the two curves remains constant for each value of the time X-Axis in the overlapping region (equal power).



Working with CD-Tracks:

By default, the application creates a CD-Track for each Audio Region added to the AudioCDLayout. In ADVANCED Mode, it is also possible to combine several Audio Regions into one CD-Track, or to create several CD-Tracks which uses only one Audio Region.

CD-Tracks are made of two sub-markers:

- The **CD-Track PreGap or Pause marker**, which is connected to the CD-Track start marker.
- The **CD-Track start marker**

To create a new CD-Track marker:

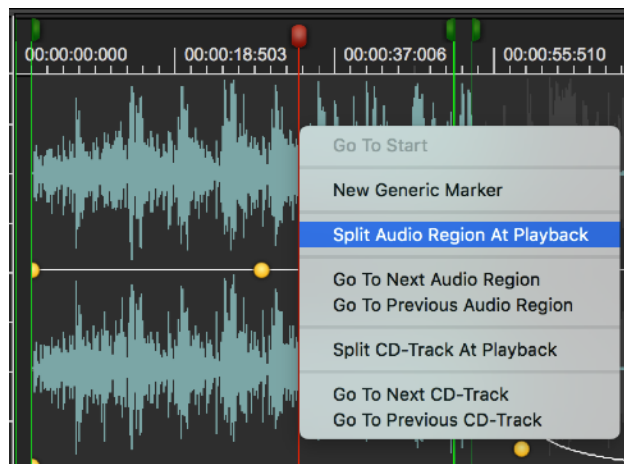
As already described, adding an audio file or an Audio Region to the AudioCDLayout, the application automatically creates also a CD-Track.

There are two ways to add a CD-Track on an existing audio region:

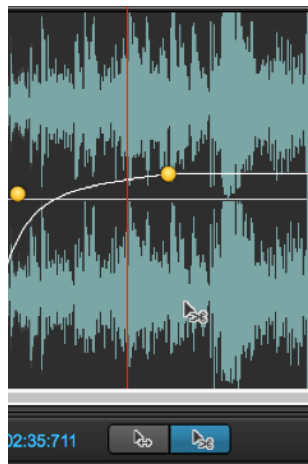
1. **Splitting an Audio Region:** it is possible to split an Audio Region into two Audio Regions. The application will also create a new CD-Track at split point, where the new second Audio Region starts. All other Audio Regions and CD-Tracks remain unaffected.

To split an Audio Region, first place the playback cursor on the wanted position, then

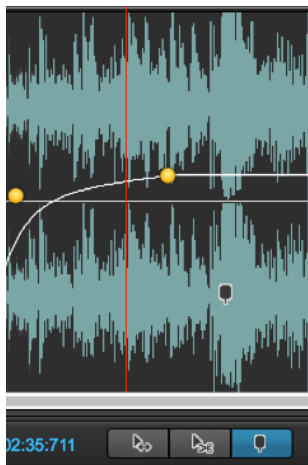
- use the menu command **Split Audio Region at Playback (or ⌘D)** on the popup menu of the Command button on top of the Audio Regions table
- The same command is available clicking on the playback cursor with the right mouse button



- Step to the **Audio Region Scissor Mouse Mode**. In this mode, clicking on an audio region waveform, the application will split that Audio Region in two Audio Regions in correspondence of the mouse pointer.

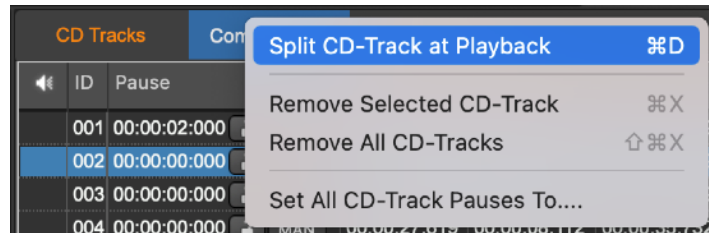


2. **Splitting the CD-Track without splitting the Audio Region (available only in ADVANCED MODE):** in Advanced mode, it is possible to split a CD-Track without splitting the underlying Audio Region.

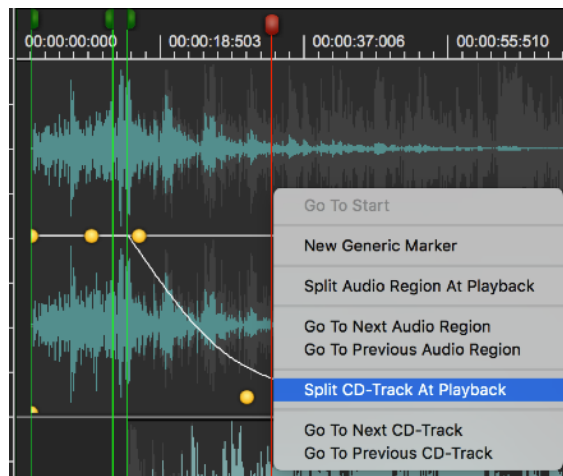


To do it:

- Step to the **CD-Track Scissor Mouse Mode**: in this mode, clicking on an audio region waveform, the application will split the CD-Track in two CD-Tracks on that position, adding a CD-Track start marker. The underlying and the other audio regions and CD-Tracks will remain unaffected.
- use the menu command **Split Audio Region at Playback (or ⌘D)** from the popup menu pressing the Command button on top of the CD-Tracks table



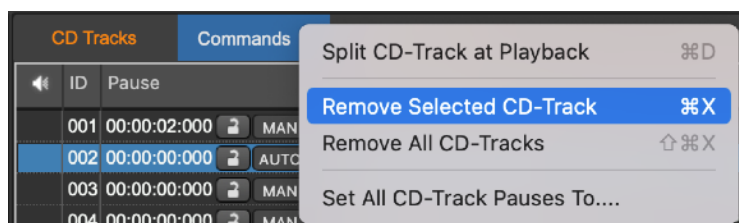
- The same command is available clicking on the playback cursor with the right mouse button



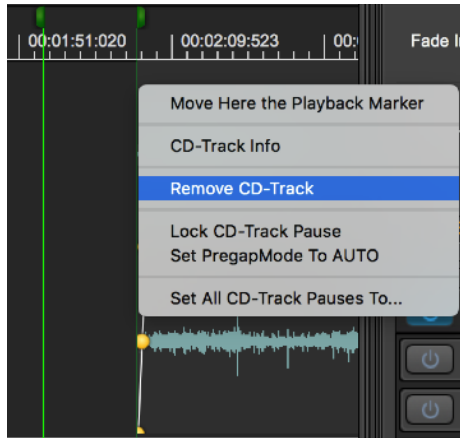
To remove a CD-Track marker:

In **EASY MODE** it is not possible to remove a CD-Track marker without removing the underlying Audio Region. In this case, just use the command to remove the underlying Audio Region on top of the Audio Regions table, the application automatically removes also the corresponding CD-Track marker.

In **ADVANCED MODE**, first select on the CD-Tracks table the CD-Track row which must be removed, then:



- use the menu command **Remove Selected CD-Track (or ⌘X)** on the popup menu of the Command button on top of the CD-Tracks table
- The same command is available clicking on the CD-Track preGap or start markers with the right mouse button:



NOTE: in the command popup menu there is also a command to **Remove All CD-Tracks (or ⇧⌘X)**

NOTE: if there at least one Audio Region on the AudioCDLayout, at least one CD-Track must also exist. The application does not allow to delete the last CD-Track of a AudioCDLayout which is not empty.

NOTE: there is an internal mechanism to link a CD-Track to the underlying Region. In other words, also in Advanced MODE, CD-Tracks belong to the underlying Audio Region. Removing an Audio Region from the AudioCDLayout, also all the CD-Tracks belonging to that Audio Region will be removed. More about this mechanism later in this chapter.

Editing a CD-Track:

There are two ways to edit the parameters of a CD-Track:

- **Numerically**, using the CD-Track Info view.
- **Graphically**, using the AudioCDLayout waveform view.

Creating a CD-Track, the application automatically shows it as a new row on the CD-Tracks table and as a new CD-Track green marker on the AudioCDLayout waveform view.

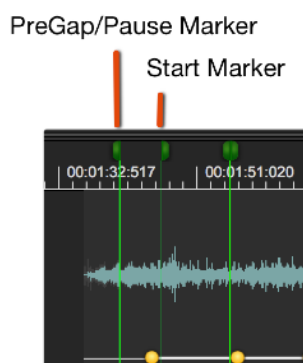
To edit an CD-Track numerically, use the CD-Track Info button on top of the CD-Track table to open the CD-Track Info view as described in the previous chapter about the CD-Tracks table and CD-Track Info view.

To edit a CD-Track graphically, use the CD-Track markers on the AudioCDLayout waveform view.

As already introduced, the head of a CD-Track marker is composed by two sub-markers, the CD-Track PreGap/Pause and Start sub-markers:

- The **CD-Track start marker**: the right half of the CD-Track marker.

- The **CD-Track PreGap or Pause marker**, the left half of the CD-Track marker



- Moving CD-Track Start Markers:

clicking on the right side of the CD-Track marker head and shifting it on left or right on the time ruler, the application sets the CD-Track Start position. In the case of EASY Mode, when CD-Track lies exactly on the start position of an Audio Region, the underlying Audio Region shifts accordingly.

NOTE: it is not possible to step over the previous or next CD-Track markers, because CD-Tracks are always ordered chronologically. If it is necessary to change the CD-Tracks order, change the order of the Audio Regions which own those CD-Tracks markers, the application automatically changes also the CD-Tracks accordingly.

- Setting CD-Track Pause:

It is not possible to change the preGap/pause of a CD-Track if the Pause length value is locked (if the red lock button on the CD-Tracks table is ON). Unlock the CD-Track Pause to edit its value numerically or graphically.

Clicking on the left side of the CD-Track marker head and shifting it on left or right on the time ruler, the application sets the CD-Track Pause length.

NOTE: it is not possible to step over the previous CD-Track markers, CD-Tracks are always ordered chronologically.

NOTE: Moving the CD-Track start marker, the Pause length remains constant except in the special case when a CD-Track Start marker lies exactly at start of the underlying Audio Region AND the CD-Track Auto MODE is ON. More about CD-Track Auto MODE later in this chapter.

The connection between a CD-Track Marker and underlying Audio Region:

A CD-Track always belongs to a certain Audio Region. Shifting or removing that always shifts or removes also all CD-Track markers which it owns.

In **EASY Mode**, there is only the case in which an Audio Region owns one and only one CD-Track. It is not possible to have a different situation.

In **ADVANCED Mode**, where it is possible to have complex configurations, it is very easy to know which Audio Region owns a certain CD-Track marker: given a CD-Track marker, it is the Audio Region which is under that CD-

Track Start marker or, if the marker is over a region where that are two overlapping Audio Regions, the owner is the Audio Region which starts after the other one. Let's see some examples:

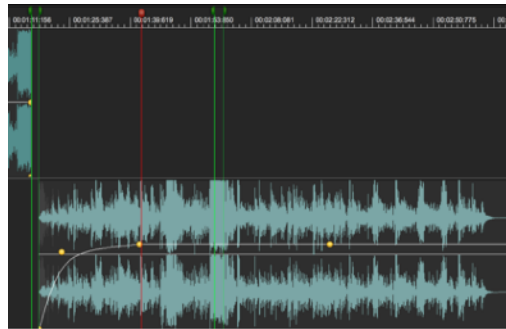
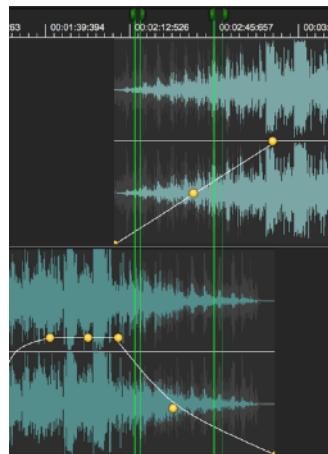


Fig. A: both CD-Tracks belong to the underlying audio region.



The fig. B above shows a case in which there is a CD-Track starting on the overlap zone between Audio Regions. This CD-Track belongs to the second Audio Region (the Region in the upper part of the AudioCDLayout waveform view), because the upper Audio Region starts after the other Audio Region involved in the overlap.

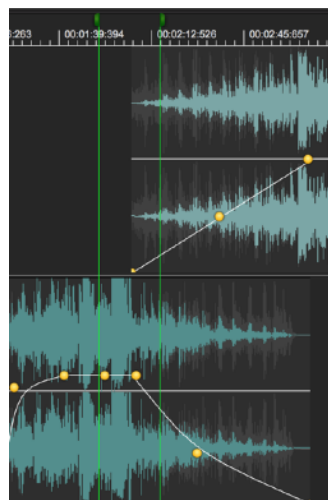


Fig. C: the CD-Track belongs to the second audio region.

Fig. C shows a case in which there is a CD-Track starting on the overlap zone between two audio regions, and the preGap extends over the first audio region. The CD-Track, both start and preGap markers, belongs to the second audio region, where the CD-Track starts.

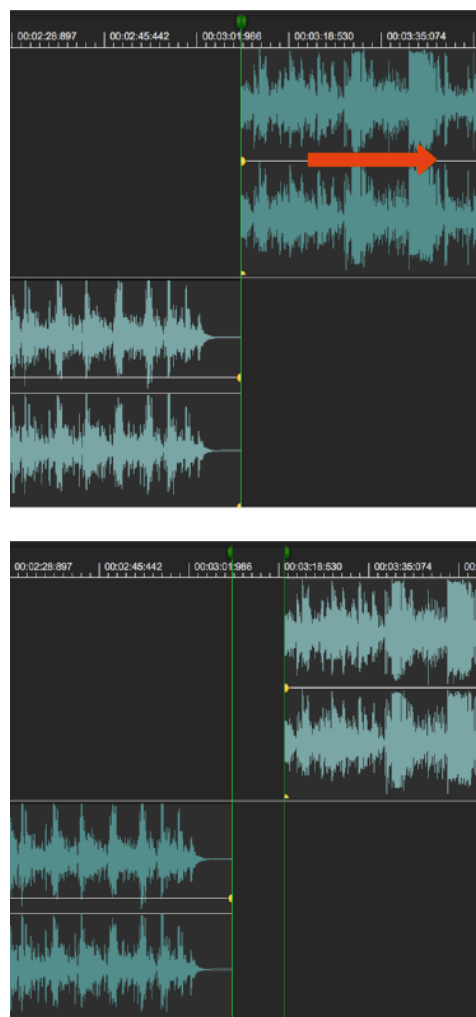
The CD-Tracks AUTO MODE

As already introduced, it is possible to shift an Audio Region forward or backward along the time axis. By default, CD-Tracks owned by the shifted Audio Region (ie positioned later on the time line) shift accordingly. Also all next Audio Regions and CD-Tracks shift as well.

Now, what happens to CD-Track markers if, shifting an Audio Region, the AudioCDLayout creates a gap with the previous Audio Region?

Usually nothing very special, EXCEPT when there is a CD-Track Start which is positioned exactly over the beginning of the underlying Audio Region (this is always the case in EASY mode). In this case:

- if the **CD-Track Auto MODE is ON**, the application sets the CD-Track Pause length to be equal to the gap between the two Audio Regions (ie the preGap will follow the gap between the Audio Regions).
- if the **CD-Track Auto MODE is OFF**, the Pause length remains constant.



In the figures above, if the CD-Track Auto MODE is ON, CD-Track Pause follows to the gap between Audio Regions

By default, CD-Track Auto MODE of newly created CD-Tracks is turned ON if the CD-Track start coincides with the Audio Region start.

To Turn ON/OFF the CD-Track Auto MODE click on the AUTO/MAN button on the Pause column on the CD-Tracks table, correspondingly to the row of the CD-Track to edit. The value toggles, ie it turns ON if it is OFF or it turns OFF if it is ON.

CD Tracks										
Commands			CD-Track Info							
⏮	ID	Pause		Start	Length	End	Title	CP	PE	ISRC
	001	00:00:02:000	MAN	00:00:02:000	00:00:03:949	00:00:05:949	05 - Poetto	X		
	002	00:00:00:000	AUTO	00:00:05:949	00:00:10:999	00:00:16:949	05 - Poetto	X		
	003	00:00:00:000	MAN	00:00:16:949	00:00:10:670	00:00:27:619	05 - Poetto	X		
	004	00:00:00:000	AUTO	00:00:27:619	00:00:08:112	00:00:35:732	05 - Poetto	X		

NOTE: in ADVANCED Mode, dragging the CD-Track start marker away from the start of the underlying Audio Region, the application automatically turns OFF the CD-Track AUTO MODE.

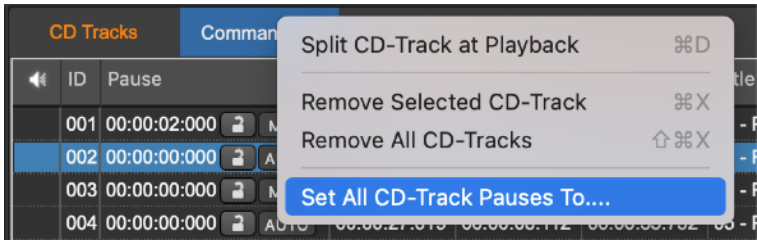
NOTE: the pause length cannot be locked if the CD-Track AUTO mode is ON. If in a certain moment the pause length is locked and the CD-Track AUTO mode is OFF, turning ON the CD-Track AUTO mode, the application automatically unlocks the pause length.

Turning ON the CD-Track Auto MODE, the application moves the corresponding CD-Track Start marker to the start of the underlying Audio Region. If it is not possible due a conflict with the previous CD-Track, it shows a warning dialog.

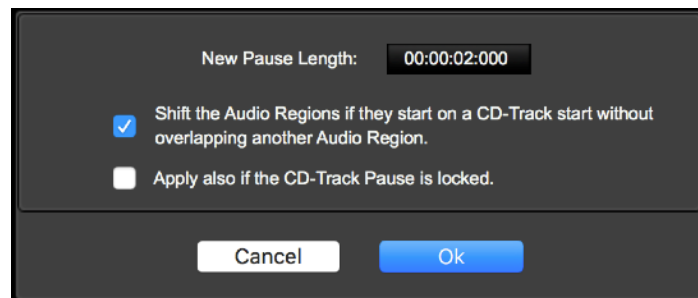
The AUTO mode is a very powerful tool making audio CD-ROM in EASY Mode. In just a few steps it is possible to drag the audio files on the AudioCDLayout view, then by default the application automatically creates also the CD-Tracks, one for each audio file. Shifting audio regions in time automatically moves CD-Tracks, too.

Setting all CD-Tracks Pauses to...

A very common situation is when it is necessary to set all CD-Track preGaps to the same value, adjusting the underlying Audio Regions accordingly. To do it, the application offers a very useful menu command, **Set All CD-Track Pauses To..** , available from the Command button on top of the CD-Track table:



The following dialog appears:



Where:

- **New Pause Length:** it is the wanted value you wish for the preGaps of all the CD-Tracks
- **Shift the Audio Regions if they start on a CD-Track start without overlapping another audio region:** enable/disable this option.
- **Apply also if the CD-Track pause is locked:** to bypass the lock flag on the CD-Track preGap length, if enabled.

NOTE: the preGap in front of the first CD-Track is fixed to 2 secs according to the Redbook standard and cannot be changed.

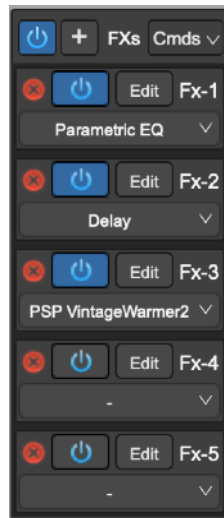
In the case in which there is a CD-Track Start on a cross-fade between Audio Regions, to avoid to reset cross-fades between them. the application does not shift these Audio Regions.

Cancel closes the dialog without modifying the AudioCDLayout; OK closes the dialog setting the preGaps to the wanted value.

Using Audio Unit and Internal Plug-in Effects on the AudioCD Layout

The application allows to configure a serial chain of effects on the output of the AudioCD Layout or, if needed, independently on each Audio Region of the AudioCDLayout.

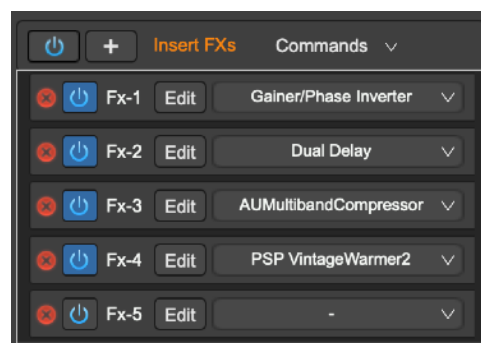
The effects on insert on the output of the AudioCDLayout are available on top of the AudioCDLayout Channel Strip, which is on the left of the AudioCDLayout view.



As already described earlier in this manual, these effects process the audio stream on output of the AudioCDLayout, ie all Audio Regions. In other words, the application applies the same serial chain of effects when it plays the different Audio Regions which are part of AudioCDLayout.

The application renders to file this serial chain of FX when it burns an Audio CD-ROM or exports the AudioCDLayout, ie the application processes the Audio Regions through these effects when it burns an audio CD-ROM or exports a DDP image.

If necessary, it is possible to load different effects for each Audio Region of the AudioCDLayout, using the Audio Region info view:



It is possible to load effects choosing them among the high quality internal effects of the application, or among the Audio Unit effect plug-ins by Apple always present on MacOS, or commercial Audio Unit plug-ins by third-party manufacturers, if installed on MacOS.

It is also possible to copy the chain of effects to duplicate it into other FX chain on insert to a different object.

WARNING: exactly as it happens when the application burns an Audio CD-ROM from the AudioCDLayout, all the functions to export the AudioCDLayout into a new file or group of audio files, process the AudioCD Layout using the effects on insert to each Audio Region and then the effects on insert to the AudioCDLayout Channel Strip.

Please refer to the previous chapter for the description of the insert FX interface and about how to load and manage plug-ins on insert.

Loading, Saving and Exporting the AudioCDLayout:

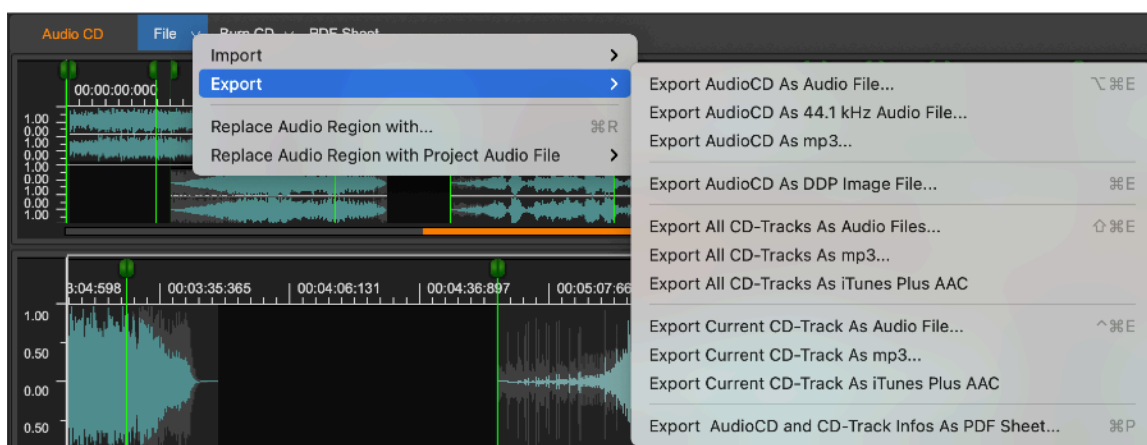
The AudioCDLayout is part of the Project Document. The application saves all the information of the current AudioCDLayout into the Project bundle, including all the files it needs to reload it in the future. Loading a Project document, the application restores the AudioCD Layout as well.

NOTE: it is important to know that to be able to rebuild again the current AudioCDLayout, the application also needs all Audio Unit plug-ins used on insert to Audio Regions and on channel strip of the AudioCDLayout as well. These plug-ins, if any, must be installed on MacOS when the application loads again the same Project. It is also valid loading the Project on a different Mac.

The application is also able to export off-line the AudioCDLayout rendering it into a new audio file or as audio CD-ROM image according to the DDP standard format.

Moreover, the application allows to create as AudioCDLayout importing the regions from an audio file, or folder with the audio CD-ROM image files compliant with the DDP standard.

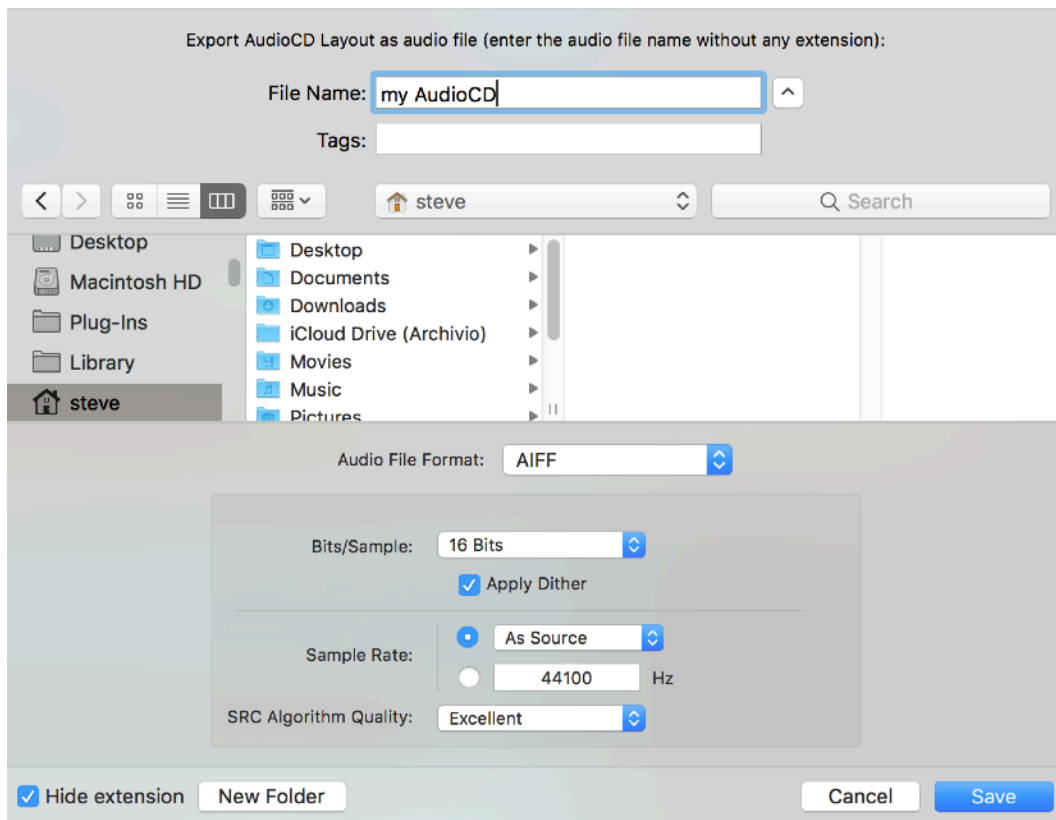
Please refer to the previous chapter titled “Adding an audio file or audio region on the AudioCDLayout” to know the details about the commands to import audio files and adding Audio Regions to the AudioCDLayout.



About exporting the AudioCDLayout, clicking on the File button on top of the AudioCDLayout waveform view, a popup menu will appear, where:

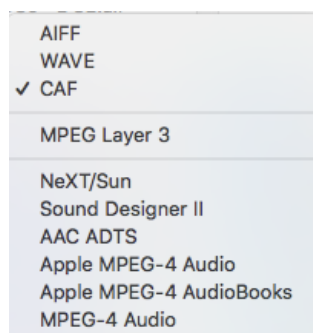
- **Export AudioCD As Audio File... (or ⌘⌘E):** the application exports the current AudioCDLayout rendering it into an audio file. Then, the

application shows a file browser to select the destination audio file, including several options.



Type the name for the audio file to create, without any extension (the application will take care to add the most suitable extension according to the chosen file format). Use the file browser to navigate to the destination folder, and the bottom section to set the destination audio file format:

- **Audio File Format:** several standard audio formats are available:



According to the chosen audio file format, the view which is on the bottom part changes.

The uncompressed PCM formats (AIFF, WAVE, CAF) need of these additional parameters:

- **Bits/Sample:** the application can save 8, 16, 24, 32 or 32 (floats) bits for each sample.

- **Apply Dither:** to turn On/Off the internal algorithm for dithering. It is highly recommended to set this option ON if and only if you are exporting the final audio CD-ROM master at 44.1 kHz/16 bits which does not require any other processing. NEVER apply dither if further processing is necessary.
- **Stereo/Mono:** to set if the destination audio file must be mono or stereo. In the case of mono, the application will mix the left and right channels on output from the AudioCD Layout.
- **Sample Rate:** to set the sample rate of the destination audio file.
- **SRC Algorithm Quality:** if the sample rate of the destination audio file is not the same as the audio files loaded in the AudioCDLayout, the application uses its internal Sample Rate Converter (SRC) to write the destination audio file. Four levels of quality of the advanced linear phase algorithm of the application are available, from "Fast" to "Excellent".
- **Export AudioCD As 44.1 kHz Audio File...:** as above but setting automatically the destination sample rate to 44.1 kHz, the audio CD-ROMs standard sample rate value.
- **Export AudioCD As .mp3...:** calls "Export AudioCD As Audio File..." setting the default audio file format to MPEG Layer 3.
- **Export AudioCD As DDP Image File... (or ⌘E):** the application exports the current AudioCDLayout rendering it into an audio CD-ROM image file according to the DDP 2 standard. The application asks for selecting a folder where to export all the files which are compliant to DDP Standard, including also the optional .md5 checksum file.

NOTE: The DDP standard is the best format to export/import an audio CD-ROM image file in a standard format. This standard includes all the AudioCD Layout informations like CD-Texts, ISRC, PQ, EAN/UPC sub-codes. And, being a data file, it also guarantees the full integrity of the written audio file, byte after byte.

- **Export All CD-Tracks As Audio Files... (or ⇧⌘E):** similar to "Export AudioCD As Audio File..." but saving each CD-Track as a separate audio file. The application asks for a folder where to save all audio files, then their audio file format. **NOTE:** the preGaps in front of each CD-Track - if any - will be rendered at the end of the audio file rendered from the previous CD-Track.
- **Export All CD-Tracks As .mp3...:** to do "Export All CD-Tracks As Audio Files..." setting the default audio file format to MPEG Layer 3.
- **Export All CD-Tracks As iTunes Plus AAC...:** to do "Export All CD-Tracks As Audio Files..." using the iTunes Plus AAC standard audio file format for the destination audio files. In this case, after choosing the destination folder, no additional parameters are required.
- **Export Current CD-Track As Audio File... (or ⌘E):** similar to "Export AudioCD As Audio File..." but saving only the current CD-Track as only one audio file. The application will ask the location and the audio file format of the destination audio file.

- **Export Current CD-Track As .mp3...:** to do “Export Current CD-Track As Audio File...” setting the default audio file formats to MPEG Layer 3.
- **Export Current CD-Track As iTunes Plus AAC...:** to do “Export Current CD-Track As Audio File...” using the iTunes Plus AAC standard audio file format for the destination audio files. In this case, after choosing the destination location, no additional parameters are required.
- **Export AudioCD and CD-Tracks Info as PDF Sheet...:** the application asks for name and location where to save in a PDF document the AudioCDLayout Regions Table, CD-Tracks tables and some other useful information about the current AudioCDLayout.

The output on text file will appear something like the following:

The screenshot shows the 'AudioCD Track Sheet' application window. It has two main sections: 'Mastering Session' and 'AudioCD Info'.

Mastering Session:

- Date (YY-MM-DAY): 2022 - 02 - 04
- Time (HH:MM): 09 : 07
- Audio Engineer / Studio: [Empty field]
- File Name: Tutorial.dspqproject
- Application: DSP-AudioCDBuilder 1.0 build 220125

AudioCD Info:

- Title: This is my CD
- Artist/Performer: Steve's Band
- Produced By: [Empty field]
- Record Label: [Empty field]
- Notes: [Empty text area]
- EAN/UPC Code: [Empty field]
- Total Length: 00:14:43:940
- Number of Tracks: 10

CD-Tracks:

Time Units: HH:MM:Secs:msecs

ID	Pause	Start	Length	End	Title	CP	PE	ISRC	Comment
001	00:00:02:000	00:00:02:000	00:00:46:545	00:00:48:545	01 - September.aiff	X			
002	00:00:08:060	00:00:56:605	00:01:28:610	00:02:25:216	01 - September	X			
003	00:00:00:000	00:02:25:216	00:01:02:218	00:03:27:434	01 - September - 1	X			
004	00:00:00:000	00:03:27:434	00:01:28:004	00:04:55:439	02 - Shutup.aiff	X			
005	00:00:00:000	00:04:55:439	00:01:45:237	00:06:40:677	03 - Seven.aiff	X		IT0324567890	Enjoy
006	00:00:06:929	00:06:47:606	00:00:26:664	00:07:14:271	04 - Lupestre.aiff	X			
007	00:00:03:864	00:07:18:135	00:00:30:313	00:07:48:449	04 - Lupestre	X			
008	00:00:05:587	00:07:54:037	00:01:12:388	00:09:06:426	04 - Lupestre - 1	X			
009	00:00:00:000	00:09:06:426	00:02:11:648	00:11:18:074	04 - Lupestre - 2	X			
010	00:00:02:000	00:11:20:074	00:03:23:866	00:14:43:940	05 - Poetto.aiff	X			

Audio Regions:

ID	Start	Length	Name	Gain	Fade In	Fade Out	Comment
001	00:00:02:000	00:01:37:890	01 - September.aiff	+0.00	00:00:00:000	00:00:43:284	
002	00:00:56:605	00:01:57:233	01 - September	+0.00	00:00:43:284	00:00:28:622	
003	00:02:25:216	00:01:24:369	01 - September - 1	+0.00	00:00:28:622	00:00:22:151	

Export As: PDF

☒ Resize PDF to Fit Vertically

Buttons: Cancel, Print, Export

It is possible to type the info of the mastering session.

It is also possible to resize each column of the Audio Regions and CD-Tracks tables, and even to change the order of the columns on the tables, just clicking and dragging to the left or to the right the headers on the tables. Then, clicking on the Export button, the application will generate a PDF file.

NOTE: this menu command is equivalent to click on the PDF Sheet button on top of the AudioCDLayout waveform view.

The Built-in Effects in DSP-AudioCDBuilder

DSP-AudioCDBuilder has a series of built-in digital effects of very high quality. they range from the various uses of modulated digital delay lines, to the simulation of analog filters and bank of filters. Algorithms for the room and hall simulations are available as well.

It is possible to use the built-in effects in the same way as all the other Audio Unit (AU) Effect plug-ins installed on MacOS.

Using an effect on insert to a certain Audio Region, the effect processes only that Audio Region. If the effect is on insert to the AudioCDLayout channel strip, it processes the audio stream on output from all Audio Regions.

Among these different effects, there are several shared graphic objects, such as knobs, sliders, and Vu-Meters.

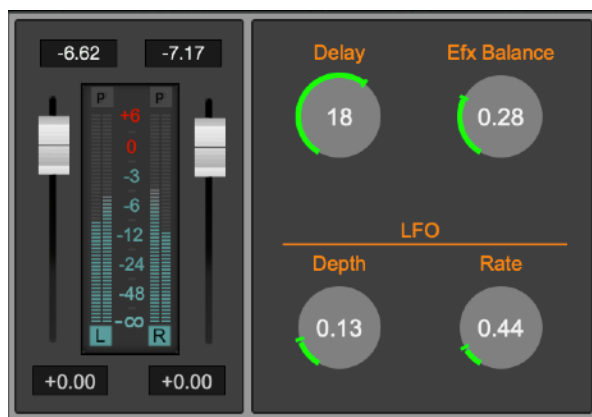
This chapter describes in detail all their characteristics.

The application built-in effects can be grouped into two main categories:

- **Digital Effects:** these are the effects using modulated delay lines and room/hall simulations (Delay, Chorus, Reverb)
- **Digital Filters:** these are the effects using digital filters (Parametric & Graphic Equalizer, Analog Filter Emulators).
- **Tools:** there are special plug-ins. One is a Gainer/Phase Inverter, one is a very special Send&Returns to/from the hardware audio device. More about this later in this chapter.

Chorus

The chorus algorithm uses dual delay lines, modulated by a Low Frequency Oscillator (LFO).



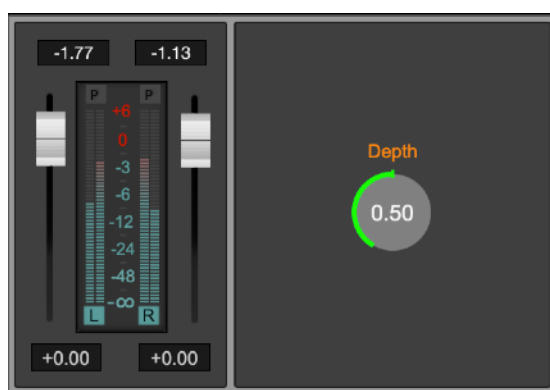
- **L&R Gain Sliders:** on the left there is a section with two gain sliders, one for the Left, one for Right channel. Use these sliders to control the gain of the input signal. Peak and RMS Vu-Meters show the input L&R signal levels.
- **Efx Balance [0.0...1.0]:** to set the ratio between the processed and the input audio signals.

- **Delay [0.0...30.0 msecs]:** to set the delay time used by the algorithm. Higher values produce a more noticeable and deep chorusing.
- **LFO Depth [0.0...1.0]:** to set the amount of the modulation of the delay time by the LFO (Low Frequency Oscillator). Higher values produce more noticeable and deep chorusing.
- **LFO Rate [0.0...5.0 Hz]:** to set the speed of the LFO. Lower values produce a lighter and less intrusive effect.

Stereoizer

The Stereoizer effect uses pass-band filters to enhance the stereo image of the input signal.

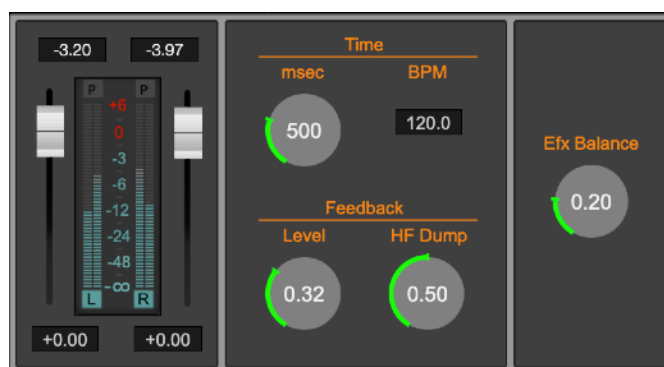
NOTE: it is highly recommended to check the mono compatibility of the signal on output, due to phase cancellation side-effect when summing the Left and Right channel if listening in mono.



- **L&R Gain Sliders:** on the left there is a section with two gain sliders, one for the Left, one for Right channel. Use these sliders to control the gain of the input signal. Peak and RMS Vu-Meters show the input L&R signal levels.
- **Depth [0.0..1.0]:** to set the depth of the effect.

Delay

Using one or more Delay effects it is possible to create very special mono and stereo echoes.



The Delay effect of the application is a single delay line, which mixes the L&R input channels before to process the signal into a delay line. It is very good to simulate the vintage sound of delay pedals used mostly by guitarists.

- **L&R Gain Sliders:** on the left there is a section with two gain sliders, one for the Left, one for Right channel. Use these sliders to control the gain of the input signal. Peak and RMS Vu-Meters show the input L&R signal levels.
- **Efx Balance [0.0...1.0]:** to set the ratio between the processed and the input audio signals.
- **Time [0..2000 msec]:** to set the time of the delay line, in msec. and in BPM (Beats Per Minute). Changing one of the values, the application will automatically change the other one in real time as well.
- **Feedback Level [0.0..1.0]:** set the feedback level of the output signal back to the input. The feedback level changes the number of repetitions (echoes) of the effect.
- **Feedback Filter Cutoff [20..16000 Hz]:** the feedback line is processed by a lowpass filter to emulate the absorption of reflecting materials, which higher for the high frequencies.

Dual Delay

The Dual Delay effect uses two independent delay lines, one for the left and one for the right channel. It is very good to produce ping-pong stereo effects and to spread the stereo image of a stereo input signal.



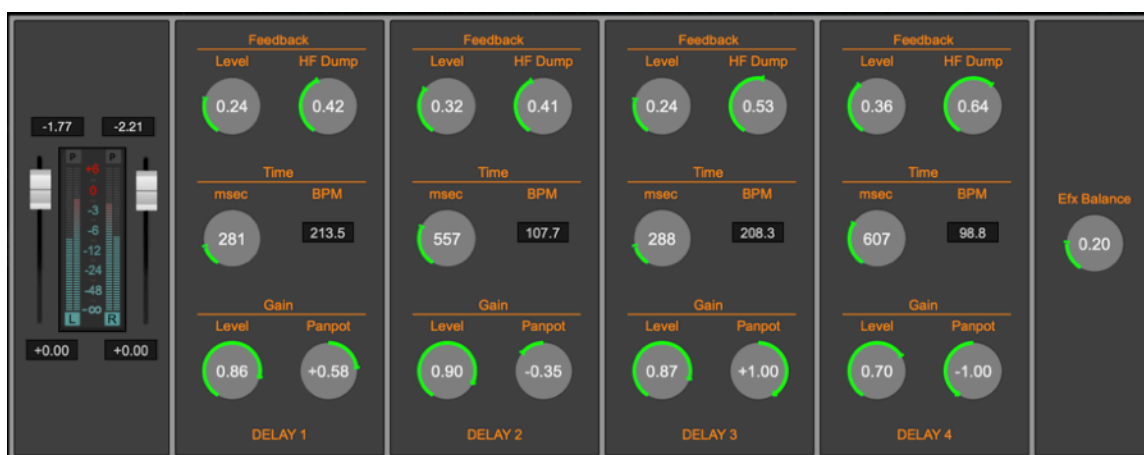
- **L&R Gain Sliders:** on the left there is a section with two gain sliders, one for the Left, one for Right channel. Use these sliders to control the gain of the input signal. Peak and RMS Vu-Meters show the input L&R signal levels.
- **Efx Balance [0.0...1.0]:** to set the ratio between the processed and the input audio signals.

For each delay line:

- **Time [0..2000 msec]:** to set the time of the delay line, in msec. and in BPM (Beats Per Minute). Changing one of the values, the application will automatically change the other one in real time as well.
- **Feedback Level [0.0..1.0]:** set the feedback level of the output signal back to the input. The feedback level changes the number of repetitions (echoes) of the effect.
- **Feedback Filter Cutoff [20..16000 Hz]:** the feedback line is processed by a lowpass filter to emulate the absorption of reflecting materials, which higher for the high frequencies.

MultiTap Delay

The MultiTap Delay effect is uses four independent delay line, each with its own controls for setting its level and pan-pot on output signal.



- **L&R Gain Sliders:** on the left there is a section with two gain sliders, one for the Left, one for Right channel. Use these sliders to control the gain of the input signal. Peak and RMS Vu-Meters show the input L&R signal levels.
- **Efx Balance [0.0...1.0]:** to set the ratio between the processed and the input audio signals.

For each delay line:

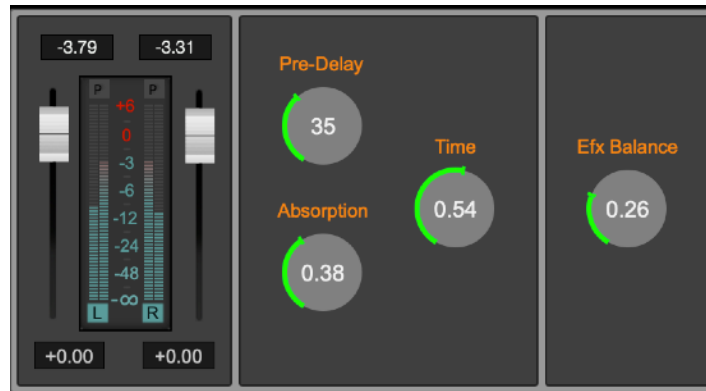
- **Time [0..2000 msec]:** to set the time of the delay line, in msec. and in BPM (Beats Per Minute). Changing one of the values, the application will automatically change the other in real time as well.
- **Feedback Level [0.0..1.0]:** set the feedback level of the output signal back to the input. The feedback level changes the number of repetitions (echoes) of the effect.
- **Feedback HF Dump [20..16000 Hz]:** the feedback line is processed by a lowpass filter to emulate the absorption of reflecting materials, which higher for the high frequencies.
- **Panpot [-64..0..64]:** to set the balance between L&R channels of the output signal of each delay line. -1.0 means full to the Left channel, 0

means equally balanced between L&R channels, and +1.0 full to the R channel.

- **Level [0.0..1.0]**: sets the level of the output signal from each Delay unit.

Reverb 1 and Reverb 2

There are two reverb effects in the application. They differ from one each other for their internal algorithm. The first one is more intense, the second is lighter. Depending on the audio file that you are working with, one could be more suitable than the other.



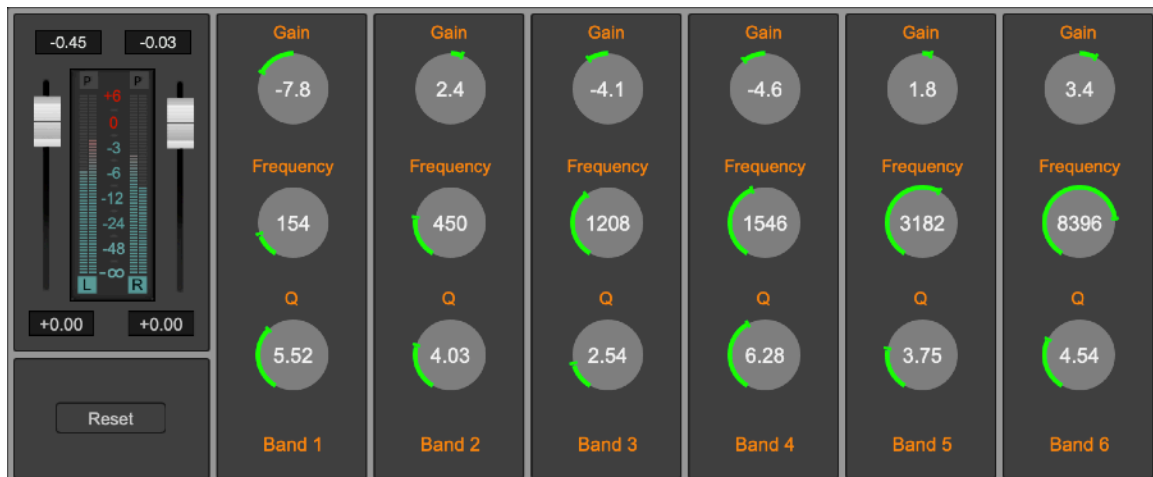
- **L&R Gain Sliders**: on the left there is a section with two gain sliders, one for the Left, one for Right channel. Use these sliders to control the gain of the input signal. Peak and RMS Vu-Meters show the input L&R signal levels.
- **Efx Balance [0.0...1.0]**: to set the ratio between the processed and the input audio signals.
- **Time [0.0..1.0]**: to set the reverb time. This value is expressed as the ratio between the minimum value (time = 0) and the higher possible value (time=1.0).
- **Absorption [0.0...1.0]**: to set the factor which emulates the reflecting properties of the walls in function of the frequency spectrum. Lower values correspond to materials having an higher absorption at high frequencies.
- **PreDelay [0...100 msec]**: to set the time of the delay line on input to the reverb effect. It simulates the time that it takes the first echo to be heard due to the distance of the reflecting surface as it happens, as an example, when playing in a church or a very large hall.

Parametric EQ

The Parametric EQ of the application has six full parametric filters.

It is possible to set the frequency, gain, and bandwidth (Q) of each filter. Since all the filters have a full excursion on the frequency range, it is possible to overlap two or more filters, to let them to work on the same frequency range.

- **L&R Gain Sliders**: on the left there is a section with two gain sliders, one for the Left, one for Right channel. Use these sliders to control the gain of



the input signal. Peak and RMS Vu-Meters show the input L&R signal levels.

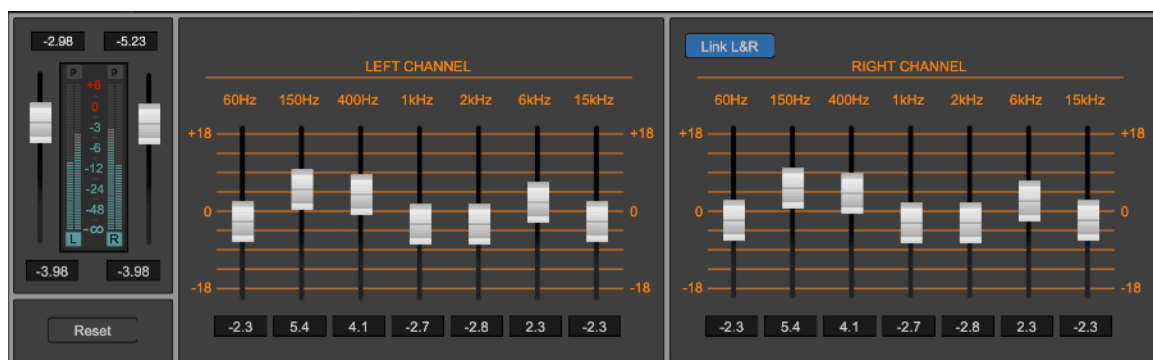
- **Reset:** to reset each parametric filter to the default values.

For each parametric filter:

- **Gain [-18..+18 dB]:** to set the gain of the parametric filter.
- **Freq [20..16000 Hz]:** to set the central frequency of the frequency band.
- **Q [0.0..5.0]:** it controls the width of the frequency response curve of the filter. Higher values correspond steeper curves, ie a more selective filter.

Graphic EQ

The graphic equalizer uses a bank of seven filters to modify the frequency contents of the audio signal. Each filter is centered around a different



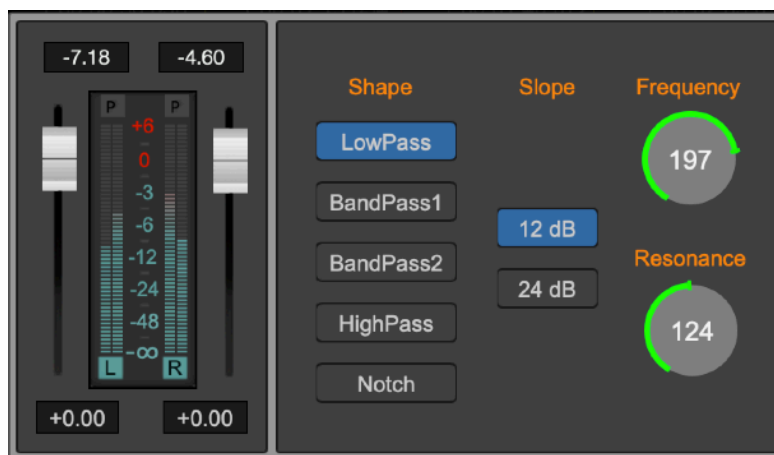
frequency according to a logarithmic scale. It is possible to set the gain of each filter in the ± 18 dB range.

- **L&R Gain Sliders:** on the left there is a section with two gain sliders, one for the Left, one for Right channel. Use these sliders to control the gain of the input signal. Peak and RMS Vu-Meters show the input L&R signal levels.
- **Reset:** to reset all gains to 0 dB.

- **Gain [-18...+18 dB]:** to set the gain of each frequency band. It is also possible to enter the numerical value clicking on the control below the slider.
- **Link L&R:** when turned On, setting a gain value for one channel, will set the same value for the other channel as well.

Resonant LowPass, BandPass, HighPass and BandReject Analog Filter emulations

Among the effects of the application, there are the filters that simulate the resonant analog filters, that became famous in the music world during the '70s, in vintage analog synthesizers. The following analog resonant filters are available: LowPass, HighPass, BandPass and Notch.



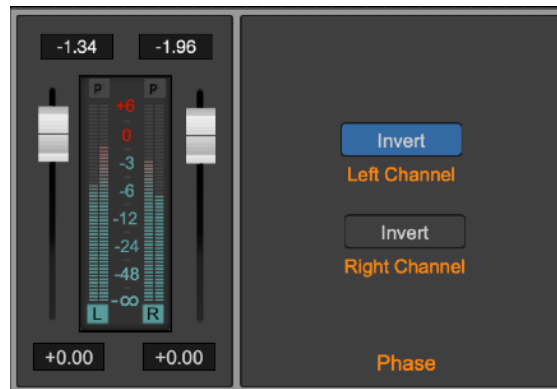
Each filter uses its own interface which however is very similar to the others. It is possible to set the cutoff frequency, the resonance at cutoff frequency – called Resonance for LowPass and HighPass, or Q in the other cases – and the slope of the curve, measured in -dB/octave. Higher slopes bring to more selective filters, that are more resonant and that cut frequencies with steeper curves.

- **L&R Gain Sliders:** on the left there is a section with two gain sliders, one for the Left, one for Right channel. Use these sliders to control the gain of the input signal. Peak and RMS Vu-Meters show the input L&R signal levels.
- **Shape:** to choose among one of the following:
 - **Resonant LowPass:** it cuts all frequencies above the cutoff frequency. Slope can be set to -12 or -24 dB/Octave.
 - **Resonant BandPass 1:** it cuts the frequencies outside the band centered around the cutoff frequency.
 - **Resonant BandPass 2:** similar to BandPass 1, but a lot more resonant.
 - **Resonant HighPass:** it cuts all frequencies below the cutoff frequency. Slope can be set to -12 or -24 dB/Octave.
 - **BandReject:** to cut the frequencies in the band just around the cutoff frequency. It can be very selective with high values of Q, and it is very useful when it is necessary to remove a specific frequency from the audio signal, such as the power line noise at 50 or 60 Hz.

- **Slope:** to set the slope (-12 or -24 dB) of the filter.
- **Frequency [20..16000 Hz]:** to set the value of cutoff frequency.
- **Resonance/Q:** to set the resonance value or the filter bandwidth. Higher resonance values produce higher gains around the frequency of cutoff that may cause the auto-oscillation of the filter, exactly as it happens working with analog filters.

The Gainer and Phase Inverter

This is a very basic and very useful built-in plug-in. It applies a Gain with the option to invert independently the phase of the Left and Right channels.



Audio CD-ROM Burning

This chapter describes the procedure to burn the output of the AudioCDLayout on an audio CD-ROM.

If you have an internal or external CD-ROM writer device connected to your Mac and, if external, this device is supported by the disc burning component of MacOS, the application allows you to burn an audio CD compliant with the Redbook standard including also CD-Text, ISRC, EAN-UPC, PQ sub-codes extensions.

The Redbook standard defines several specs about the format of an audio CD-ROM. If the audio CD-ROM is compliant to the Redbook standard, all the audio CD-Players should always be able to play it.

Among the others, the Redbook standard defines that an audio CD-ROM cannot have more than 99 CD-Tracks. An audio CD-ROM must start with a preGap of 2 secs. Each CD-Track cannot be shorter than 4 secs, and the CD-Track Start markers can be placed only at quantized time intervals, multiple of a certain small constant value.

Most of these specs will be invisible to you, the application takes care to follow the specs for you. If it will be not possible to produce automatically an audio CD-ROM compliant with the rebook standard, the application, at the time of rendering the AudioCDLayout for burning, shows a warning message (as, for example, in the case in which a CD-Track will result to be shorter than 4 secs), letting you to choose to continue or not.

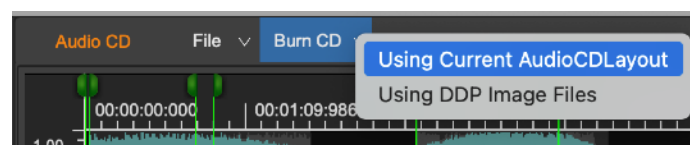
The application burns an audio CD-ROM from the output of the AudioCDLayout converting it - if necessary - to the standard 44.1 kHz sample rate using its internal Sample Rate Converter at maximum quality.

Rendering the AudioCDLayout into the audio file used by the CD-Burning engine, the application uses its internal dithering algorithm when converting the audio samples from the internal floating point numerical representation to the fixed 16 bits/sample precision of the audio CD-ROM Redbook standard. The dithering algorithm is necessary to avoid audio distortion on low level signal levels for audio signal at 16 bits/sample.

If you wish to use an external Audio Unit plug-in to do dithering, just insert it as effect FX on the AudioCDLayout channel strip (it must be the last one on the chain, ie the one at bottom on the interface), and turn OFF the internal dithering algorithm of the application. This can be done on the Preference dialog. Under the Default settings for the AudioCD, there is a button to turn on/off the internal dithering algorithm exporting audio CD-ROM image file (the same algorithm is used by default also exporting DDP image files).

NOTE: if external, the CD-Burner device must be connected and turned ON before to start this operation.

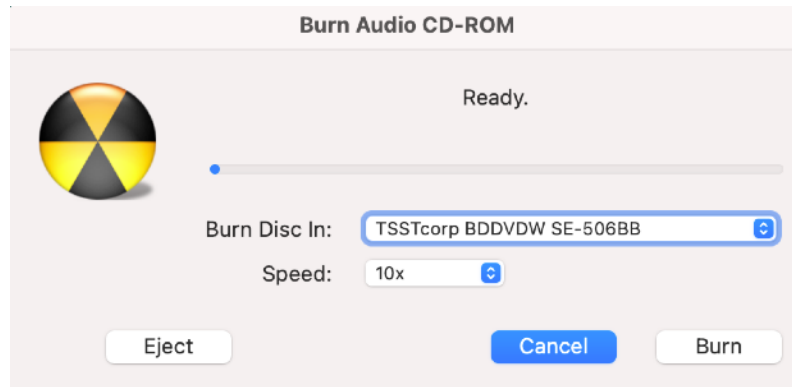
To burn an audio CD-ROM, having ready the AudioCDLayout, press the BurnCD button on top of the AudioCD Layout main waveform view:



It is possible to burn the audio CD-ROM using the current AudioCDLayout or using a DDP Image file.

In the first case, the application first renders the AudioCD Layout to a temporary internal data file. In the second case, the application shows a file browser to select the folder where there are the DDP image files.

Then, it shows the Audio CD-ROM Burning dialog:



if there are several CD-Burner devices connected to your Mac, use the Burn Disc In popup menu to choose the device to use.

The application asks to insert a blank disc. Inserted a blank disc, it populates and activate the popup menu to set the speed for burning.

NOTE: It is highly recommended to choose always the slowest possible speed among the available values.

Press the Burn button to start the process, the application shows a progress dialog until the burning session is completed.

At the very end, the application asks if you want to keep a copy of the Audio CD-ROM on the HD as DDP image file. If yes, it shows a file browser to choose a folder when to save the Audio CD-ROM image files according to the DDP standard.

The Input/Output Audio Recorder

The input/output Audio Recorder of the application is able to record to file the audio on input to the Mac as well as the audio on output from the applications itself.

the application always creates an Audio Recorder at startup, and there is always only one Audio Recorder.

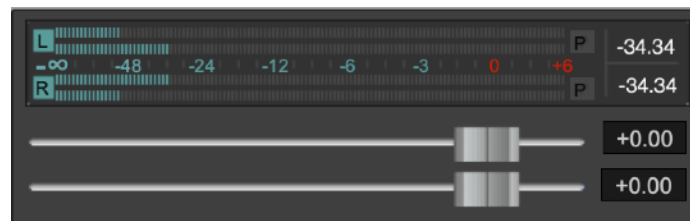
To show the Audio Recorder, use the command **Show Input/Output Recorder** (or ⌘⌘R) from the top menu bar of the application:

the application will show the Audio Recorder floating window:



The Audio Recorder interface consists of:

- Gain sliders and Vu-Meters



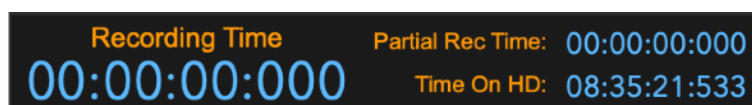
these are the same elements also used by the channel strip.

- The Transport Bar



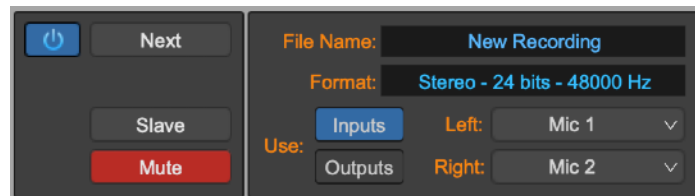
- **REC button**, to put a new recording on standby.
- **PLAY/STOP button**, to start and stop the new recording.
- **New Marker button**, to add a generic marker at the current recording position.

- Time Display



- **Current Recording Time:** it shows the time elapsed since the start of the recording session.
- **Partial Rec Time,** it shows the time elapsed since the last click on New Marker button, ie the position of the generic marker added last.
- **Time On HD:** the free space on the HD used for recording.

- **Other controls**



- **File Name and Format:** they show the current file name and file format. Clicking on it, the application shows a dialog to enter a new file name and the audio file format to use:



It is possible to set if the new recording must be a Mono or Stereo file and, if Mono, if the audio recorder must mix the input (or output) L&R channels, if it must use only the L or only the R channel.

It is possible to set the Bit Depth (8, 16, 24, 32 and 32 floats) as well.

- **Use Inputs/Outputs:** click on Inputs button to record the audio on input to the current audio device used by the application (refer to the chapter about the Audio Settings to know how to set this current audio device). Click on the Outputs button to record the audio on output from the application.
- **Left/Right popup menus:** if the audio recorder is recording the inputs, these popup menus show the list of the input audio ports to the current audio device used by the application. If the audio recording is recording the output from the application, these menus do not allow other choices other than Out L and Out R channels.
- **On/Off button:** to turn On/Off the audio recorder
- **Mute button:** to mute/un-mute the output of the audio recorder.
- **Next button:** to switch the file to the “next” on the fly during recording. Clicking on this button, the application closes the current recording, automatically switching to another file, naming it with a numerical extension to distinguish it from the closed recording. Then, the

application continues to record on this new file. The application adds the previous recording to the worksheet as well.

- **Slave button:** if ON, the audio recorder transport bar is slave to the transport bar of the Editor window. If the audio recorder is slave, clicking on the play/stop button on the transport bar of the main Editor window will control also the play/stop button of the audio recorder. In any case, to start/stop a new recording, the audio recorder must already be in stand-by, ie its Rec button must already be turned on, otherwise nothing happens.

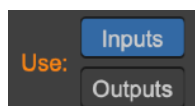
NOTE: turning the Slave button ON, it is possible to dump to file in real time the output of the audio file on the Editor.

NOTE: At startup, by default the audio recorder is muted to avoid unwanted audio feedbacks between inputs and outputs.

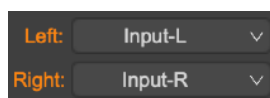
How to make a new recording

This is the step-by-step procedure to make a new recording:

- 1) Configure the application to use the wanted audio device using the **Options->AudioSettings...** menu command from the top application menu bar, as described in the relevant chapter in this manual.
- 2) Make the Input/Output audio recorder visible using the **Windows->Show Input/Output Recorder...** menu command from the top application menu bar or clicking on the recorder button on top of the Editor window.
- 3) **To make a recording from audio Inputs:**
 - I. **Click on the Inputs button** to record the audio inputs to the application

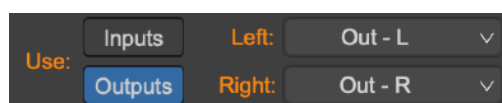


- II. **Use the popup menu controls on the Input Channels view to set the input ports for the L&R input channels:**



The VU-Meters of audio Recorder will show the input signal levels.

- 4) **To make a recording from the application Outputs:**
 - I. **Click on the Outputs button** to record the audio outputs of the application



The VU-Meters of audio Recorder will show the input signal levels.

- 5) **Click on the File Name** on the Audio Recorder module to enter the file name of the new recording and the audio file format.

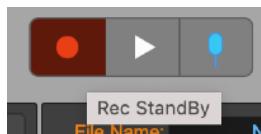


It is possible to set if the recording must be stereo or mono and, if mono, if the audio recorder must mix the input L&R channels, use only the L or only the R channel.

It is also possible to set the bit depth (8, 16, 24, 32 and 32 floats) of the new recording.

Click on the OK button to confirm.

- 6) **Click on the REC button to put the recording on STAND-BY.** The application waits to start to record (recording still does not start at this stage). The REC button will turn ON.



- 7) **To start recording:**

- I. **SLAVE mode OFF: click on the PLAY button on the Audio Recorder Transport Bar.** The counter shows the elapsed recording time.
- II. **SLAVE mode ON: click on the PLAY button on the main Editor window Transport Bar.** The counter shows the elapsed recording time.

- 8) **To stop the recording:**

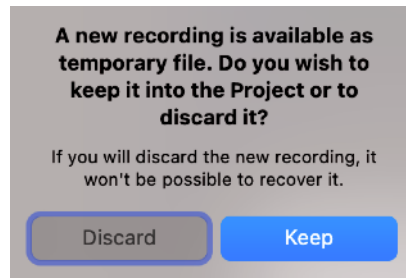
- I. **SLAVE mode OFF: click on the STOP button on the Audio Recorder Transport Bar.**
- II. **SLAVE mode ON: click on the STOP buttons on the Editor window Transport Bar or on the Audio Recorder Transport Bar.**

- 9) **The counter stops** and the PLAY button turns OFF

- 10) the application shows a dialog asking to keep or discard the new recording

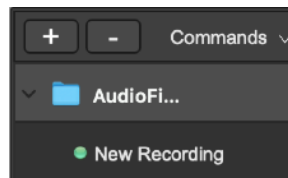
If the recording is ok, click on KEEP to save the new recording.

WARNING: Discard will delete the new recording from the HD with no chance of recovery.



11) Then, the application adds the new recording to the Document Manager table adding it to the list of the audio files.

Double-click on the new file name row on the Document Manager table to load the new recording as a new Audio Region on the AudioCDLayout waveform view.



NOTE: during recording, it is possible to click on the **New Marker button** on the Audio Recorder Transport Bar to add a generic marker at the current cursor position. The application will save these generic markers into the



audio file at the moment of keeping the new recording into the worksheet.

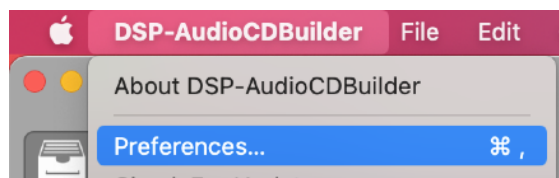
Preferences

Use the Preference dialog to set the default parameters used by the application.

The Preference dialog shows a multi-panel view which collects all the user configurable settings, divided into the following categories:

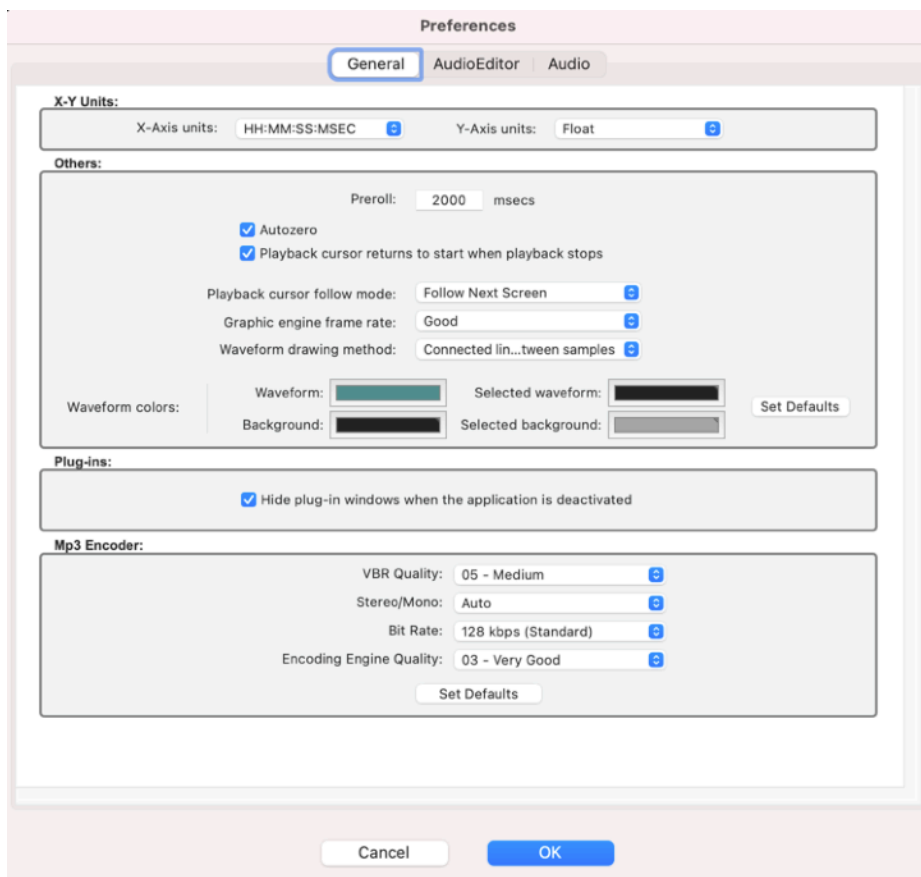
- **General:** general settings
- **AudioCD:** AudioCDLayout settings
- **Audio:** Audio Device settings

To open the Preferences dialog, use the **Preferences...** menu command from the application top menu bar:



In upper part there are the different tabs to choose the category of configurable settings to show on the lower part.

General Preferences



Selecting the General tab, the above view appears.

X-Y Units Options:

- **X-Axis Units:** to choose the default unit used by the application to represent the time axes on the Time Ruler and for displaying time values. Choose one of the possible options: hh:mm:sec:msec, Seconds, Samples, milliseconds or AudioCD.
- **Y-Axis Units:** the default unit used by the application to represent the level of the audio signal. Possible options are: floats (-1.0, 1.0), Decibels (dB).

Other Options:

- **AutoZero:** when this option is ON, releasing the mouse after moving a marker or setting the selection, the application automatically shifts the cursor point to the previous zero-crossing point. A zero-crossing point is the location in which the waveform intersects the zero level changing the sign. This option is very useful to place markers in positions that have the zero level in common.
- **Playback cursor returns to its starting position when the black stops:** if turned OFF, when the application stops to play, the playback cursor remains on the last position reached.
- **Waveform drawing method:** set the method used drawing the waveform. It has a big impact at high x-axis zoom-in levels, like 1:1 or more. Possible methods are: connected lines between samples, one dot for each sample, one vertical line for each sample.
- **Waveform Colours:** it allows you to assign the colours used to draw waveforms and backgrounds. Use the Set Default button to restore these settings to factory values.

Plug-ins:

- **Hide plug-in window when the application is deactivated:** If OFF, when the application goes background, all plug-in windows remains visible on screen. Otherwise, they will disappear until the application becomes foreground again.

Mp3 Encoder:

These are the advanced settings for the internal mp3 encoder. It is highly recommended to keep the default values as they are if not strictly necessary.

AudioCD Preferences

Selecting the AudioCD tab, this view appears:

General **AudioCD** Audio

Defaults:

- ☒ AudioCD Layout starts on Easy Mode.
- ☒ Apply internal Dither algorithm burning AudioCD or exporting DDP

Replacing an Audio Region, keep settings for:

- ☐ Audio Region Length
- ☒ Audio Region CD-Texts and ID3 Tags

Audio data file name for exporting DDP:

AudioCD:

EAN/UPC Code:

- ☒ Burning an Audio CD-ROM, write CD-Texts on Disc

ID3 TAG:

Performer:

Album:

Songwriter:

Year:

Composer:

Arranger:

Message:

Genre ID:

Defaults CD-Track settings:

Pause length for new CD-Tracks: msec

- ☐ CD-Track Pause length LOCKED
- ☒ CD-Track Pause AUTO/MANUAL Mode to AUTO

- ☒ CP - Copy Protection
- ☐ PE - Pre Emphasis

CDTexts/ID3 Tags:

- ☒ use CDTexts/ID3 Tags from the source AudioFile
- ☐ use the same CDTexts/ID3 Tags of the AudioCD

Cancel OK

Defaults:

- **AudioCDLayout starts in EASY mode** if turned On, the application set the AudioCDLayout in EASY mode doing New Project. It is the default setting.
- **Apply internal dither algorithm burning Audio CD or exporting DDP** if turned ON (the default setting), the application applies its internal dithering algorithm at the very final moment, just before to burn an audio CD-ROM or exporting it as DDP image. It is necessary to turn it OFF only if the current AudioCDLayout is using a plug-in to do dithering as last processing on the output of the AudioCDLayout.
- **Replacing an Audio Region, keep settings for...** Using the command to Replace a certain Audio Region on the AudioCDLayout, the application can replace also CD-Text and ID3 tags or can keep the existing setting. Moreover, the AudioCDLayout can maintain the length of the Audio Region as it is before to replace, or to set the length of the Audio Region to the length of imported audio file.
- **Audio data file name for exporting DDP:** the DDP defines that the name used for audio data binary file can be whatever you want, and it is indicated into an accessory file into the DDP folder. Use this setting if for any reason it is important to change the default string used by the application.

AudioCD:

These are the default values for CD-Texts and ID3 Tags.

- **Burning an Audio CD-ROM, write CD-Texts on disc:** if OFF, the application does not include CD-Texts when it burn an audio CD-ROM.

Default CD-Track Settings:

- **Pause length for new CD-Tracks:** to set the default value (expressed in milliseconds) for the preGap/pause to use when the application automatically creates a new CD-Track after adding new audio regions on the AudioCDLayout. **NOTE:** the preGap in front of the first CD-Track is fixed to 2 secs.
- **CD-Texts/ID3 Tags:** to set if the application, creating a new CD-Track, must use the the CD-Texts/ID3 Tags from the audio file or from the default CD-Texts settings for the AudioCD (see the above AudioCD section).

Use the other fields of this section to set the default settings for the options on the AudioCDLayout CD-Track table. The application uses these setting when it adds new CD-Tracks on the AudioCDLayout

Audio Settings

The screenshot shows the 'Preferences' window with the 'Audio' tab selected. The 'Audio Settings' section is expanded, showing 'Output Audio Device' and 'Input Audio Device' settings. The 'Output Audio Device' section includes fields for 'Output Device' (Scarlett 6i6 USB), 'Sample Rate' (48000), and 'I/O Buffer Size' (512). Below these are 'Preferred Outputs' for 'Left Output Channel' (Mon 1) and 'Right Output Channel' (Mon 2). A note states: 'to avoid any real-time resampling while playing, the sample rate of the output device should have the same value of the audio file under editing.' The 'Input Audio Device' section includes fields for 'Input Device' (Scarlett 6i6 USB) and a checked 'Sync to the Output device' checkbox. Below are 'Preferred Inputs' for 'Left Input Channel' (Mic 1) and 'Right Input Channel' (Mic 2). A note states: 'To avoid any real-time resampling on recording, this application will disable the inputs if it cannot set the sample rate of the input device to the same value of the output device. Moreover, to avoid drop-outs, the input and output devices should be the same physical device.' At the bottom are 'Cancel' and 'OK' buttons.

Preferences

General AudioEditor **Audio**

Audio Settings:

Output Audio Device:

Output Device: Scarlett 6i6 USB

Sample Rate: 48000

I/O Buffer Size: 512

Preferred Outputs

Left Output Channel: Mon 1

Right Output Channel: Mon 2

NOTE: to avoid any real-time resampling while playing, the sample rate of the output device should have the same value of the audio file under editing.

Input Audio Device:

Input Device: Scarlett 6i6 USB ☒ Sync to the Output device

Preferred Inputs

Left Input Channel: Mic 1

Right Input Channel: Mic 2

NOTE: To avoid any real-time resampling on recording, this application will disable the inputs if it cannot set the sample rate of the input device to the same value of the output device. Moreover, to avoid drop-outs, the input and output devices should be the same physical device.

Cancel OK

Even if the application doesn't need any additional audio hardware to work properly, it supports and manages all audio devices which are compatible with CoreAudio of MacOS. To verify if an external audio device is compatible with MacOS and the application, run the Apple Audio MIDI Configuration utility which is into the Applications/Utility folder. If an audio device is visible among the list of available audio devices on the Audio Configuration window, then the application is surely be able to use it for audio I/O.

NOTE: To assign and configure the audio device used by the application for audio input/output, it is also possible to use the menu command on the application top menu bar **Options->AudioSettings...** menu command from the application top menu bar:

These are the options for Audio I/O settings:



- **Audio Settings:** in the upper part, two popup menus allow you to set which I/O device must be used by the application to play on output (output device) and to receive audio on input (input device).

Among the available devices, there is always a “System” device, which is the one assigned as default to MacOS for audio I/O. By default, the application starts using the System device.

NOTE: it is highly recommended to set the same physical audio device for both inputs and outputs. Other settings may produce audio drop outs and clicks.

Turning ON the **Sync menu selections** check box, choosing an audio device for output and/or input, the application tries to do the same choice for the other device (input device when choosing the output, and the contrary) automatically. This with the purpose to assign the same physical hardware interface for both Inputs and Outputs. It is highly recommended to keep this option On.

- **Preferred Inputs/Outputs:** these popup menus list the available audio input or output ports available on the current audio device (ie the audio device which is selected on the I/O Audio Device popup menu above).

These preferred Input and Output channels are the channels which the application uses by default as input ports on the audio recorder and which uses for playing its output.

As an example, choosing the Scarlett 6i6 as input and Output audio device, which is a multi-port audio device, this is what the application shows as a possible choice for the preferred output channels:

Audio Settings:

Output Audio Device:

Output Device: Scarlett 6i6 USB

Sample Rate: 48000

I/O Buffer Size: 512

Preferred Outputs

Left Output Channel: Mon 1

Right Output Channel: Mon 2

NOTE: to avoid any real-time resampling while playing, the sample rate of the output device should have the same value of the audio file under editing.

Input Audio Device:

Input Device: Scarlett 6i6 USB ☒ Sync to the Output device

Preferred Inputs

Left Input Channel: Mic 1

Right Input Channel: Mic 2

NOTE: To avoid any real-time resampling on recording, the sample rate of the input device to the same value of the output device. Moreover, to avoid drop-outs, the input and output devices should be the same physical device.

And this for the preferred input channels:

Audio Settings:

Output Audio Device:

Output Device: Scarlett 6i6 USB

Sample Rate: 48000

I/O Buffer Size: 512

Preferred Outputs

Left Output Channel: Mon 1

Right Output Channel: Mon 2

NOTE: to avoid any real-time resampling while pl same value of the audio file under editing.

Input Audio Device:

Input Device: Scarlett 6i6 USB

Preferred Inputs

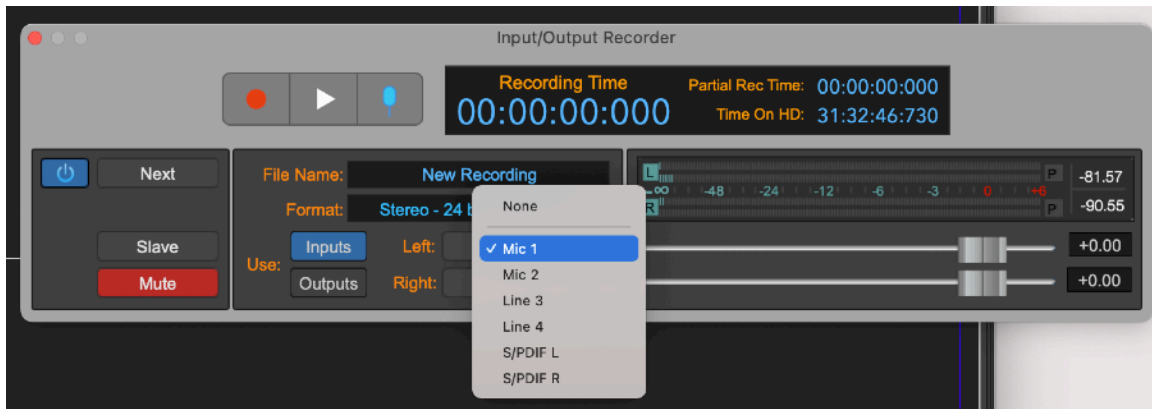
Left Input Channel: Mic 1

Right Input Channel: Mic 2

NOTE: To avoid any real-time resampling on recording, this application will disable the inputs if it cannot set the sample rate of the input device to the same value of the output device. Moreover, to avoid drop-outs, the input and output devices should be the same physical device.

With the above settings, the application plays always using the Mon1 and Mon2 output audio ports of the Scarlett 6i6 audio device. Opening the Audio Recorder to record the Inputs, the Mic1 and Mic2 are the default input ports.

It is possible to set a different audio port for audio inputs:



For outputs, if it is necessary to use a different audio port for playing outputs, use again the Audio settings opening the Preferences dialog or from the Options->Audio Settings menu command.