



PART 10

Fairlight

Chapter 123

Using the Fairlight Page

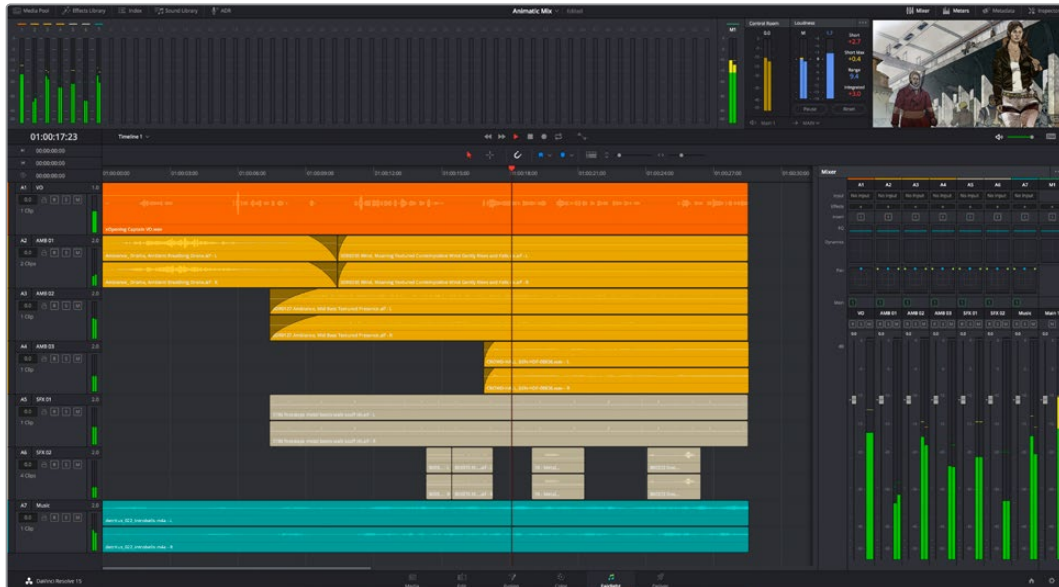
This chapter covers the basic user interface controls found on the Fairlight page, where they are and what they do, in order to give you an overall orientation of how to work with this integrated audio environment.

Contents

The Fairlight Page User Interface	2406
The Interface Toolbar	2406
Showing Which Panel Has Focus	2407
The Audio Timeline	2407
Controls in the Audio Timeline	2408
Track Layering	2411
Switching Among Multiple Timelines	2411
Toolbar	2412
Customizing Clip Display in the Timeline	2413
Customizing the Timeline's Display	2414
Fixed Playhead Mode	2414
Visible Video Tracks	2414
Video and Audio Scrollers	2414
Mixer	2416
The Monitoring Panel	2419
Viewer	2419
The Media Pool	2420
Importing Media Into the Media Pool on the Fairlight Page	2421
Media Pool Preview Player	2421
Bins, Power Bins, and Smart Bins	2422
Showing Bins in Separate Windows	2422
Filtering Bins Using Color Tags	2423
Sorting the Bin List	2423
Filtering Clips With Audio in the Fairlight Page	2424
Searching for Content in the Media Pool	2424
Taking Advantage of the Media Pool's Usage Column	2425
Effects Library	2425
Effects Library Favorites	2426
ADR	2426
The Setup Panel	2426
The List Panel	2427
The Record Panel	2427
Sound Library Browser	2428
Index	2431
Inspector	2431
Metadata Editor	2432
Oscillator for Generating Tone, Noise, and Beeps	2432
Dual Monitor Layout	2433
Customizing the Fairlight Page	2434
Undo and Redo in DaVinci Resolve	2434

The Fairlight Page User Interface

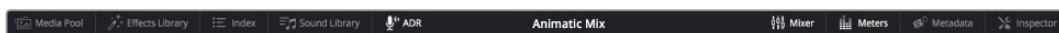
In single monitor mode, the Fairlight page is an optimized look at the audio tracks of your project, with an expanded mixer and custom monitoring controls that make it easy to evaluate and adjust the levels of your program in order to create a smooth and harmonious mix.



Audio page

The Interface Toolbar

At the very top of the Fairlight page is a toolbar with buttons that let you show and hide different parts of the user interface. These buttons are as follows, from left to right:

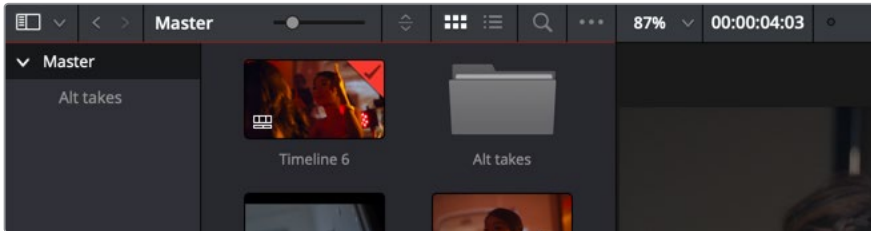


The Interface toolbar

- **Media Pool:** Shows and hides the Media Pool, from which you can edit audio clips into the Fairlight page timeline.
- **Effects Library:** Opens the Audio FX panel of the Effects Library, from which you can apply VST and other audio effects to clips in the timeline.
- **Index:** Shows and hides the Index and its Tracks and Markers panels. The Tracks panel lets you manage the tracks of the timeline, showing and hiding which ones you want to work with. The Markers panel lets you see every marker in the timeline, along with associated data, so that it's easy to browse through your markers all at once to quickly find the information you need.
- **Mixer:** Shows and hides the Mixer, to the right of the timeline, that lets you adjust various effects and levels associated with each track of the timeline in order to create a harmonious mix.
- **Monitoring:** Shows and hides the Monitoring audio meters and viewer at the top of the Fairlight page.
- **Inspector:** Show and hides the Inspector, from which you can edit different clip attributes.
- **Metadata:** Shows and hides the clip metadata inspector.

Showing Which Panel Has Focus

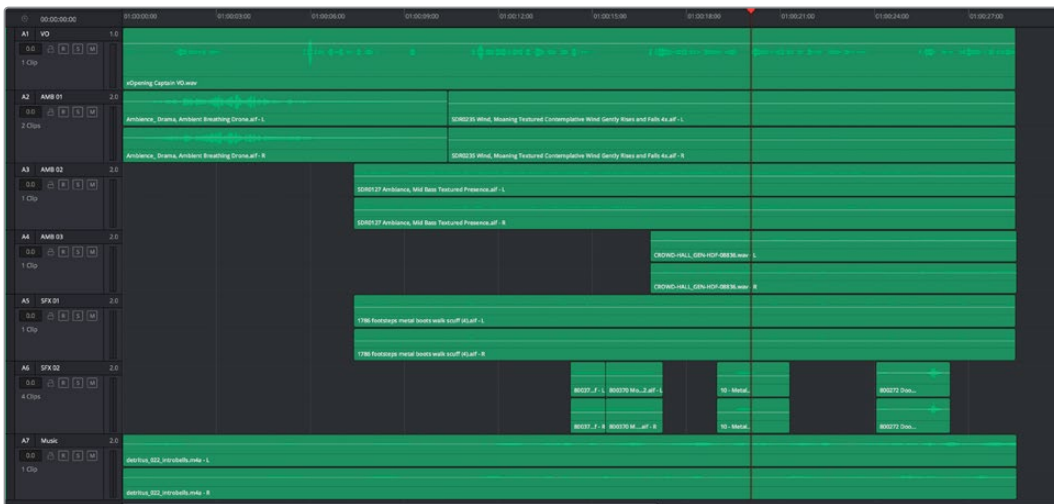
Whenever you click somewhere on the DaVinci Resolve interface using the pointer, or use a keyboard shortcut to “select” a particular panel (such as in the Edit page), you give that panel of the user interface “focus.” A panel with focus will capture specific keyboard shortcuts to do something within that panel, as opposed to doing something elsewhere in the interface. A highlight appears at the top edge to show you which panel has focus so that you can keep track of which part of the current page is taking precedence, and you can switch focus as necessary to do what you need to do.



The focus indicator shown at the top edge of the Media Pool, shown next to a Viewer that doesn't have focus

The Audio Timeline

The heart of the Fairlight page, the Audio Timeline presents the audio channels and tracks of the currently selected timeline differently than the Edit page does, in a one-channel-per-track format that's optimized for audio mixing and sweetening. The Audio page timeline cannot be closed.

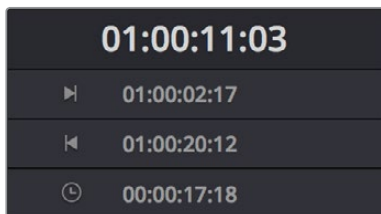


The Audio page timeline

Controls in the Audio Timeline

The audio timeline has the following controls.

- **Timecode fields and Range buttons:** Four timecode fields show the current timecode value corresponding to the position of the playhead (at the very top), the Range In point, the Range Out point, and the Range duration. Clicking the Range In and Range Out buttons (to the left of the timecode fields) set these points and their corresponding timecode value.



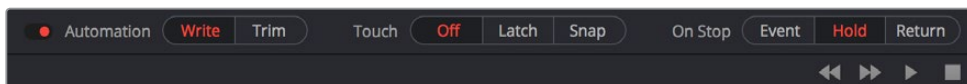
Timecode fields and Range buttons in the Fairlight page

- **Transport controls:** The bar defining the top of the timeline contains the Fairlight page's audio-specific transport controls, which differ from those found on the Media, Edit, Color, and Deliver pages due to its inclusion of recording capabilities. These include Fast Reverse, Fast Forward, Play Forward, Stop, Record, and Loop.



Fairlight page transport controls

- **Automation toolbar:** Clicking this button opens a secondary toolbar with all the controls you need to configure the recording of mixer automation.



Fairlight page automation toolbar

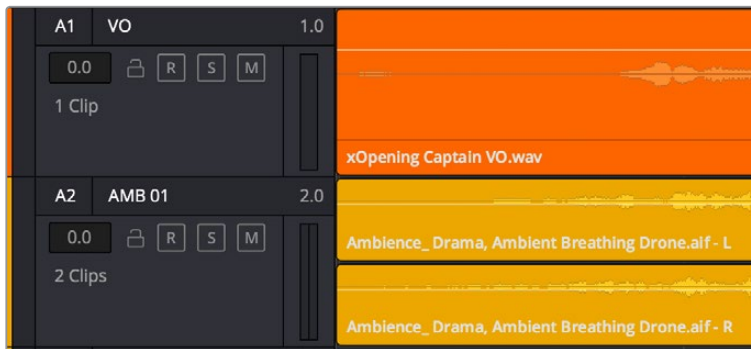
- **Monitoring controls:** At the far right of the transport controls, a set of three monitoring controls let you quickly control the output volume of your mix. An audio Enable/Disable button lets you mute audio playback, while a slider lets you change the volume, and a DIM button lets you temporarily duck the monitored volume being output in order to have a quick chat with your client about sports or the state of the world while keeping half an ear on the mix. Dim and Mute commands are also available from the Fairlight menu.



The monitoring controls

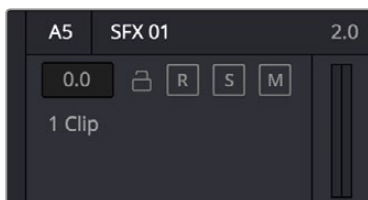
- **Timeline Ruler:** The Timeline Ruler shows the program's timecode. The playhead indicates the current frame and sample where you're working in the Timeline, and the playhead has a handle that appears within the Timeline Ruler. Dragging within the Timeline Ruler moves the playhead. When you add markers to the timeline, these markers appear within the Timeline Ruler, as well.

- **Playhead:** Shows the current frame and sample of playback, and provides a visual representation of where you are while playing, shuttling, and jogging through the timeline. Also used as a reference point for editing operations. The largest timecode display at the upper left-hand display shows the position of the playhead.
- **Audio tracks:** The Fairlight page of DaVinci Resolve supports multiple audio tracks, and each audio track may contain multiple lanes with which to accommodate the audio channels that are contained within multi-channel audio clips using track mappings such as stereo, 5.1, 7.1, or Adaptive (1–24 channels). All audio clips that have been edited into the Timeline appear within each track, with the recorded channels within each clip occupying as many lanes as that clip has available. At the left of each track is a header area that contains a number of controls.



The Fairlight timeline is divided into tracks and lanes; track A1 has a single lane for the mono audio within it, and track A2 has two lanes to accommodate stereo audio

- **Track header:** The track header contains different controls for selecting, locking/unlocking, and soloing/muting tracks. Each track header also lists how many clips appear on that track. The track header contains the following five controls, from left to right:



The track header controls of the Fairlight page timeline

- **Track color:** Each track can be color-coded with one of 16 different colors. These color codes correspond to the Edit page Mixer, and to the Fairlight page Mixer and Audio Meters. You can choose a new color for any track by right-clicking the track header and choosing from the Change Track Color submenu. You can set multiple tracks to the same color by Command-clicking in the track header of multiple tracks to select them, and then right-clicking one of the selected track headers and choosing from the Change Track Color submenu.
- **Track number:** Indicates the number of each track.
- **Track name:** Each track has a name that defaults to the track number, such as Track 1, Track 2. However, you can click any track's name and edit it to be whatever you like. For example, you can rename each track with the type of audio you're editing onto it, such as Production, Ambience, SFX, or Music. These track names are also used to identify each track's channel in the Mixer, in the middle of each channel strip (each channel strip's track number is simultaneously displayed at the top).

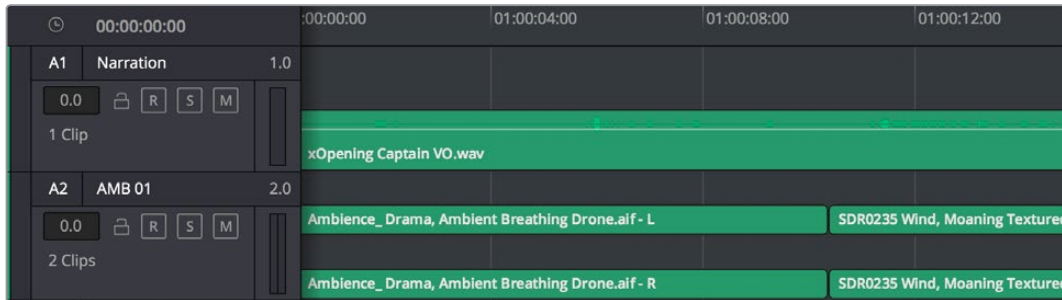
- **Audio channel type indicator:** Audio tracks also show which channel configuration that track uses, listing the number of channels for mono, stereo, 5.1, 7.1, and adaptive.
 - **Fader value:** A field displays the current fader setting at the position of the playhead, in dB.
 - **Lock Track button:** Light gray when turned on, dark gray when turned off. When a track is locked, clips can't be replaced, moved, or otherwise edited, although clips on locked tracks can be graded.
 - **Arm button:** This button arms recording onto that track.
 - **Solo button:** Disables all other tracks but the current one, enabling you to quickly hear a single track in isolation. This affects rendering, so if one or more tracks are soloed, the muted tracks won't be output or rendered.
 - **Mute button:** Temporarily disables audio on that track so it's neither monitored nor output. This affects rendering, so if one or more tracks are muted, they won't be output or rendered.
 - **Audio meters:** Each track has audio meters in the track header that let you see levels during playback.
- **Toolbar editing tools:** The toolbar contains both modal and command buttons to let you work on your projects. More detail on these appears in the following section.
 - **Vertical and horizontal scroll bars:** If your project is longer than the current width of the Timeline, or the number of audio tracks is taller than the current height of the Timeline, these scroll bars let you drag to navigate around your program. When you scroll horizontally, you also move the playhead. You may also scroll vertically using the scroll wheel (or other scroll control) of your mouse or other pointing device. You may scroll horizontally by holding the Command key down while using your scroll control.
 - **Individual Timeline track resizing:** Any track in the Timeline can be individually resized by right-clicking anywhere within that track's header control area and choosing a track height from the Lock Track Height To submenu of the contextual menu. You can choose a fixed size including Micro, Mini, Medium, Large, and Extra Large. When you choose a fixed track height, vertical zooming no longer affects that track until you change that track's Lock Track Height to option back to None.



Resizing an individual audio timeline track using contextual menu options

Track Layering

Audio layering is a special audio editing mode that lets you superimpose multiple audio clips in the same track, with audio clips edited into the top layers muting overlapping sections of audio clips appearing on lower layers. With audio layering enabled, superimposed audio clips are treated similarly to superimposed video clips that have opacity set to 100%, with clips on top obscuring (or muting) clips underneath.



Turning on track layers opens up space to edit more audio into each track

Audio layering is incredibly useful for any situation where you're combining segments of multiple takes together to create a single voiceover, audio vocal track, or dramatic performance, as you can choose which segments to use via their superimposed position in the stack of clips appearing in that track, while at the same time you're preserving the other takes underneath in case you might want them later.

TIP: Track layering can be enabled for audio tracks on the Edit page as well.

Switching Among Multiple Timelines

Timelines can be organized like any other clip in the Media Pool. To open or switch among timelines, use the following procedures.

To switch timelines, do one of the following:

- In the Edit page Media Pool, double-click a timeline.
- In the Edit page Timeline Viewer, choose a timeline from the Timelines pop-up menu at the top of the viewer.
- In the Color page, choose a timeline from the Timelines pop-up menu at the top of the viewer.
- In the Fairlight page, choose a timeline from the Timelines pop-up menu to the left of the transport controls.

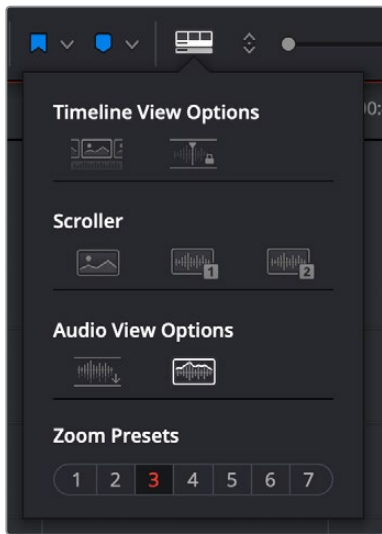
Toolbar

The Toolbar has buttons that let you choose modes of functionality and other buttons that let you execute commands such as placing markers and flags.



Buttons in the Fairlight Page toolbar

- **Normal Edit mode:** The default mode in which you can move and resize clips in the Timeline, roll edits, and do other basic editing tasks.
- **Region Selection mode:** Performs an insert edit to the Timeline with whatever clip is in the Source Viewer.
- **Add Cut:** Click to add a cut to every clip on an unlocked track that intersects the position of the playhead.
- **Snapping:** Enables or disables clip snapping. When turned on, clip In and Out points, markers, and the playhead all snap to one another for reference while you're editing. A pop-up menu lets you choose how to use snapping to quantize clip position, to Bars, Beats, Divisions, Tics, or via Smart snapping.
- **Flag Clip/Flag Colors pop-up menu:** Flags identify clips, and indicate all clips that correspond to the same item of media in the Media Pool. Clips can have multiple flags. Clicking the Flag button automatically adds a flag to whichever clip is currently selected in the Timeline. A pop-up menu to the right lets you choose differently colored flags, and clear all flags from the currently selected clip.
- **Add Marker/Marker Colors pop-up menu:** Markers identify specific frames of individual clips. Clicking the Add Marker button adds a marker of the currently displayed color to the clip at the position of the playhead in the Timeline. A pop-up menu to the right lets you choose differently colored markers, and clear all markers from the currently selected clip.
- **Timeline View Options pop-up menu:** Contains a variety of controls with which to customize the display of clips in the Timeline:
 - **Timeline View Options:** The left button lets you display or hide the video tracks in the current timeline, for use as a reference while you work. The right button lets you set the playhead to be fixed, so that during playback the tracks scroll past the playhead as it remains in place, which is useful when working with the Fairlight control surface.
 - **Scroller:** Three buttons let you turn on one video and two audio scrollers, which act as scroll bars and zoomed-in visual references for the video and audio media immediately surrounding the playhead.
 - **Audio View Options:** The left button lets you toggle full waveforms on and off, while the right button lets you toggle waveform outlines on and off.
 - **Zoom Presets:** These buttons let you choose from one of 7 zoom levels, and checkboxes let you show and hide flags and markers, full waveforms, and waveform borders.

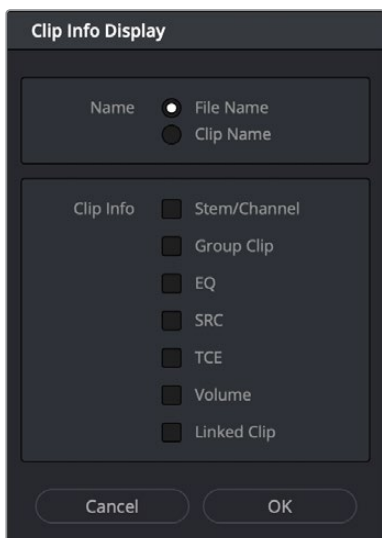


Selecting the Audio Timeline View options

- **Zoom Height slider:** Lets you change the height of all tracks and clips in the Timeline at once. You can also zoom the height of timeline tracks by pressing the Command key while using the scroll control of your pointer, if it has such a control. The scroll wheel of a mouse is most common.
- **Zoom Width slider:** Lets you shrink or expand the width of the contents of the Timeline. You can also control the width of the contents of the timeline using the scroll control of your pointer, if it has such a control. The scroll wheel of a mouse is most common.

Customizing Clip Display in the Timeline

Choose Fairlight > View Clip Info Display to open a dialog with which you can customize what information is shown at the bottom of each clip in the timeline. This dialog has options for viewing the clip name versus the display name, and for choosing from among a variety of metadata that you might want available as you work.



Selecting the audio clip view options

Customizing the Timeline's Display

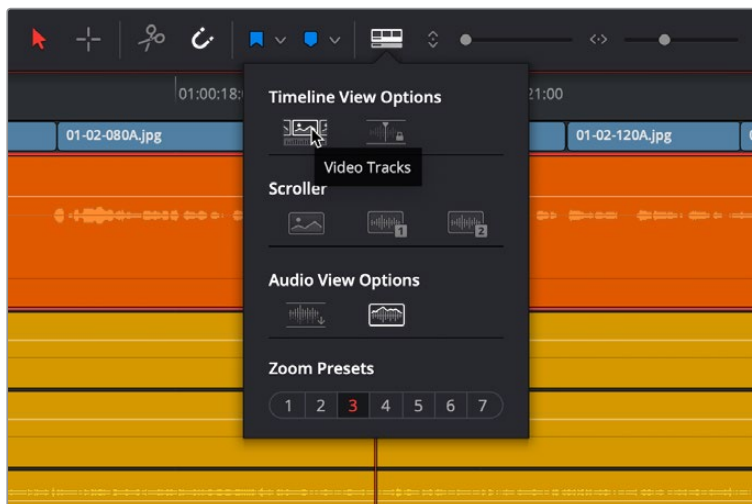
There are a variety of ways you can customize the timeline to better see what you're working on.

Fixed Playhead Mode

Turning on the Fixed Playhead mode in the Timeline View Options pop-up menu, or choosing View > Show Fixed Playhead, puts the Fairlight timeline into an audio-centric mode where the playhead remains fixed in place, and the Timeline scrolls underneath it as you use the transport controls or JKL to play, shuttle, or scrub forward or back.

Visible Video Tracks

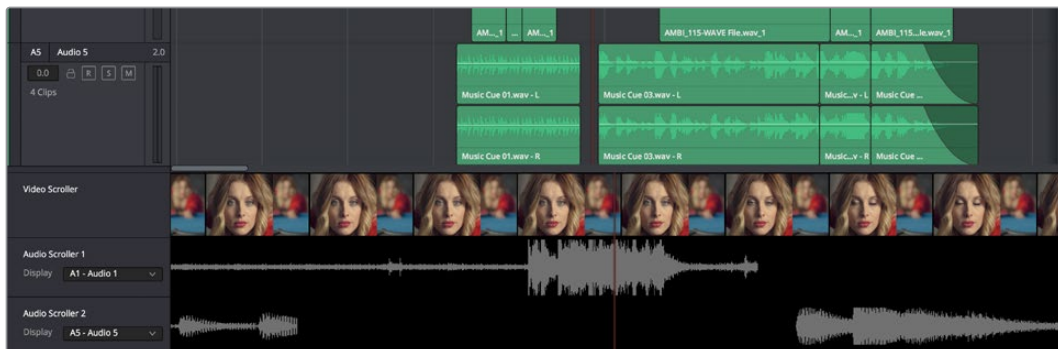
A checkbox in the Timeline View Options pop-up menu of the toolbar lets you display small versions of the video tracks in the Fairlight timeline, for reference. These video tracks are uneditable; they're simply there so you can see which audio clips correspond to which video items, and so they can be used as snapping targets for positioning audio.



Showing video tracks on the Fairlight page

Video and Audio Scrollers

Checkboxes in the Timeline View Options let you optionally show one Video Scroller and up to two Audio Scrollers at the bottom of the Fairlight timeline.



Video and Audio Scrollers at the bottom of the Fairlight timeline

At the default Low zoom level, the Video Scroller provides a scrollable frame-by-frame filmstrip view of the video of your program, where one frame of the scroller equals one frame of your video. Each of the two Audio Scrollers, on the other hand, let you focus on a continuous waveform view of a particular audio track. You choose which track populates an Audio Scroller via a pop-up menu in the Timeline header.



Audio Scrollers showing the pop-up menu that selects which track they display

What Are They Used For?

The Audio Scrollers always provide a zoomed-in view of specific audio tracks that you're focused on, regardless of the zoom level of the Timeline tracks above. This means you can focus on subtle details of the audio of one or two tracks that you're working on, while the rest of the Timeline shows you the overall stack of tracks with clips that are playing together at that moment.

Meanwhile, the Video Scroller always shows the exact frame of video that corresponds to the current moment in time, so it's an aid to precision editing involving frame-specific adjustments.

Additionally, both the Filmstrip and Waveform viewers scroll continuously during playback, giving you a preview of what visual actions and audio cues are coming a few moments forward in time that you can refer to while performing automation or recording foley.

Repositioning the Scroller Playhead

While the scrollers are visible, the Scroller playhead can be dragged to the left or right in the Timeline to give you more or less preview room to the right.

Zooming the Video Scroller

Right clicking on the Video scroller lets you choose a Low, Medium, or High zoom level. At Low, you get a frame-by-frame view of the program that feels like scrolling a strip of film on a Steenbeck. At Medium and High, you get a progressively abbreviated film strip that lets you zoom more quickly.

Scrolling the Fairlight Timeline Using the Scroller Tracks

Dragging the scroller tracks to the left or right smoothly scrubs through the Timeline in greater detail, regardless of the zoom level of the Timeline tracks above.

Mixer

The Audio Mixer provides a set of graphical controls you can use to assign track channels to output channels, adjust EQ and Dynamics, set levels and record automation, pan stereo and surround audio, and mute and solo tracks.

The Audio Mixer exposes two sets of channel strips with controls that correspond to the tracks in the Timeline. The leftmost set of channel strips expose one set of controls for each track in the Timeline, while the rightmost set of channel strips expose another set of controls for each Main and Sub (submix) you've created to bus the mixed audio tracks to whatever set of output tracks you want to expose.



The Audio Mixer, with channel strips corresponding to the tracks in the Timeline

- **Track color:** Each track can be differently color-coded, to help you keep organized.
- **Track number:** The number of the timeline track corresponding to each channel strip appears here.
- **Input:** A pop-up menu that lets you patch inputs, patch buses, and configure the input settings of audio signals routed through Blackmagic hardware interfaces.
- **Effects:** VST and Audio Unit effects that you apply to tracks from the Effects Library appear here, with controls for enabling/disabling each effect, opening an effect's custom controls, and deleting that effect.
- **Insert:** Enables the routing of effects from Blackmagic audio interface hardware to outboard effects boxes and back again. This button can be toggled to enable/disable such routing.
- **EQ:** Double-clicking exposes a four-band parametric equalizer with additional Hi and Lo Pass filters, that has both graphical and numeric controls for boosting or attenuating different ranges of frequencies of audio on each track. You can select from among four types of EQ filtering from the Equalizer Type pop-up menu, with options for Earth (the default), Air, Ice, and Fire. Each band has controls for the filter type (Bell, Lo-Shelf,

Hi-Shelf, Notch), Frequency, Gain, and Q-factor (sharpness of the band), with the available controls for each band of EQ change depending on the filter type.



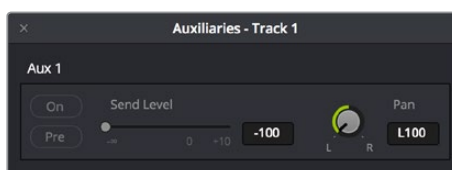
The channel strip EQ window

- **Dynamics:** Double-clicking exposes a set of dynamics controls with three sets of controls corresponding to an Expander or Gate, a Compressor, and a Limiter that can be used separately or in concert to manage the dynamics of the audio on that track.



The channel strip Dynamics control window

- **Aux:** Lets you route that track's channels through an Aux send bus. Each Aux bar corresponds to a specific Aux bus that you created. Double-clicking any of these bars opens up the Auxiliaries window, with which you can enable or disable auxiliaries, set each one to be routed Pre the channel strip or Post the channel strip (the default), and set the Send level and Pan value.



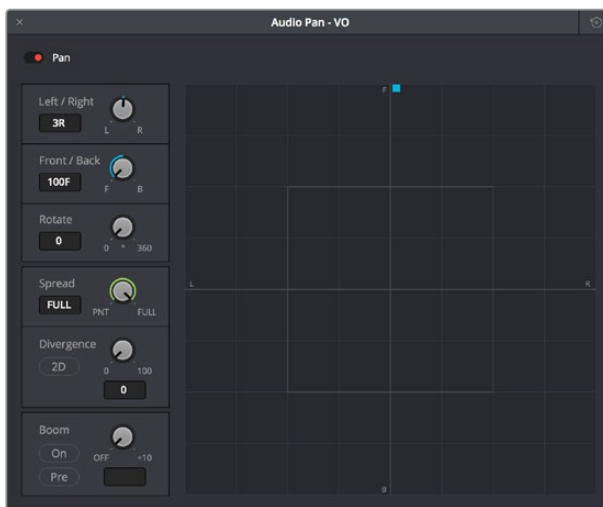
The Auxiliaries control window

Whatever level you set an Aux bus will be shown in the bar that represents that Aux bus in the Mixer's channel strip.



The Auxiliaries levels shown in the channel strip of the Mixer

- **Pan:** A pan control compatible with stereo and surround panning. You can drag within this control to adjust pan, or you can double-click to expose a pan window. What controls are available in the pan window depend on the mapping of the audio track, but both stereo and surround panning controls are available, with corresponding numeric controls.



The Pan control window

Option-double-clicking on the Pan control of the Mixer opens an alternate 3D Audio Pan window. Whereas the regular Pan window lets you do stereo and conventional 5.1 and 7.1 surround panning, the 3D Audio Pan window lets you do the kind of spatial audio positioning enabled by advanced surround formats such as Auro 3D and NHK 22.2 (more information about specific support for these and other formats will come later).



The 3D Pan window

- **Main:** These buttons let you assign a track or Sub's channels to one or more of the main buses.
- **Submix:** These buttons let you assign that track's channels to one or more submix buses.
- **Track name:** This mirrors the track name found in the header controls of the timeline. If you customize a track's name in the timeline, that name appears here.
- **dB:** Shows you the volume, in decibels, that track is currently set to.
- **Arm, Solo, and Mute buttons:** Identical to the controls found in the track header controls of each timeline audio track. Arm lets you enable a track to be recorded onto. Solo lets you mute all other tracks in order to play that track in isolation (along with any other Soloed tracks). Mute disables audio playback from that track.
- **Fader:** Each track's vertical faders let you adjust the volume of that track, and perform automation recording.

The Monitoring Panel

The Monitoring panel that runs along the top of the Fairlight page shows all of the audio meters corresponding to the tracks in the timeline, as well as the Master Output meter, control room meters, and a video viewer.



The Monitoring panel

At left, a row of audio meters corresponds to the channel strips of the Mixer, one meter for every audio track in the timeline. Each track displays the number of meters that corresponds to that track's audio mapping, with mono tracks having a single audio meter, stereo tracks having two, 5.1 tracks having six, and so on. All of these track and bus meters (with the exception of the Loudness meters) display both peak and RMS (root mean square) levels against a dB scale.

To the right of the Track meters are the Bus meters, in which all Mains, Subs, and Aux buses appear, separated by type, and each displaying the number of meters that corresponds to that track's audio mapping. This way you can see the sum of all tracks that have been routed to a particular bus.

The last set of meters, to the right of all others, are the Loudness meters, which consist of two sets of meters and a numerical readout. These meters let you keep track of the integrated loudness of the overall mix, which is the standard to which all contemporary mixing specifications refer when describing the deliverables you're expected to provide to the client.

Viewer

A small viewer to the left of the Monitoring panel shows the frame of video at the position of the playhead. The only available control is a button in the lower right-hand corner that lets you expand the Viewer into its own floating window.

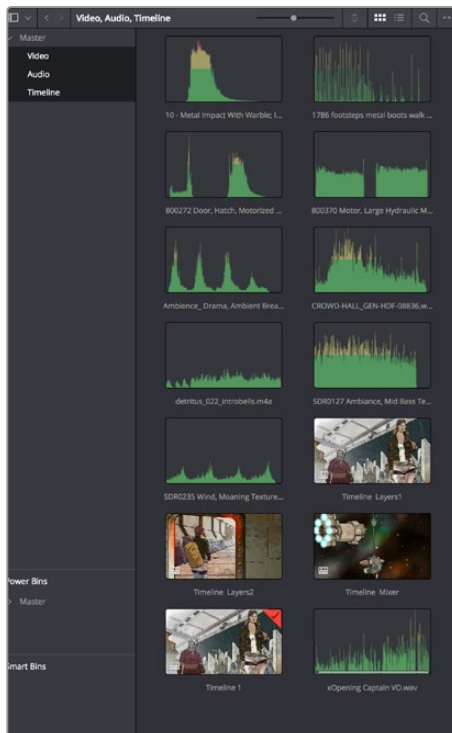


The Monitoring panel

The Media Pool

In the Fairlight page, the Media Pool serves as the repository of all audio clips in your project, both clips that appear within the timeline, and clips that you've added to your project but have not yet used. When you record audio into the timeline, the resulting clips are stored in the Media Pool as well, for future use. The Media Pool is also mirrored on the Media and Edit pages, and contains all of the video clips and timelines within that project.

The Bin list at the left shows a hierarchical list of bins used for organizing your media, which is also used to organize your timelines. By default, the Media Pool consists of a single bin, named "Master," but you can add more bins as necessary to organize timelines and clips by right-clicking anywhere in the empty area of the Media Pool and choosing Add Bin. You can rename any bin by double-clicking on its name and typing a new one, or by right-clicking a bin's name and choosing Rename Bin. The Bin list can be hidden or shown via the button at the upper left-hand corner of the Fairlight page toolbar.



The Media Pool in Thumbnail mode showing audio clips

The browser area to the right shows the contents of the currently selected bin in the bin list. Every clip you import, every timeline you create, and every AAF, XML, or EDL file you import appears here. You can create or import as many timelines as you need within a single project.

As elsewhere, the Media Pool can be displayed in either Icon or List view. In List view, you can sort the contents by any one of a subset of the total metadata that's available in the Metadata Editor of the Media page. Of particular interest to audio editors are columns for Name, Reel Name, different timecode streams, Description, Comments, Keyword, Shot, Scene, Take, Angle, Circled, Start KeyKode, Flags, and Usage.

For more information on using the myriad features of the Media Pool, see Chapter 11, "Adding and Organizing Media with the Media Pool." In the sections that follow, some key features of the Media Pool are summarized for your convenience.

Importing Media Into the Media Pool on the Fairlight Page

While adding clips to the Media Pool in the Media page provides the most organizational flexibility and features, if you find yourself in the Edit or Fairlight pages and you need to quickly import a few clips for immediate use, you can do so in a couple of different ways.

To add media by dragging one or more clips from the Finder to the Fairlight page Media Pool (macOS only):

- 1 Select one or more clips in the Finder.
- 2 Drag those clips into the Media Pool of DaVinci Resolve, or to a bin in the Bin list.
Those clips are added to the Media Pool of your project.

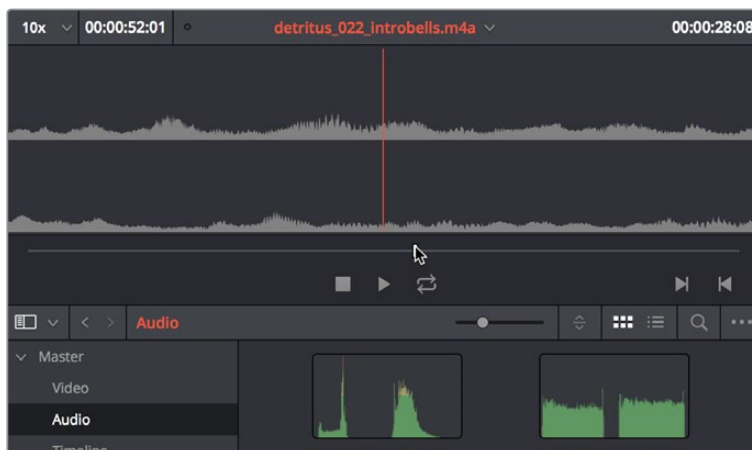
To use the Import Media command in the Fairlight page Media Pool:

- 1 With the Fairlight page open, right-click anywhere in the Media Pool, and choose Import Media.
- 2 Use the Import dialog to select one or more clips to import, and click Open.
Those clips are added to the Media Pool of your project.

For more information on importing media using the myriad features of the Media page, see Chapter 11, "Adding and Organizing Media with the Media Pool."

Media Pool Preview Player

The Media Pool has a preview player at the top that provides a place to open selected source clips in the Media Pool, play them, add marks to log them, and set In and Out points in preparation for editing them into the Timeline via drag and drop. The Media Pool Preview Player effectively acts as a Source monitor for editing in the Fairlight page.



The preview player in the Media Pool

- Various viewing controls populate the title bar at the top. A pop-up menu at the upper left lets you choose a zoom level for the audio waveform that's displayed. To the right of that, a Timecode window shows you the duration of the clip or the duration that's marked with In and Out points. Next to the right, a real-time performance indicator shows you playback performance. In the center, the title of the currently selected clip is shown, with a pop-up menu to the right that shows you the most recent 10 clips you've browsed. To the far left, a Timecode field shows you the current position of the playhead (right-clicking this opens a contextual menu with options to change the timecode that's displayed, and to copy and paste timecode).
- The center of the Media Pool Preview Player shows you the waveforms in all channels of the currently selected clip, at whatever zoom level is currently selected.
- Transport controls at the bottom consist of a jog bar for scrubbing, Stop, Play, and Loop buttons, and In and Out buttons.

Bins, Power Bins, and Smart Bins

There are actually three kinds of bins in the Media Pool, and each appears in its own section of the Bin list. The Power Bin and Smart Bin areas of the Bin list can be shown or hidden using commands in the View menu (View > Show Smart Bins, View > Show Power Bins). Here are the differences between the different kinds of bins:

- **Bins:** Simple, manually populated bins. Drag and drop anything you like into a bin, and that's where it lives, until you decide to move it to another bin. Bins may be hierarchically organized, so you can create a Russian dolls nest of bins if you like. Creating new bins is as easy as right-clicking within the bin list and choosing Add Bin from the contextual menu.
- **Power Bins:** Hidden by default. These are also manually populated bins, but these bins are shared among all of the projects in your current database, making them ideal for shared title generators, graphics movies and stills, sound effects library files, music files, and other media that you want to be able to quickly and easily access from any project. To create a new Power Bin, show the Power Bins area of the Bin list, then right-click within it and choose Add Bin.
- **Smart Bins:** These are procedurally populated bins, meaning that custom rules employing metadata are used to dynamically filter the contents of the Media Pool whenever you select a Smart Bin. This makes Smart Bins fast ways of organizing the contents of projects for which you (or an assistant) has taken the time to add metadata to your clips using the Metadata Editor, adding Scene, Shot, and Take information, keywords, comments and description text, and myriad other pieces of information to make it faster to find what you're looking for when you need it. To create a new Smart Bin, show the Smart Bin area of the Bin list (if necessary), then right-click within it and choose Add Smart Bin. A dialog appears in which you can edit the name of that bin and the rules it uses to filter clips, and click Create Smart Bin.

Showing Bins in Separate Windows

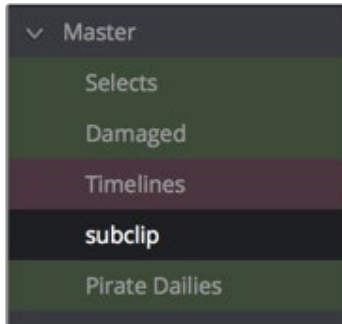
If you right-click a bin in the Bin list, you can choose "Open As New Window" to open that bin into its own window. Each window is its own Media Pool, complete with its own Bin list, Power Bins and Smart Bins lists, and display controls.

This is most useful when you have two displays connected to your workstation, as you can drag these separate bins to the second display while DaVinci Resolve is in single screen mode. If you hide the Bin list, not only do you get more room for clips, but you also prevent accidentally switching bins if you really want to only view a particular bin's contents in that window. You can have as many additional Bin windows open as you care to, in addition to the main Media Pool that's docked in the primary window interface.

Filtering Bins Using Color Tags

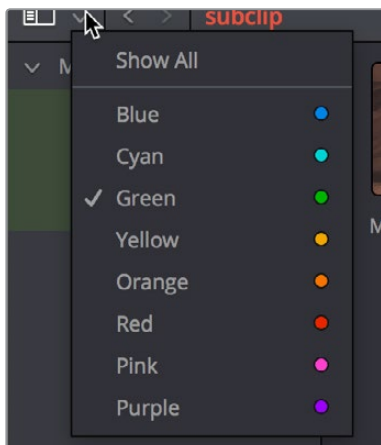
If you're working on a project that has a lot of bins, you can apply color tags to identify particular bins with one of eight colors. Tagging bins is as easy as right-clicking any bin and choosing the color you want from the Color Tag submenu.

For example, you can identify the bins that have clips you're using most frequently with a red tag. A bin's color tag then appears as a colored background behind that bin's name.



Using color tags to identify bins

Once you've tagged one or more Media Pool bins, you can use the Color Tag Filter pop-up menu (the pop-up control to the right of the Bin List button) to filter out all but a single color of bin.



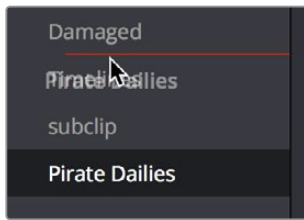
Using Color Tag filtering to isolate the red bins

To go back to seeing all available bins, choose Show All from the Color Tag Filter pop-up.

Sorting the Bin List

The Bin list (and Smart Bin list) of the Media Pool can be sorted by bin Name, Date Created, or Date Modified, in either ascending or descending order. Simply right-click anywhere within the Bin list and choose the options you want from the Sort by submenu of the contextual menu.

You can also choose User Sort from the same contextual menu, which lets you manually drag all bins in the Bin list to be in whatever order you like. As you drag bins in this mode, an orange line indicates the new position that bin will occupy when dropped.

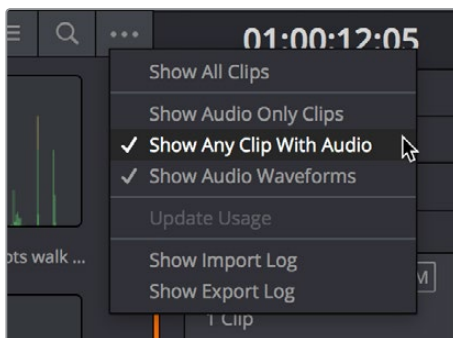


Dragging a bin to a new position in the Bin list in User Sort mode

If you use User Sort in the Bin list to rearrange your bins manually, you can switch back and forth between any of the other sorting methods (Name, Date Created, Date Modified) and User Sort and your manual User Sort order will be remembered, making it easy to use whatever method of bin sorting is most useful at the time, without losing your customized bin organization.

Filtering Clips With Audio in the Fairlight Page

The Media Pool in the Fairlight page has one additional feature: the ability to filter out audio-only clips, or clips with audio, in the currently selected bin. This makes it easy for you to find audio clips that you're looking for, which are hidden along with lots of video clips in the same bin. To use this feature, click the Option menu of the Media Pool and choose Show All Clips, Show Audio Only Clips, or Show Clips With Audio.



The Media Pool filter options in the option menu

Searching for Content in the Media Pool

An optional Search field can be opened at the top of the Media Pool that lets you quickly find clips by name, partial name, or any of a wide variety of Media Pool metadata.

To search for a clip by name:

- 1 Select which bin or bins you want to search.
- 2 Click the magnifying glass button at the upper right-hand corner of the Media Pool.
- 3 Choose the particular column of information you want to search (or All Fields to search all columns) using the Filter by pop-up menu. Only selected bins will be searched.
- 4 Type your search string into the Search field that appears. A few letters should be enough to isolate only those clips that have that character string within their name. To show all clips again, click the cancel button at the right of the search field.

TIP: Smart Bins are essentially multi-criteria search operations that scope the entire project at once and are saved for future use.

Taking Advantage of the Media Pool's Usage Column

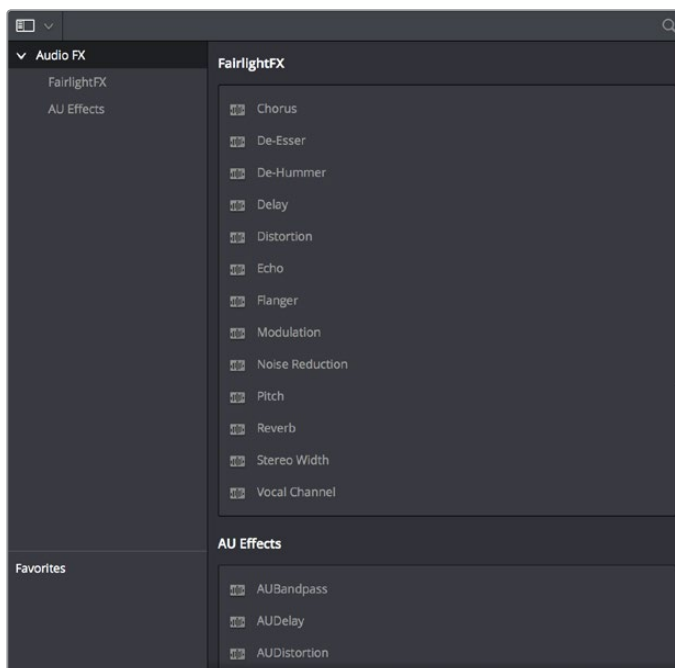
In List view, the Usage column does not automatically update to show how many times a particular clip has been used. However, you can manually update this metadata by right-clicking within the Media Pool and choosing Update Usage Data from the contextual menu that appears. Afterwards, each clip will display how many times it's been used in this column. Clips that have not been used yet display an x.

Effects Library

The Effects Library on the Fairlight page displays both the built-in FairlightFX audio plug-ins that accompany DaVinci Resolve on macOS, Windows, and Linux, as well as whatever Audio FX are available on your workstation.

- FairlightFX are built-in audio processing effects that are fully cross-platform on all platforms DaVinci Resolve supports.
- On macOS and Windows, DaVinci Resolve supports the use of third-party VST audio plug-ins.
- On macOS, DaVinci Resolve supports Audio Unit (AU) audio plug-ins.

Once you install third-party effects on your workstation, they appear in this panel of the Effects Library alongside the FairlightFX that are always available. Audio plug-ins let you apply effects to audio clips or entire tracks worth of audio, to add creative qualities such as echo or reverb, or to take care of mastering issues using noise reduction, compression, or EQ.

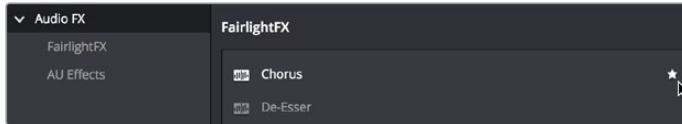


The Effects Library

Similar to the Media Pool, the Effects Library's Bin list can be opened or closed using a button at the top left.

Effects Library Favorites

You can click on the far right of any transition, title, or generator to flag that effect with a star as a favorite effect. When you do so, the favorited effects appear in a separate Favorites area at the bottom of the Effects Library Bin list.



Stars indicate a flagged favorite effect, all favorites are currently filtered

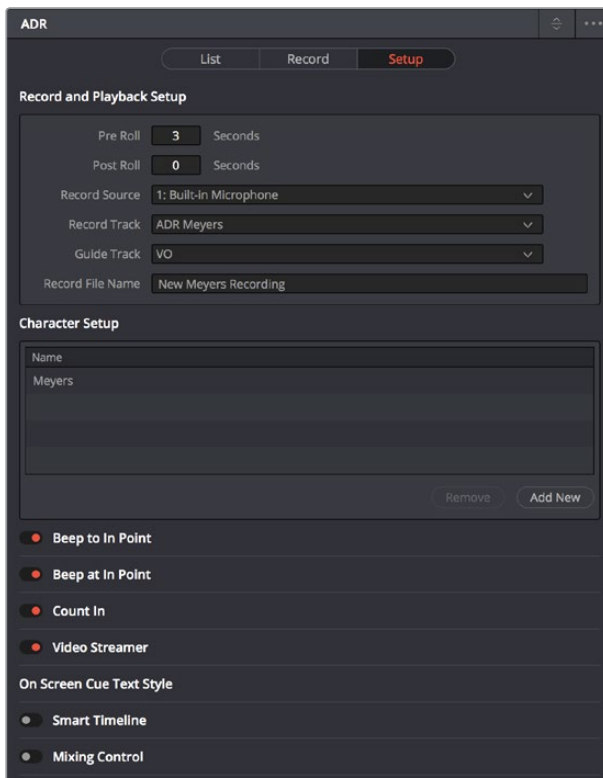
ADR

The Fairlight page of DaVinci Resolve has a sophisticated interface for doing ADR, or automated dialog replacement, in a structured and straightforward manner. Simple yet powerful cue list management, industry-standard audio beeps and visual cues, and sophisticated take management with star ratings and layered take organization help you manage the resulting recordings to use the best parts of each take in your program.

When open, the ADR interface consists of three panels to the left of the Timeline: a Record panel, a List panel, and a Setup panel. The controls of these panels are described in the order in which they're used.

The Setup Panel

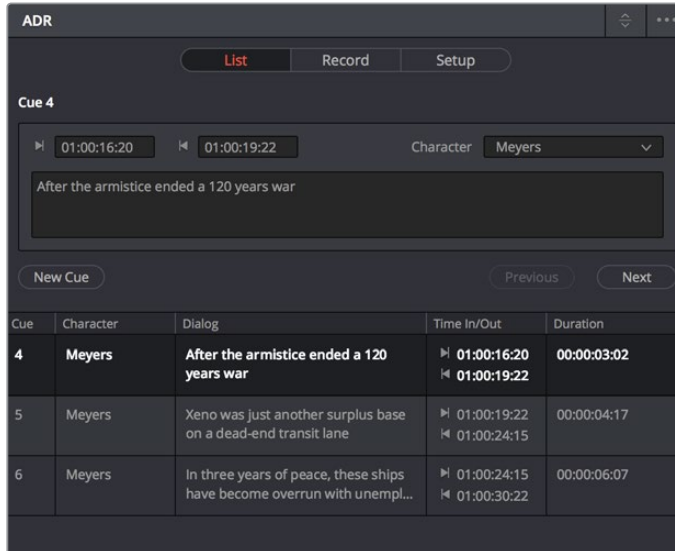
As its name implies, the Setup panel is where you configure your ADR session. It presents the controls letting you set up which audio input you want to use and what tracks to listen and record to, as well as preferences governing what the actors will see on the display you output video to, to help them keep their performance in sync.



The Setup panel of the ADR interface

The List Panel

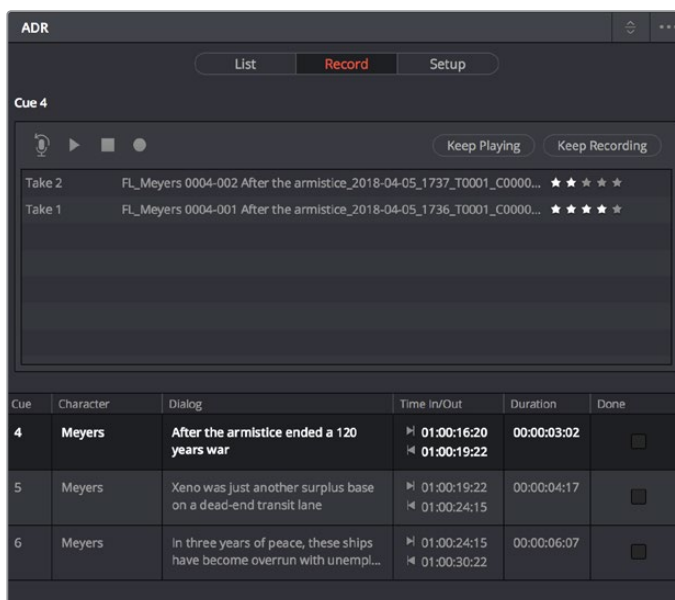
This is where you create a list of cues you need to re-record, either from within the Fairlight page, or imported from a .csv file that someone provides you. It presents controls for adding, editing, importing, and exporting cues that you want to record.



The List panel of the ADR interface

The Record Panel

This is where you actually run the ADR recording session you've set up, using the dialog cues you've put into the Cue list. It presents controls for displaying and selecting which cues to record, previewing and initiating recording, and adding metadata to rate the different takes you've recorded and to keep track of which cues have been completed.

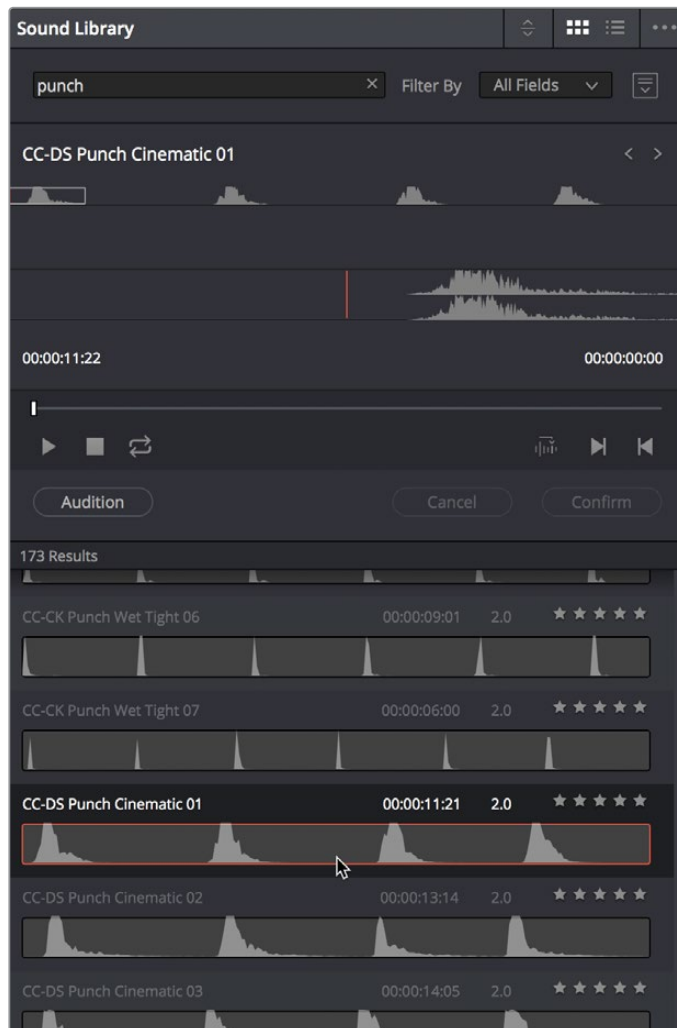


The Record panel of the ADR Interface

For more information on using the VO panel, see Chapter 127, "ADR."

Sound Library Browser

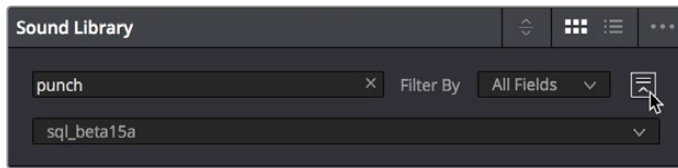
A Sound Library panel is available from the Interface toolbar for browsing sound effects libraries that you have available to you, on your system or on a SAN you're connected to. It includes the capability of scanning specified file paths to catalog available sound files and their metadata, storing this data within the currently selected project database (or another database that you select) to use when searching for the perfect sound effect within your library. Once you've cataloged your sound effects collection, it's easy to search for sounds, preview what's been found in the list, and edit the one you like best into the Timeline.



The Sound Library panel

The Sound Library panel has the following controls:

- **List display controls:** The Sound Library title bar has controls for sorting the sound effects list, showing it in List or Icon view, and an Option menu with various other settings and commands.
- **Search field:** Enter a term into the search field to look for sound effects files using that metadata. A pop-up menu to the right lets you search the database by name or description metadata.
- **Library controls:** Clicking the Library button (to the right of the Search field) reveals a menu that lets you choose which database to use for searching (and cataloging) sound effects collections. Each PostgreSQL database can have a different catalog.



Choosing a library to search

- **Preview and Audition controls:** These controls let you preview and audition sound effects that you find as you look for the right one.
 - **Clip name:** The name of the current clip you’ve selected.
 - **Next/Previous buttons:** Two buttons let you select the next or previous sound effect clip in the Sound Effect list.
 - **Zoom control:** Controls the zoom level of the Playthrough waveform.
 - **Duration field:** Shows the duration of the current clip, or of the section of the clip marked with In and Out points.
 - **Playhead timecode field:** The timecode of the playhead’s position.
 - **Navigation waveform:** The waveform of the entire sound effect appears here, making it easy to jump to different parts of the selected clip. All channels are summed together in this display.
 - **Playthrough waveform:** A zoomed-in section of the selected clip that lets you see more waveform detail for setting In, Out, and Sync points.
 - **Jog bar:** Lets you scrub around the clip.
 - **Transport controls:** Stop, play, and Loop buttons let you control playback, although you can also use the space bar and JKL controls. Right-click the Stop button to switch it into “Stop and Go to Last Position” mode.
 - **Marking controls:** The Sync Point button lets you mark which frame of the sound effect you want to use to sync to a frame of the Timeline when you audition. In and Out points let you mark how much of the sound effect clip you want to edit into the Timeline.
 - **Audition controls:** The Audition button puts you into Audition mode where the currently selected sound effect clip appears at the position of the playhead in the currently selected Timeline track. Cancel and Confirm buttons let you choose whether you want to remove the clip from the Timeline and try again with another clip, or leave the sound effect clip in.
- **Sound Effect list:** All sound effect clips that match the current search criteria appear in this scrollable list. Each item in the list shows its name, duration, channel mapping, and star ratings that you can customize.

To catalog all audio files within a given file path:

- 1 Open the Sound Library.
- 2 (Optional) Click the Library button (to the right of the Search field), and select which PostgreSQL-based project database you want to save the resulting metadata analysis to using the Library pop-up menu that appears. The current database is selected by default. If you're using a disk database instead, the top compatible PostgreSQL database in the list will be the default.
- 3 Click the Option menu and choose Add Library. From the file dialog that appears, select the top-most directory of a file path that contains sound effects; if you've selected a directory with subdirectories inside, each subdirectory will be examined for content.
- 4 Click Open.

A progress bar will show you how long the operation will take. When you're finished, a dialog will appear letting you know how many clips were added to the current library.

To search for a specific sound effect and edit it into the Timeline:

- Type a search term into the Search field. Optionally, you can click the Library button to the right of the search field, and use the Type, Duration, and Format pop-up menus to help limit your search.

All audio cues that include the search term in their file names will appear in a list below. Selecting an item on the list loads it into the preview player where you can play it or audition it in your timeline.

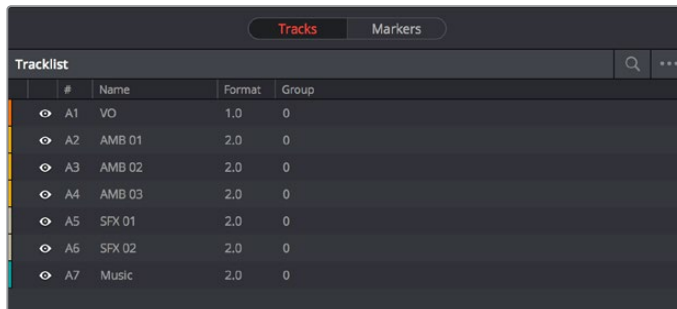
Auditioning clips you've found in the Timeline:

- 1 Select a sound effect clip you've found from the list that you want to audition in the Timeline.
- 2 Move the playhead to the part of the sound effect that you want to sync to, and click the Sync Point button to place a sync mark on that clip. For example, if you're syncing a car door closing, you might sync to the peak of the "slam."
- 3 Set In and Out points to define the range of the sound effect you want to potentially use.
- 4 Select a track you want to preview the sound effect in by clicking its track header or Mixer channel strip.
- 5 Position the playhead at the place in the Timeline you want to align the sync mark in the sound library to.
- 6 Click the Audition button in the Sound Library. That clip now appears, temporarily, in the Timeline, and you can play through that section of the Timeline to see how you like the sound effect in context with the rest of the mix.
- 7 If you like the sound effect, click Conform to keep it in the Timeline. If you don't, click Cancel.

Index

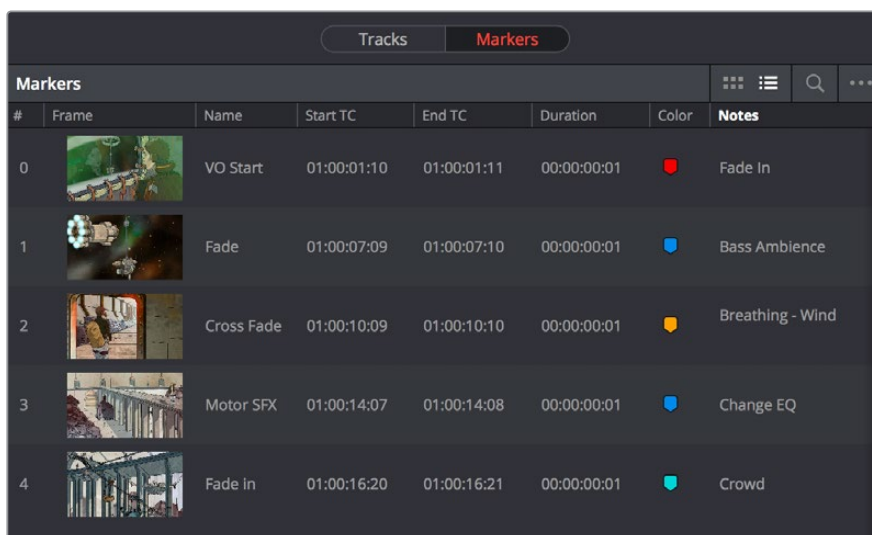
The Index provides a handy interface for listing all of the clips in the current edit, all the tracks in the current timeline, and all the markers in the current timeline. Using these lists, multiple items can be selected, tracks can be managed, and marker notes can be consulted with ease. Each of these three categories of information is displayed in separate panels:

- **Tracks:** Every track in the currently open timeline corresponds to a row of controls and information in this panel. From left to right, each track has a visibility control, a color control, a number, a name, a format, and a group that it belongs to.



The Tracks panel shows a row of information for each of the tracks in the Timeline

- **Markers:** The markers panel can be displayed in either thumbnail or list mode. In thumbnails mode, each marker in your timeline corresponds to a thumbnail displaying the timecode of its location underneath it, and the color of the marker to the left of the timecode location. In list view, each marker displays a row with the following information; marker number, frame (showing a thumbnail), marker name, start timecode, end timecode, duration, marker color, and notes.



The Markers panel shows a row of information for each of the markers in the Timeline

Inspector

When you add an audio effect to a clip or a track, those effects appear in the Inspector when that clip or track is selected.

Metadata Editor

Lets you view and edit the metadata of selected clips in the Fairlight page.

Oscillator for Generating Tone, Noise, and Beeps

The Fairlight page has a general purpose oscillator, the settings of which you can customize by choosing Fairlight > Oscillator Settings. This opens the Oscillator Settings window that you can configure to generate tones, noise, or beeps using five sets of controls:

- **Enable/Disable Oscillator toggle:** Lets you turn the Oscillator on or off system-wide.
- **Frequency dial:** Sets a custom frequency of oscillating tone, from 20 Hz to 10kHz. Defaults to 1kHz.
- **Level dial:** Sets the output level for the tone or noise, from –50dB to +10dB. Defaults to –15 dB.
- **Frequency presets:** Four buttons let you choose from four commonly used tones: 100 Hz, 440 Hz, 1 kHz, and 2 kHz.
- **Noise type buttons:** Two buttons let you choose from White noise or Pink noise.

You can set up the Oscillator to output whatever kind of tone or noise you require, and then patch it to tracks for recording tones, or patch it to audio outputs for calibrating speakers. If you use the beep options of the ADR panel, those are performed via the Oscillator.

To play the Oscillator out of your speakers:

- 1 Choose Fairlight > Patch Input/Output to open the Patch Input/Output window.
- 2 Choose Osc from the Source pop-up menu, and choose Audio Outputs from the Destination pop-up menu.
- 3 At the left, click the button of what you want to output, Osc (Oscillator) or Noise.
- 4 At the right, click the connected audio outputs that you want to patch to, and click Patch. Tone or noise should immediately start playing out of your configured speakers.
- 5 To stop, select one of the patched buttons, and click Un-Patch.

To record a tone or noise from the Oscillator to an audio track:

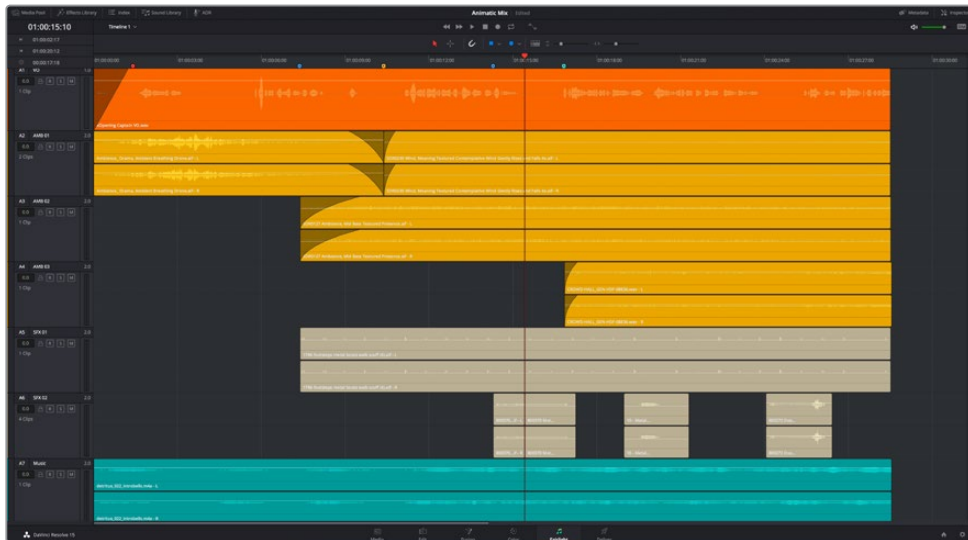
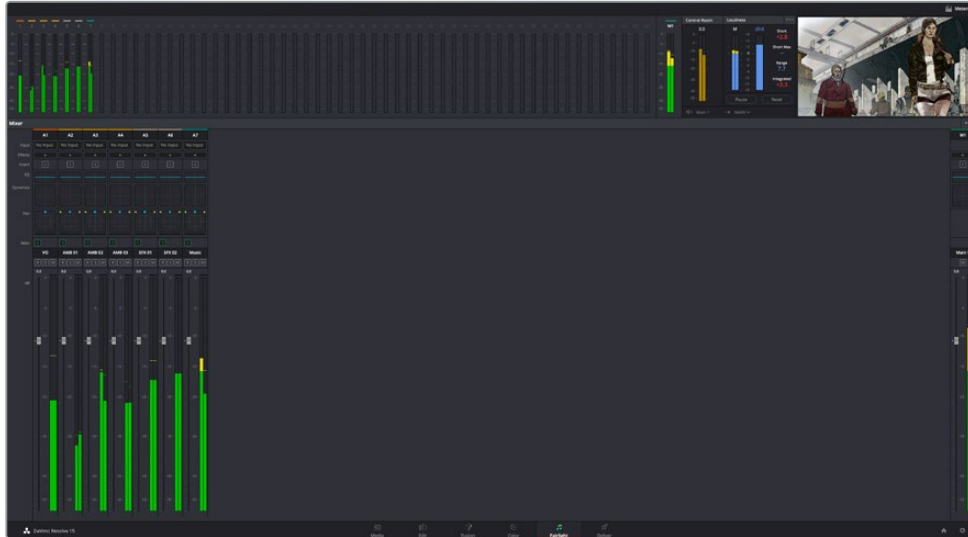
- 1 Choose Fairlight > Patch Input/Output to open the Patch Input/Output window.
- 2 Choose Osc from the Source pop-up menu, and choose Track Input from the Destination pop-up menu.
- 3 At the left, click the button of what you want to output, Osc (Oscillator) or Noise.
- 4 At the right, click the connected audio outputs that you want to patch to, and click Patch. Close the Patch Input/Output window.
- 5 Click the Arm Record (R) button in the track header of the track you patched the Oscillator to. If your Main is properly patched to your outputs, you should hear the tone or noise, and that track's audio meter should immediately rise to the level being output by the Oscillator.
- 6 Click the Record button of the transport controls to initiate recording of that tone to the patched track. Click the Stop button or press the Spacebar to halt recording when you're done.

Dual Monitor Layout

The Audio page has a dual monitor layout that provides maximum space for the mixer and audio meters on one screen and a full-screen timeline on the other.

To enter dual screen mode:

Choose Workspace > Dual Screen > On.



The Fairlight page in dual screen mode

To switch which UI elements appear on which monitors:

Choose Workspace > Primary Display > Display 1 or Display 2, which reverses the contents of both monitors in dual screen mode.

Customizing the Fairlight Page

The default layout is quite efficient for a number of tasks on most displays. You can always return to the default layout by choosing **Workspace > Reset UI Layout**. However, the Fairlight page can be customized to create more room for specific areas of the interface to accommodate different tasks.

To resize any area of the Fairlight page:

Drag the vertical or horizontal border between any two panels to enlarge one and shrink the other.

To resize the height of individual audio tracks:

Move the pointer to the bottom border of any audio track header, and when it becomes a resize cursor, drag that border up or down to resize that track. Each track can have an independent size when you do this.

To resize any column of the Index:

Move your pointer over the divider between any two columns and drag when the horizontal resize cursor appears.

To rearrange Index columns:

Drag the header of any column to the left and right to move that column.

Undo and Redo in DaVinci Resolve

No matter where you are in DaVinci Resolve, Undo and Redo commands let you back out of steps you've taken or commands you've executed, and reapply them if you change your mind. DaVinci Resolve is capable of undoing the entire history of things you've done since creating or opening a particular project. When you close a project, its entire undo history is purged. The next time you begin work on a project, its undo history starts anew.

Because DaVinci Resolve integrates so much functionality in one application, there are three separate sets of undo "stacks" to help you manage your work.

- The Media, Edit and Fairlight pages share the same multiple-undo stack, which lets you backtrack out of changes made in the Media Pool, the Timeline, the Metadata Editor, and the Viewers.
- Each clip in the Fusion page has its own undo stack so that you can undo changes you make to the composition of each clip, independently.
- Each clip in the Color page has its own undo stack so that you can undo changes you make to grades in each clip, independently.

In all cases, there is no practical limit to the number of steps that are undoable (although there may be a limit to what you can remember). To take advantage of this, there are three ways you can undo work to go to a previous state of your project, no matter what page you're in.

To simply undo or redo changes you've made one at a time:

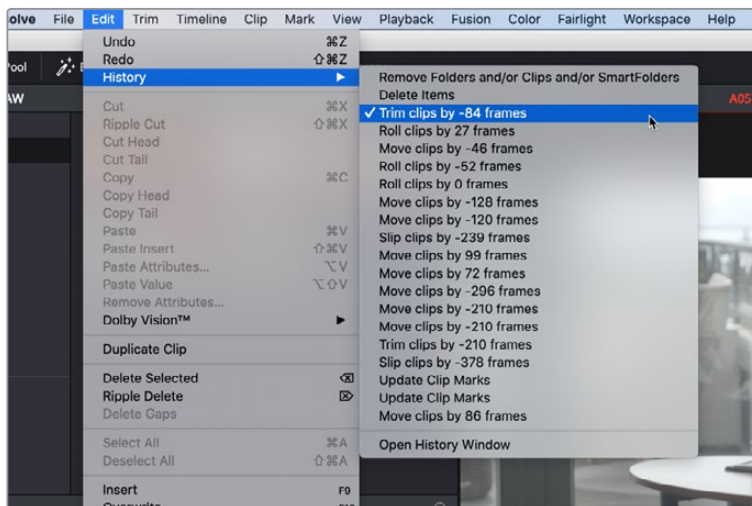
- Choose Edit > Undo (Command-Z) to undo the previous change.
- Choose Edit > Redo (Shift-Command-Z) to redo to the next change.
- On the DaVinci control panel, press the UNDO and REDO buttons on the T-bar panel.

TIP: If you have the DaVinci control panel, there is one other control that lets you control the undo stack more directly when using the trackballs, rings, and pots. Pressing RESTORE POINT manually adds a memory of the current state of the grade to the undo stack. Since discrete undo states are difficult to predict when you're making ongoing adjustments with the trackball and ring controls, pressing RESTORE POINT lets you set predictable states of the grade that you can fall back on.

You can also undo several steps at a time using the History submenu and window. At the time of this writing, this only works for multiple undo steps in the Media, Edit, and Fairlight pages.

To undo and redo using the History submenu:

- 1 Open the Edit > History submenu, which shows (up to) the last twenty things you've done.
- 2 Choose an item on the list to undo back to that point. The most recent thing you've done appears at the top of this list, and the change you've just made appears with a check next to it. Steps that have been undone but that can still be redone remain in this menu, so you can see what's possible. However, if you've undone several changes at once and then you make a new change, you cannot undo any more and those steps disappear from the menu.

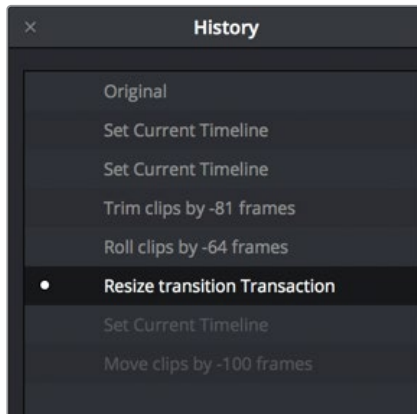


The History submenu, which lets you undo several steps at once

Once you've selected a step to undo to, the menu closes and the project updates to show you its current state.

To undo and redo using the Undo window:

- 1 Choose Edit > History > Open History Window.
- 2 When the History dialog appears, click an item on the list to undo back to that point. Unlike the menu, in this window the most recent thing you've done appears at the bottom of this list. Selecting a change here grays out changes that can still be redone, as the project updates to show you its current state.



The Undo history window that lets you browse the entire available undo stack of the current page

- 3 When you're done, close the History window.

Chapter 124

Setting Up Tracks, Buses, and Patching

One of the first things you need to do when you're setting up a new project for mixing in the Fairlight page is to define all of the audio tracks and buses you're going to need, including submixes and mains that route and combine the audio being output. This chapter covers how to create audio tracks, and how to use buses to manage your mixes in the most efficient possible way.

Contents

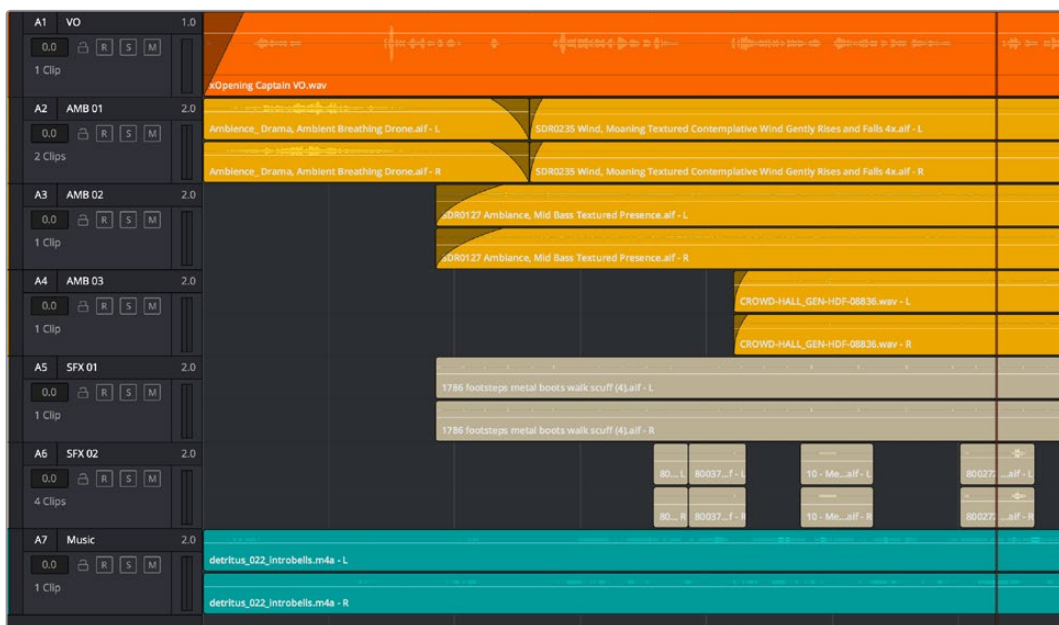
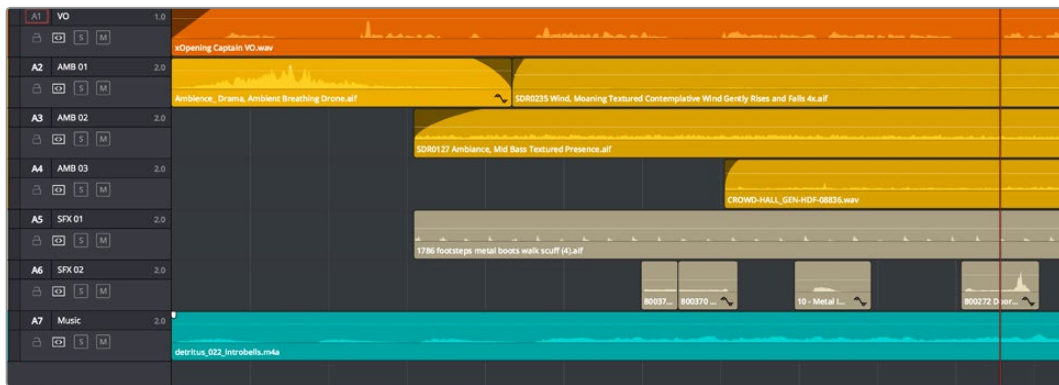
Audio Tracks	2439
What Is a Bus?	2440
Types of Buses	2440
Buses in Nested Timelines	2441
Controlling Signal Flow	2441
Managing Audio Tracks	2441
Defining Timeline Audio Track Channels at Creation	2441
Creating Tracks	2442
Rearranging Tracks	2442
Changing How Many Channels an Audio Track Has	2442
Deleting Tracks	2442
Linked Groups of Mono Tracks	2442
Creating Buses	2444
Assigning Buses	2445
Patching Signal Paths	2446
Using the Patch Input/Output Window	2446
Using a Channel Strip's Input Menu	2448

Audio Tracks

Each audio track in a Resolve timeline corresponds to a single channel strip on the Mixer's left side. Depending on how an audio track has been configured, each audio track is assigned a specific audio format such as stereo, LCRS, 5.1 surround, or 7.1 surround, so that multiple audio channels within the clips on that track can be correctly routed to the proper audio output for monitoring and rendering via the lanes that can be seen within each track on the Fairlight timeline.

Audio tracks in DaVinci Resolve have been designed to contain multiple channels of clip audio within a single track, but how those individual audio channels are displayed depends on the page. The Edit page hides these individual audio channels, displaying only a single clip in the timeline to make it easier to edit multi-channel sources without needing to manage a huge number of tracks. However, the Fairlight page has a unique track and lane system for displaying audio.

The Fairlight page displays the same number of tracks as the Edit page, but each track on the Fairlight page is divided into lanes, which expose each individual channel of clip audio for editing and mixing.



(Top) Stereo audio in the Edit page represented by a single track; (Bottom) The same stereo audio in the Fairlight page shows the two lanes that correspond to each of the stereo audio tracks

Now that you understand how tracks work on the Fairlight page, the next important concept you need to understand in order to unlock the power of the Fairlight page is the audio bus, which lets you combine multiple audio tracks in different ways.

What Is a Bus?

In audio postproduction, a bus is essentially a destination channel to which you can route multiple audio feeds (typically the audio tracks in the timeline) so they are mixed together into a single signal that can be controlled via a single channel strip.

For example, if you have five audio channels into which have been edited all of the dialog audio clips for a particular program, you can route the output of all five dialog tracks to a Submix bus, which combines them so that all dialog can then be mixed with a single set of controls.

There are multiple levels of busses. For example, individual tracks can be routed to Submix busses, as described above. Additionally, multiple Submixes can be routed to one or more Mains. For example, you could have four submix busses, one for German dialog, one for English dialog, one for Music, and one for Effects. You could route the German, Music, and Effects submix busses to Main 1 for the German version of the program, and route the English, Music, and Effects submix busses to Main 2 for the English language version of the program.

Audio tracks from the timeline are routed to buses via each channel strip's multiformat surround panner, so buses are configured to accommodate specific audio formats such as stereo, LCRS, 5.1 surround, or 7.1 surround.

Types of Buses

There are four types of busses in DaVinci Resolve.

Mains

Main busses are typically the primary output of a program; each new project you create starts out with a single Main called M1, to which all tracks are routed by default. You can add additional Mains, and you can use them however you like, as either full or partial mixes of the program you're working on. Mains can be directly output in the deliver page.

Sub (Submix)

Sub busses are often the means by which multiple tracks of audio that belong to the same category (dialog, music, effects, ambience, and so on) are combined together so that everything in that category can be mixed as a single audio signal. Multiple Sub busses can be themselves routed to Main busses, or they can be directly output in the deliver page.

Aux (Auxillary)

Each channel strip includes the ability to expose up to 12 auxiliary bus sends, which are typically used to route audio to software or hardware effects of some kind. Typically, an audio signal is sent to the effect (or hardware) applied to that bus and then is routed back to the channel it came from. Auxiliary send signals can be connected either immediately before or after a channel strip's fader, based on a Pre setting. Each auxiliary bus can also be configured to accommodate specific audio formats such as stereo, LCRS, 5.1 surround, or 7.1 surround.

Multi Track

Multitrack buses provide bus paths for combining feeds that you want to re-record to disk, or route to other I/O.

Buses in Nested Timelines

When you nest a timeline inside of another timeline that has buses set up for mixing in the Fairlight page, all Sub and Aux routings work as intended within the nested timeline, which exposes all channels of Main 1 in the enclosing timeline. In this sense, the audio of the nested timeline can be considered to be a submix that outputs its resulting audio to the audio track it's edited onto.

Controlling Signal Flow

The process of setting yourself up for editing and mixing in the Fairlight page involves:

- First, customizing the tracks of the timeline to be organized and configured as required.
- Second, creating the busses you need in order to organize your signal flow.
- Third, patching the tracks to Subs, and the Subs to Mains, in order to create the signal flow you need.

Managing Audio Tracks

When you're getting ready to record or edit audio clips into the Fairlight Timeline, you need to make sure you've got enough tracks to do the job. The following procedures cover the different methods available for adding, removing, and rearranging tracks as you work. These commands are all available via the contextual menu that appears when you right-click anywhere in the Timeline header area (the header of the Timeline is the area to the left where each track's various buttons and controls are located).

Defining Timeline Audio Track Channels at Creation

If you decide to create a new audio track, you have to choose what kind of audio track it will be. Right-clicking in the bottom audio portion of the Timeline track header reveals a contextual sub-menu that lets you create different kinds of audio tracks.

- **Mono:** Holds a single channel with only one lane.
- **Stereo:** Holds stereo left and right channels, with two lanes.
- **5.1:** Holds the six channels corresponding to a 5.1 surround mix, for a total of six lanes. For broadcast, SMPTE specifies Left, Center, Right, Left Surround, Right Surround, and LFE. For cinema distribution these tracks are ordered Left, Right, Center, LFE, Surround Left, and Surround Right.
- **7.1:** Holds the eight channels corresponding to a 7.1 surround mix, for a total of eight lanes. For broadcast, SMPTE specifies Left, Center, Right, Left Surround, Right Surround, LFE, Back Surround Left, and Back Surround Right. For cinema distribution these tracks are ordered Left, Right, Center, LFE, Left Surround, Right Surround, Back Left Surround, and Back Right Surround.
- **Adaptive:** Capable of holding up to 24 audio channels, which would display up to 24 lanes within the track. An adaptive audio track can hold clips with different combinations of channels, up to the maximum number of channels allowed within that track. The number of channels allowable on a particular Adaptive track is user-definable (1–24) at the time that track is created. If you edit a clip with more channels into an Adaptive track that was created to hold fewer channels, the extra clip channels are muted.

Creating Tracks

There are two commands with which to create new audio tracks, and both are in the contextual menu found by right-clicking within any audio track's header controls. Add Track adds a single audio track of the type you choose from a submenu. Add Tracks lets you insert as many tracks as you like, of a type and at a position you designate using the Add Tracks dialog.

Rearranging Tracks

You can rearrange tracks by right-clicking in a track's header area and choosing either Move Track Up or Move Track Down in the contextual menu that appears.

Changing How Many Channels an Audio Track Has

If you had set up your timeline with one kind of audio track, but you discover you actually need a different kind, you can change any audio track's type at any time. Just right-click anywhere in that audio track's timeline header, and choose an option from the Change Track Type To submenu of the contextual menu.

Deleting Tracks

Right-click within a track's Timeline header and choose Delete Track. If there are clips on a track you remove, they are also deleted from the Timeline, but preserved in the Media Pool.

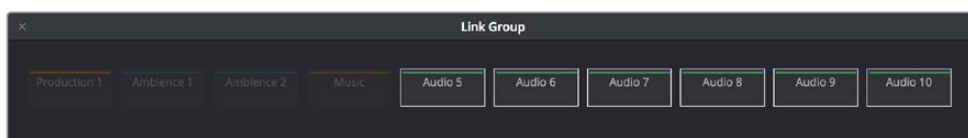
Linked Groups of Mono Tracks

Linked groups are an organizational construct that you can create using mono tracks (other kinds of tracks such as stereo, 5.1, 7.1, or Adaptive cannot be used in a Linked Group). Unlike a multi-channel track with lanes, a linked group of mono tracks functions as five independently editable tracks in the Timeline. However, each track is mapped just like an audio channel using one of the standard multi-channel mappings (stereo, 5.1, 7.1, Adaptive), and linked groups of mono tracks are mixed using only a single channel strip.

Linked groups are extremely useful when you've been given a set of six independent audio files that need to be assembled as a single surround mix, or when you have surround channels that need to be specifically re-edited on a channel by channel basis.

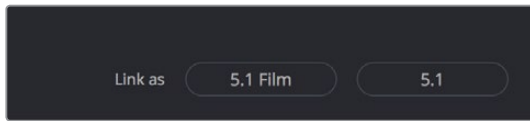
To create a Linked Group:

- 1 Create two or more Mono audio tracks that you want to group together. If you need to create a linked group with a specific channel mapping, such as 5.1, make sure you create enough tracks (in this case, 6).
- 2 Choose Fairlight > Link Group.
- 3 When the Link Group dialog appears, Mono audio tracks are represented by active buttons (all other channel mapped tracks are disabled, since they can't be linked). Click to enable the button of every track you want to include in the group you're about to create. Which mappings are available to use for creating your group depends on how many tracks you've selected.



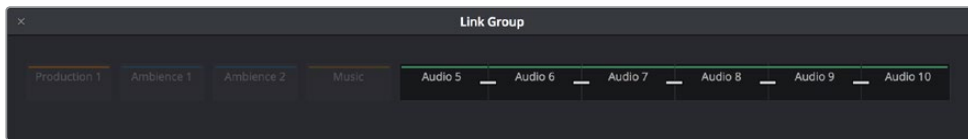
Selecting six tracks to use for creating a link group

- 4 After you've selected all the tracks you need to, click one of the available "Link as" buttons below. In this example, six tracks have been selected, so you could click 5.1 Film or 5.1.



When you select enough tracks, you can create groups linked as specific surround mappings

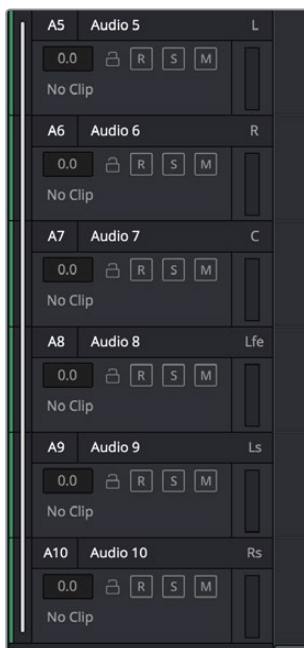
Afterwards, the tracks you selected should turn into a single block, showing they've been linked.



When you select enough tracks, you can create groups linked as specific surround mappings

- 5 Close the Link Group window when you're finished.

Once you've created a linked group, the mono tracks in the timeline that you linked appear with a bar to the left in the track header that spans every track that's linked. If the tracks are tall enough, they'll also be labeled to identify which track corresponds to which surround channel, L, R, C, Lfe, Ls, Rs, and so on. At this point, you can edit each channel of a surround mix into the appropriate track.



Tracks in a Linked Group are labeled to identify which track corresponds to which surround channel

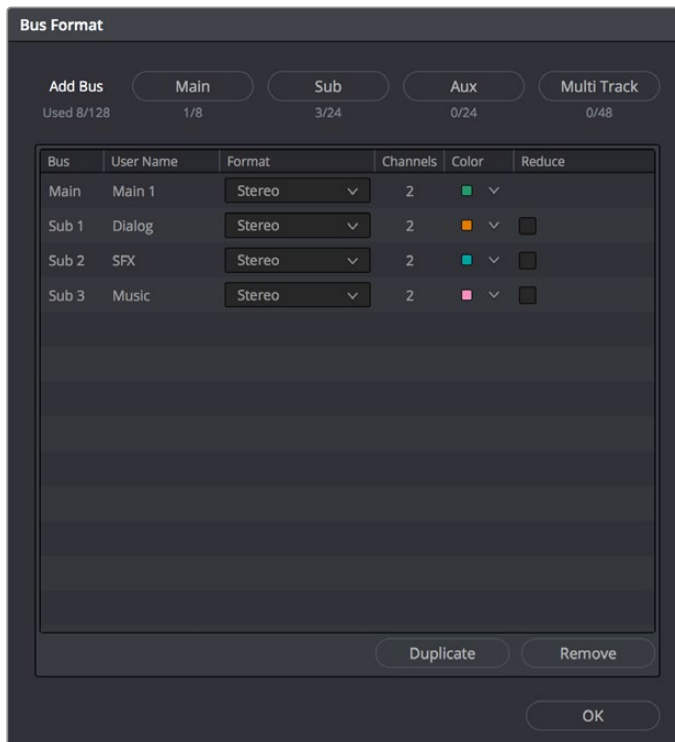
If necessary, you can also unlink a linked group to turn it back into independent mono tracks.

To unlink a Linked Group:

- 1 Choose Fairlight > Link Group.
- 2 When the Link Group dialog appears, select the Linked Group you want to unlink.
- 3 Click Unlink.
- 4 Close the Link Group window when you're finished.

Creating Buses

Choosing Fairlight > Bus Format opens the Bus Format window, which lets you create as many busses as you need (up to the limitations of your system) to organize the tracks and channels of your program.



The Bus Format window lets you add busses to the mixer

Four buttons at the top of the window let you create any type of bus Fairlight supports. Creating a new bus, whether it's a Main, Sub, Aux, or Multi Track, adds the new bus to the list that appears below.

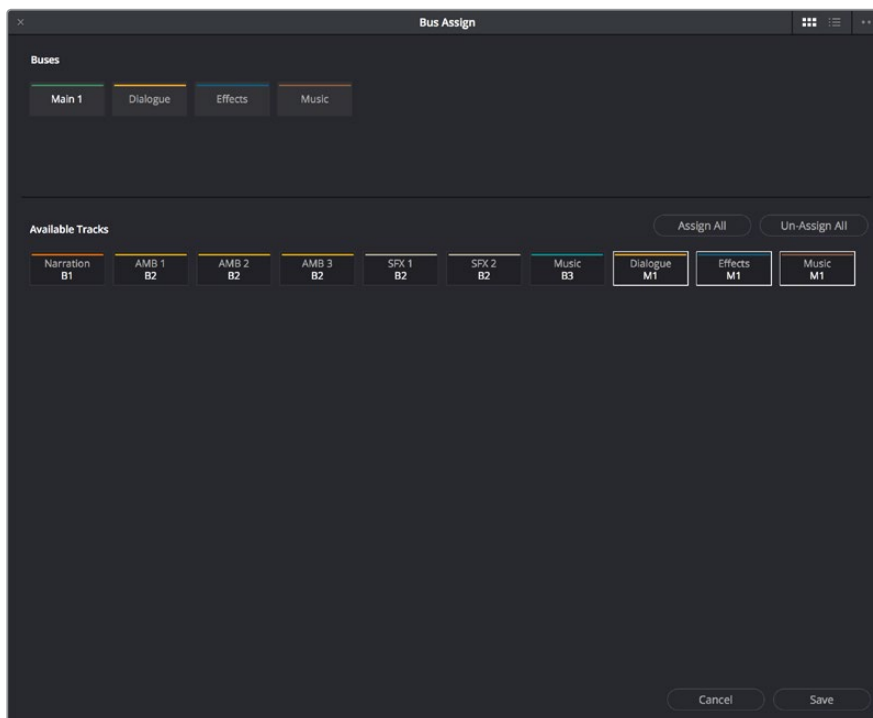
The Bus list lets you rename the bus, choose the format of each bus (a pop-up menu appears in the Format column of each entry of the list), and color-code each bus (a Color pop-up lets you choose that bus's color). Simply click any item on the Bus list to select it, and choose different options from the Format and Color pop-up menus, or click on the User Name of any bus to select it, and type a custom name.

At the bottom of the list are two additional buttons that let you Duplicate or Remove selected Buses. When you're done modifying the available busses, you can click OK to accept the change and close the Bus Format window, Cancel to close the window (although any busses you've made remain in place), or Bus Assign to open the Bus Assign window.

NOTE: Text at the upper left-hand corner of the window lets you know how many buses you're using out of how many your workstation will support.

Assigning Buses

Once you've created one or more busses, you'll want to assign different tracks to specific busses, and different Subs to specific Mains. This is accomplished in the Bus Assign window, which you can open by choosing Fairlight > Bus Assign, or by clicking the Bus Assign button in the Bus Format window.

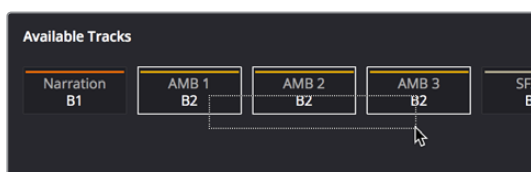


The Bus Assign window lets you choose which tracks are connected to which busses, and which busses are connected to which mains

The top shows all of the available Main, Sub, and Multi Track busses, while the bottom shows all available tracks, Sub busses, and Aux busses. The Bus Assign window defaults to Icon view, in which each Bus and Track is shown as a button, but it can be switched to List view, in which the Available Tracks section is shown as a list.

Methods of making bus assignments:

- **To assign specific tracks to a bus:** Click a button in the Buses section to select that bus, and then either click or drag a bounding box over all the available tracks that you want to assign to that bus. Once assigned, the Available Tracks buttons display which Bus they've been assigned to.



Assigning multiple tracks to a bus by dragging a bounding box

- **To assign every track, Sub, and Aux to a bus:** Click a button in the Buses section to select that bus, and then click Assign All.
- **To clear all track assignments from a particular bus:** Click a button in the Buses section to select that bus, and then click Unassign All.

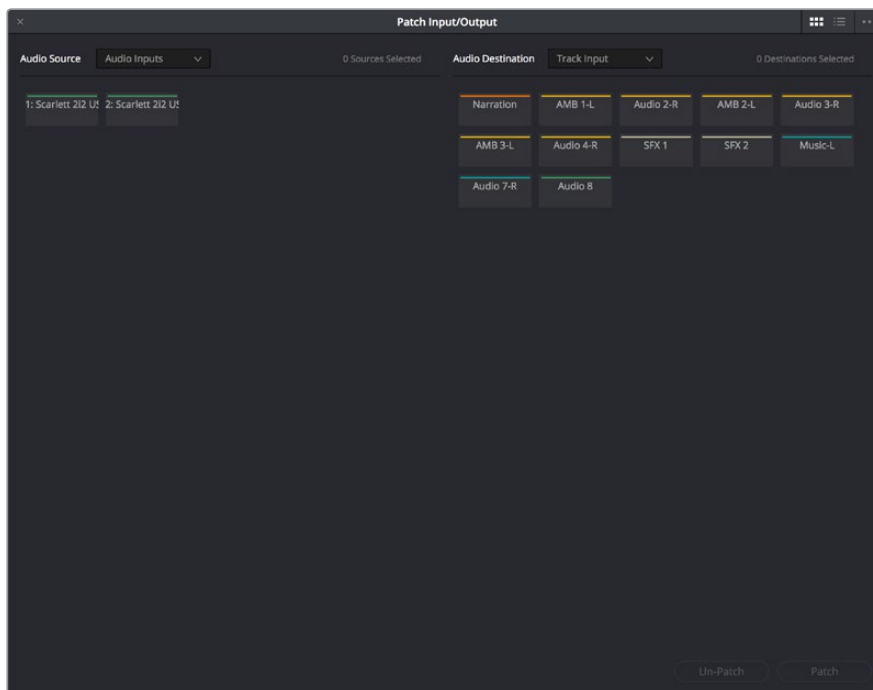
When you're done making bus assignments, click Save.

Patching Signal Paths

While bus creation and assignment is a straightforward way of creating a cascade of routing from tracks to Subs to Mains, sometimes you need to create more specific signal paths. For example, if you need to record audio to a track, you need to patch the audio input you want to record from to the track you want to record to. This, and many other scenarios, are accomplished using the Patch Input/Output window.

Using the Patch Input/Output Window

Choosing Fairlight > Patch Input/Output opens the Patch Input/Output window, which can be displayed in either Icon or List view. This window is split into two halves, with the left half containing whichever Audio Source controls you choose, and the right half containing whichever Audio Destinations you choose. In the following screenshot, the Audio Inputs from a Scarlett2i2 USB audio interface are shown, while the available Track Inputs are shown to the right.



The Patch Input/Output Window showing Audio Inputs and Track Inputs

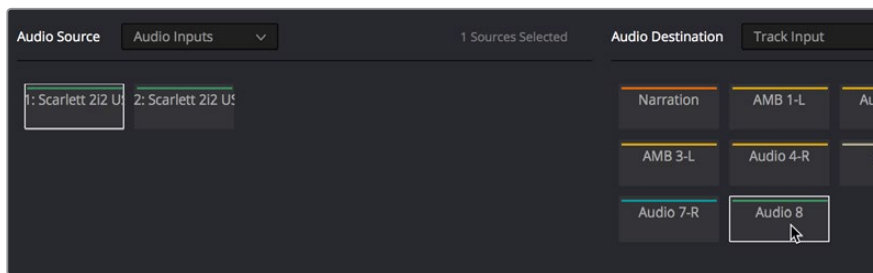
Creating a Patch

By default, the Patch Input/Output window shows the available Audio Inputs as the Source, and the Track Inputs as the destination. This makes it easy to patch whatever audio source (such as a microphone connected to a USB audio interface) to a specific audio track of the timeline to

prepare for recording. Patching and unpatching a source to a destination is straightforward.

To patch a source to a destination:

- 1 Choose a type of source from the Audio Source pop-up menu at the upper left-hand side of the window.
- 2 Click the button or list item of the source you want to patch on the left side of the Patch Input/Output window.
- 3 Choose a destination from the Audio Destination pop-up menu at the upper right-hand side of the window.
- 4 Click the button or list item of the destination you want to patch on the right side.



A selected audio source and audio destination pair

- 5 Click the Patch button at the bottom right of the window. The source and destination will both display the connection they're patched to.

To unpatch a source and destination pair:

- 1 Click a button or list item corresponding to a source or destination you want to unpatch.
- 2 Click Unpatch.

Choosing Audio Source and Destination Controls

The Audio Source and Destination pop-up menus let you choose different categories of source and destination controls to patch together.

The following Audio Source options are available:

- **Audio Inputs:** The available physical audio inputs on your workstation, for example SX-36, MAD1, or system audio. Useful when patching to record audio.
- **Track Repr:** Short for Reproduction, this is the signal from the track playback, before any processing
- **Track Send:** Track Insert send
- **Track Direct:** Track Direct Out, can be pre or post the track fader, with an offset
- **MT-Bus Dir:** Multitrack Bus Direct Out, can be pre or post the multitrack bus master fader, with an offset
- **MT-Bus Out:** Multitrack Bus Out, always post the Multitrack bus master fader
- **Aux-Bus Send:** Aux bus master insert send
- **Aux-Bus Dir:** Aux Bus Direct Out, can be pre or post the Aux bus master fader, with an offset
- **Aux-Bus Out:** Aux Bus Out, always post the Aux bus master fader
- **Sub-Bus Send:** Sub bus master insert send

- **Sub-Bus Dir:** Sub Bus Direct Out, can be pre or post the Sub bus master fader, with an offset
- **Sub-Bus Out:** Sub Bus Out, always post the Sub bus master fader.
- **CR-Mon Dir:** Monitor system Direct out. Post fold up/down matrix, pre the Monitor VolumeLevel/Dim/Mute
- **CR-Mon Out:** Monitor system output. Post fold up/down matrix and Monitor VolumeLevel/Dim/Mute
- **Main Send:** Main bus master insert send
- **Main Dir:** Main Bus Direct Out, can be pre or post the Main bus master fader, with an offset
- **Main Out:** Main Bus Out, always post the Main bus master fader
- **Osc:** Oscillator outputs. Sine, Pink noise, White noise.
- **Solo Out:** AFL and PFL Solo Bus Out, always post the respective bus master fader

The following Audio Destination options are available:

- **Track Input:** Input to the Record and Thru path; simply put, the available audio tracks in the current timeline.
- **Track Return:** Track insert return
- **Aux-Bus Return:** Aux Bus master insert return
- **Sub-Bus Return:** Sub Bus master insert return
- **Main Return:** Main Bus master insert return
- **CR-Mon In:** Input to the Monitor system's fold up/down matrices
- **Talk Back:** The Talkback system, showing Comm1 and Comm2
- **Audio Outputs:** The available physical audio outputs on your workstation, for example SX-36, MADI, or system audio.

Using a Channel Strip's Input Menu

The Input pop-up menu at the top of each track's channel strip in the mixer provides some shortcuts for patching different inputs and buses to the tracks of your mix. Each option in this menu makes the Patch Input/Output window appear with different Audio Source and Audio Destination selections automatically set up.

Input

The Patch Input/Output window appears set up to let you patch different inputs (such as the system audio input) to the tracks of the timeline. This makes it fast for setting up audio inputs in preparation for recording.

Aux Bus

A shortcut to open the Patch Input/Output window (discussed previously in this chapter), which appears set up to let you patch different Aux buses to specific submix and timeline track channels.

Sub Bus

A shortcut to open the Patch Input/Output window (discussed previously in this chapter), which appears set up to let you patch different Sub (submix) bus channels to specific timeline track channels.

Main Bus

A shortcut to open the Patch Input/Output window (discussed previously in this chapter), which appears set up to let you patch different Main bus channels to specific timeline track channels.

Path Settings

Choosing Path Settings opens the Path Settings window for that track. This window contains controls for adjusting the input level of audio signals being input via a BMD input/output device.



The Path Settings window showing audio inputs and track inputs

These parameters control the following:

- **Mic/Instr.:** Adjusts the Mic/Instrument level for this source, from 0 to 100 dB.
 - **On:** Enables Microphone/Instrument level for this source.
 - **48V:** Enables phantom power for that input.
- **Record Level:** Controls the level going to the disk before recording. It does not affect the track when in Thru mode.
 - **Rec:** Enabling this button makes this track ready to record. Only turn this on if there is an audio source patched to the current track.
 - **Thru:** When on, this makes the affected track into the equivalent to a live feed. When enabled, this track will monitor its input, but will not respond to a record command. Only turn this on if there is an audio source patched to the current track.
- **Trim:** This parameter controls the level as the channel enters the mixer. For timeline tracks, this controls the signal coming from disk, and does not affect any current levels being recorded.
- **Direct Output:** Controls the level going from this channel to the direct output.
 - **On:** Toggles direct output on and off.
 - **Pre:** Toggles the direct output to connect either pre or post the main channel fader.
- **Insert:** Controls the insert return only. When enabled, the channel connects to its insert return, otherwise the Channel connects to the straight-through path. The insert send, on the other hand, is always active (though it must be patched somewhere before it can be heard).

NOTE: Insert sends and returns are only audible if patched to physical outputs or inputs, or to other paths. Sends can be sent to the input of any path in the system, and returns can come from the output or send of any path. This is done in the Patch I/O screen (press the Patch I/O button).

Chapter 125

Transport Controls, Timeline Navigation, and Markers

The Fairlight page has unique transport control, zooming, and scrolling options not found in the other pages of DaVinci Resolve that help you to work with audio more efficiently. This chapter covers how to get around the Fairlight version of the Timeline.

Contents

Transport Controls and JKL Navigation	2452
Transport Controls	2452
Using JKL to Control Playback	2452
Dragging the Playhead to Scrub	2453
Looping Playback	2453
Loop Jog Scrubbing	2453
Moving the Playhead Using Timecode	2454
Clip, Marker, and Track Navigation	2455
Selecting Tracks	2455
Moving the Clip Selection	2455
Moving the Track Selection	2455
Zooming and Scrolling	2456
Setting the Zoom Level of the Timeline	2456
Scrolling Through the Timeline	2456
Using Flags	2457
Using Markers	2457
Adding Markers to Clips	2457
Adding Markers to Timelines	2458

Transport Controls and JKL Navigation

Because of the Fairlight page’s audio-focused workflow, the transport and playback controls differ from those found in the Media, Edit, Color, and Deliver pages.

Transport Controls



Fairlight page transport controls

The Fairlight transport controls are also designed to mirror their counterparts on the Fairlight control panels. They include the following functions:

- **Rewind and Fast Forward:** Initiates accelerated playback through the Timeline in either direction. Pressing either of these buttons multiple times speeds up this motion, cycling through 8x, 24x, 60x, 150x, and 360x play speeds.
- **Play:** Plays forward. Identical to pressing the Spacebar or L keys while playback is stopped.
- **Stop:** Stops playback. Identical to pressing the Spacebar or K keys while playback is engaged.
- **Record:** Initiates recording if you have an audio source patched to a track, and if that track is enabled for recording. For more information about recording, see Chapter 126, “Recording.”
- **Loop:** Toggles looped playback off and on. While looped playback is on, playback will loop at the end of the Timeline, and will also loop when you use the Play In to Out command, and will continue to loop automatically until you stop playback.
- **Automation controls:** This button exposes the automation toolbar. For more information about recording automation, see Chapter 131, “Automation Recording.”

Using JKL to Control Playback

The JKL keyboard shortcuts are common to many editing applications, and experienced editors know these to be some of the most useful controls for playback and editing there are. Here’s a list of the many different ways you can use these three keyboard shortcuts to play through clips and timelines as you work.

J	Plays 100% backward.
K	Stops playback.
L	Plays 100% forward.
Press J repeatedly	Increases backward play speed each time you press J, for a range of fast-reverse speeds.
Press L repeatedly	Increases forward play speed each time you press L, for a range of fast-forward speeds.
Shift-J	Plays in fast reverse.

Shift-L	Plays in fast forward.
K+J	Plays backward at slow motion (with slow motion audio playback).
K+L	Plays forward at slow motion (with pitch-corrected audio playback on OS X).
Pressing K while tapping J	Moves the playhead back one frame.
Pressing K while tapping L	Moves the playhead forward one frame.

If you're using Fairlight with the keyboard, then this will probably become one of the main ways you move the playhead around in DaVinci Resolve.

Dragging the Playhead to Scrub

You can also drag the playhead left and right to scrub through the visible area of the Timeline by clicking and dragging anywhere within the Timeline ruler at the top of the Timeline, directly below the toolbar. If you're zoomed in at a reasonable level for editing, scrubbing the playhead using your pointer will result in smooth, tape-like slow and fast audio playback, giving you a great deal of precision while trimming audio.

Looping Playback

Two controls govern looping on the Fairlight page, similarly to how looping works on the Edit page.

- **Loop:** Command-Forward Slash (/). Toggles looped playback off and on. While looped playback is on, playback initiated with any of the following commands will loop automatically until you stop playback.
- **Play In to Out:** Option-Forward Slash (/). If you've marked a section of a clip or timeline with In and Out points, this command lets you preview how it will play.

Loop Jog Scrubbing

Currently available only on the Fairlight page, choosing Timeline > Loop Jog enables a brief sample preview to be heard while scrubbing the playhead through the Timeline. This can make it easier to recognize bits of dialog or music as you're quickly scrubbing through tracks, in situations where you're trying to locate specific lines or music cues. It also enables this brief sample preview to loop endlessly when you hold the playhead on a frame, so you can pause while scrubbing and hear (by default) the current 80 ms prior to the playhead as it loops.

A pair of settings in the User Preferences let you customize this behavior.

- **Loop Jog Alignment:** Three options let you choose whether you loop audio Pre the position of the playhead, Centered on the playhead, or Post the position of the playhead.
- **Loop Jog Width:** A field lets you choose how many milliseconds of audio to loop when Loop Jog is enabled. How many milliseconds of audio corresponds to one frame depends on the frame rate of the video. For example, at a frame rate of 25 fps, there are $1000/25 = 40$ ms per frame, so the default value of 80 ms equals two frames of looping.

Moving the Playhead Using Timecode

You can use absolute or relative timecode entry to move the playhead in the Timeline. Timecode entry lets you move the playhead very precisely or jump to specific timecode values really quickly.

How to Enter Timecode Values

When entering timecode, type each pair of hour, minute, second, and frame values from left to right, with a period representing a pair of zeros for fast entry. The numbers you enter appear in the timecode field at the upper left-hand corner of the Viewer with focus. When you're finished typing, press the Return key to execute the timecode command. The rules for timecode entry are as follows:

- The right-most pair of timecode values (or period) you enter is always the frame number.
- A period to the left or to the right of any number you type is considered to be a pair of zeroes.
- A single period between two numbers is considered to either be a single zero or ignored if it's between two pairs of numbers.
- Any untyped pairs of values to the left of what you enter are assumed to be whatever those values were prior to the timecode you entered; this makes it easy to type partial timecode values even when the Timeline starts at hour one.
- It's not necessary to enter colons or semicolons.

Absolute Timecode Entry

Absolute timecode is entered simply by typing the timecode value you want to move the playhead to, and when you press the Return key, the playhead will move to that timecode value.

Here are some examples of absolute timecode entry using this method:

Original TC Value	User-Typed Value	New TC Value
01:10:10:10	15245218	15:24:52:18
01:10:10:10	2..	01:02:00:00
01:10:10:10	15	01:10:10:15
01:10:10:10	12	01:10:10:12
01:10:10:10	1.2	01:10:01:02
01:10:10:10	1115..	11:15:00:00
01:10:10:10	23...	23:00:00:00

Relative Timecode Entry

Relative timecode is entered by starting the timecode value with a plus (+) or minus (-). Adding a plus results in the value you type being added to the current timecode value for purposes of offsetting the playhead from its current position. Adding a minus will subtract the value you type from the current timecode value.

Here are three examples of relative timecode entry:

User-Typed Value	Result
+20.	00:00:20:00 is added to the current timecode value.
+3..	00:03:00:00 is added to the current timecode value.
-5	00:00:00:05 is subtracted from the current timecode value.

Clip, Marker, and Track Navigation

As of Resolve 15, the Up and Down Arrow keys are used to move the playhead from one edit point to the next in the Fairlight page Timeline, just as in the Edit page Timeline.

However, holding Command-Option down while using the Arrow keys gives you Fairlight page-specific behaviors that are used to navigate among clips, markers, and tracks in the Fairlight page in a way that's different than other pages of DaVinci Resolve but very useful to the way the Fairlight page operates. This section covers the basics.

Selecting Tracks

Which tracks are selected determine the behavior of the Arrow keys.

- **In Selection mode:** You can select tracks by clicking or Command-clicking (to select multiple tracks) anywhere in the background area or on the track number of the track headers. If you click and drag, you can use a bounding box to select multiple tracks.
- **In Range Selection mode:** You can select tracks by clicking or Command-clicking anywhere either in the background area or on the track number of the track header, or in any unused area of the track itself in the Timeline. If you click and drag, you can use a bounding box to select multiple tracks.

Moving the Clip Selection

The Command-Option-Left and Command-Option-Right Arrow key shortcuts are used to move the playhead left and right in the Timeline, navigating from clip to clip or from marker to marker. How these keys function depends on whether or not one or more tracks is selected in the Timeline.

- **If no tracks are selected:** The Left and Right Arrow keys will jump the playhead from Timeline marker to Timeline marker. Clip markers will be ignored.
- **If one or more tracks are selected:** The Left/Right Arrow keys will jump the playhead among clip In points, clip Out points, and Timeline markers.

Moving the Track Selection

The Command-Option-Up and Command-Option-Down Arrow key shortcuts are used to move the track selection up and down in the Timeline, changing which tracks are selected. By changing which tracks are selected, you can alter which clip's In and Out points are used to jump the playhead around the Timeline.

If no tracks are selected, then nothing happens.

Zooming and Scrolling

The Fairlight page has several methods of zooming into and out of the Timeline, and scrolling when you're zoomed to the point where your edited sequence of clips extends past the left and right edge of the visible timeline.

Setting the Zoom Level of the Timeline

Depending on how you like to work, there are several methods of zooming into and out of the Timeline.

- **Using the Vertical Zoom slider:** A pair of sliders at the right of the toolbar let you zoom vertically and horizontally. The first one lets you scroll vertically in order to see more detail in the height of your waveforms. If no tracks are selected, then zooming is centered on the top audio track in the Timeline. If one or more tracks are selected, then zooming is centered on the topmost selected audio track.
- **Using the Horizontal Zoom slider:** A pair of sliders at the right of the toolbar let you zoom vertically and horizontally. The second one lets you zoom horizontally in order to see more detail in the width of your waveforms. Zooming is always centered on the position of the playhead.
- **Pressing Command-Equal (=) and Command-Minus (-):** Command-Equal (also referred to as Command-Plus) and Command-Minus let you zoom horizontally into the Timeline. Zooming is always centered on the position of the playhead.
- **Using scroll controls of your pointing device to scroll horizontally:** Holding the Option key down and using the scroll wheel (or scroll control) of your pointing device will zoom horizontally into the Timeline.
- **Using scroll controls of your pointing device to scroll vertically:** Holding the Shift key down and using the scroll wheel (or scroll control) lets you zoom vertically in the Timeline. In this case, if no tracks are selected, then zooming is centered on the top audio track in the Timeline. If one or more tracks are selected, then zooming is centered on the topmost selected audio track.
- **Using the Fairlight panel's Jog/Edit wheel:** If you have a Fairlight panel, you can hold the ZOOM button down while turning the Jog/Edit wheel to zoom into the Timeline at the position of the playhead.

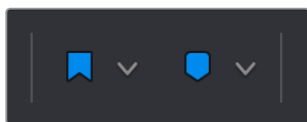
Scrolling Through the Timeline

However closely you're zoomed into the Timeline, if you're zoomed enough so that clips extend past the visible area of the Timeline, scroll bars appear below. If the playhead is offscreen, a small orange tic mark indicates its position relative to the entire timeline, which is represented by the total width of the scroll bar's background.

If you drag the playhead, or otherwise use any of the transport controls or playback key shortcuts to move through the Timeline, the contents of the Timeline refresh every time the playhead hits the left or right edge of what's visible.

Using Flags

Flags are meant to mark an entire clip, and they also flag every other clip in the Timeline that shares the same Media Pool source clip, making this a handy way of quickly identifying which clips in a given timeline come from the same Media Pool source. Flags are visible in every page of DaVinci Resolve, making them an excellent method of tracking media from page to page.



The Flag and Marker buttons and pop-ups.

You can apply multiple flags to clips, with a variety of colors to choose from. In addition to flagging specific media files, flags can be useful for sorting by column in the Media Pool, as well as a variety of other operations.

Methods for flagging clips in the Fairlight page:

- **To flag a clip:** Select one or more clips, and either click the Flag button to flag that clip with the current color, or click the Flag pop-up in the toolbar to choose a different color and then click the Flag button. In the Edit page, flags appear in the Timeline superimposed in the name bar of each clip.
- **To remove all flags from a clip:** Select one or more clips with flags you want to remove, then click the Flag pop-up in the toolbar, and choose the top “Clear All” option.

Using Markers

Markers are used to call attention to a particular frame within a specific clip. Markers can be individually colored, and can have customized name and note text. Whenever you enter text into a marker, that marker displays a small dot that indicates there’s more information inside of it. Once placed, markers snap to In and Out points, edit points, the playhead, and other markers whenever snapping is enabled, making it easy to use markers to “measure” edits and trims that you make in the Timeline. Markers are visible in every page of DaVinci Resolve, making them an excellent method of tracking frames in clips and specific moments in the Timeline from page to page.

You can add markers to the Timeline (in the Timeline ruler) or to clips. The full procedures for placing and editing markers in the Fairlight page’s onscreen interface are identical to those for the Edit page, so for more information, see Chapter 24, “Marking and Finding Clips in the Timeline.” For now, here’s a summary.

Adding Markers to Clips

The following procedures describe how to add markers to clips in the Timeline of the Media page.

To mark a clip in the Timeline, do one of the following:

- Select one or more clips you want to mark, then move the playhead to the frame of a selected clip in the Timeline, and click the Marker button in the toolbar (or press M) to place a marker at that frame, using the current color (if multiple overlapping clips are selected, you'll add a marker to all clips).
- To place a marker during playback and immediately open the marker dialog to enter a name or note within it, select one or more clips you want to mark, play through the selection until you want to place a mark, then press Command-M. Playback pauses until you enter some text and close the marker dialog again, at which point playback continues.
- Select one or more clips you want to mark, and then click the Marker pop-up to choose a different color, and click the Marker button.

Adding Markers to Timelines

You can also place markers of any color into the Timeline ruler to denote specific times for future reference, or add notes about issues you want to keep track of. You should note that all markers placed on clips or in the Timeline also appear within the Mini-Timeline of the Color page, making it easy to place notes to reference particular audio cues that might be valuable when editing or grading.

To mark the Timeline itself, make sure all clips are deselected, and do one of the following:

- Click the Marker button (or press M) to place a marker of the currently selected color in the Timeline ruler.
- To place a marker during playback and immediately open the marker dialog to enter a name or note within it, select one or more clips you want to mark, then press Command-M. Playback pauses until you enter some text and close the marker dialog again, at which point playback continues.
- Click the Marker pop-up to choose a different color, and click the Marker button.
- Right-click in the Timeline ruler and choose a marker color from the Add Marker submenu of the contextual menu.

Chapter 126

Recording

It's possible to record to one or more tracks on the Fairlight page, accommodating workflows as varied as editors recording scratch voiceover or temp sound effects, recording engineers recording narration, ADR, or foley as part of the audio finishing process, music studios recording orchestras for the music score, or garage bands recording their latest magnum opus. While DaVinci Resolve is a comprehensive post-production environment for cinema and video, the Fairlight page can be used for any audio recording application you might have, from books on tape to live music to feature films and television.

This chapter covers the somewhat brief basics of audio recording in the Fairlight page. Keep in mind that this is a work in progress, and that the comprehensive recording capabilities of earlier versions of Fairlight will be migrating into DaVinci Resolve as time passes.

Contents

Setting Up to Record	2462
Patching Inputs	2462
Arming Tracks	2463
Choosing Where to Record Audio Clips To	2463
User-Selectable Input Monitoring Options	2463
Recording Using the Onscreen Controls	2464
Recording and Editing Multiple Takes Using Layering	2464
Recording VSTi Instruments	2465

Setting Up to Record

Depending on how your workstation is set up, it's possible to simultaneously record to multiple tracks in the Fairlight page at once. How many tracks you can record to depend entirely on what hardware you have available. This section describes the process of recording to tracks in the Fairlight page.

Patching Inputs

Before you can record anything, you need to use the Patch Input/Output window to patch an available audio input to a track. If your computer has nothing else, the inputs of your workstation are available to connect whatever audio device is set up as the default audio input on your system to the track you want to record to.

To open the Patch Input/Output window, do one of the following:

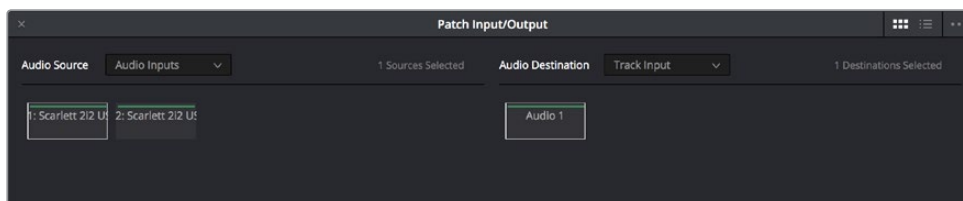
- Choose Fairlight > Patch Input/Output.
- Click the Input menu at the top of the channel strip of the track you want to record to, and choose Input.



The Input pop-up menu lets you open the Patch Input/Output window with that track selected

To patch an audio source to an audio destination:

- 1 Make sure that the Audio Source menu is set to Audio Inputs, and the Audio Destination menu is set to Track Input.
- 2 On the right, click the audio input that you want to patch so it's highlighted.
- 3 On the left, click the audio destination that you want to patch so it's highlighted also, if it's not already. In this simplified example, channel 1 of the Scarlett 2i2 is being connected to Audio 1, which is the only track in the timeline.



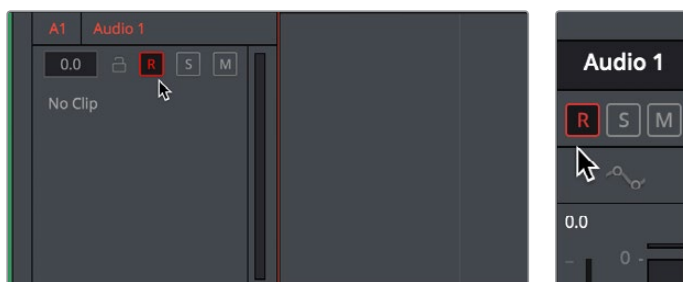
Selecting a source and a destination to patch

- 4 Click the Patch button at the bottom of the window, and your recording setup will be patched.

- 5 Continue steps 2 and 3 until you've patched all the inputs you want to record from to all of the tracks that you want to record onto. You can patch as many inputs to as many tracks as your system is set up to accommodate. In this example, there are two available audio sources, but there's only a microphone connected to the first channel, so that's the only one being connected.
- 6 When you're finished, close the window.

Arming Tracks

To record on a track, it must be armed. You should note that it's impossible to arm a track that hasn't been patched first, so make sure you've patched the audio source you want to record from to the track you want to record to first. Then arming that track is as simple as clicking the R button in the track header controls, or in the channel strip for that track in the Mixer.



(Left) The arm button turned on in the track header,
(Right) the arm button turned on in the channel strip

Once a track has been armed, you're ready to record.

Choosing Where to Record Audio Clips To

The process of recording in the Fairlight page creates new clips and generates additional media on disk. You can specify the location on disk you want to save these recordings by opening the Capture and Playback panel of the Project Settings and using the Browse button, found underneath the "Save clips to" field, to choose a new location (a folder named "Capture" on your scratch disk is the default location).

To choose where the new clips that are created are placed in the Media Pool, simply open the Media Pool and select any bin in the Bin list, or create a new bin and select it if you want to put your recordings in their own location.

User-Selectable Input Monitoring Options

The Fairlight > Input Monitor Style submenu presents five options governing how you want to monitor inputs while recording.

- **Input:** You only hear the live signal being input; you never hear the contents of tracks.
- **Auto:** When one or more tracks are armed for recording, you hear the live input signal; on playback you hear the contents of each track.
- **Record:** You only hear the live input signal while actively recording, meaning the Record button has been pressed while one or more tracks are armed for recording. You don't hear the input signal while tracks are merely armed.
- **Mute:** You hear nothing.
- **Repro:** While recording, you only hear what's just been recorded, played from the track. In other words, you're not listening to the live input, but you're reviewing what's just been recorded as it's recording.

Recording Using the Onscreen Controls

You can record anywhere you want on the currently armed track or tracks by placing the playhead where you want recording to begin. In this way, you can record to specific areas of your program as you record voiceover, sound effects, foley, or other timed performances that need to fit into a particular region of the edit.

To begin recording:

- 1 Position the playhead where you want recording to begin.
- 2 Click the Record button in the transport controls. Recording immediately begins, and the material being recorded immediately begins drawing a waveform in real time, giving you immediate feedback that the input you're recording is properly connected or not, as well as where on the currently armed track material is being recorded.

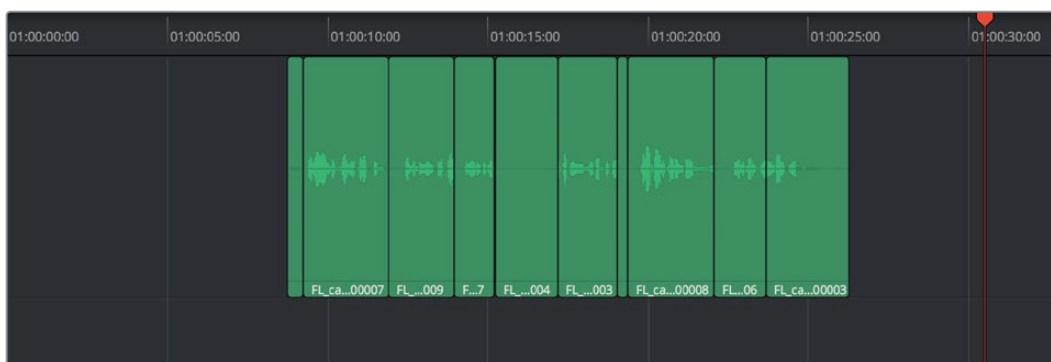
To stop recording, do one of the following:

- Click the Stop button in the transport controls.
- Press the Spacebar.

Recording and Editing Multiple Takes Using Layering

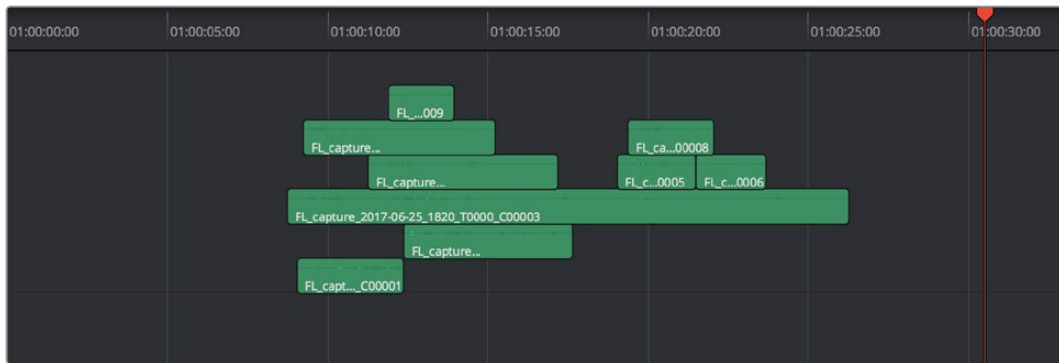
There are two ways you can record multiple takes. You can either record them one after the other, sequentially, and then edit them later. However, you also have the ability to record multiple takes to the same region of the timeline, one on top of another, while at the same time preserving every take using track layering.

In the following screenshot, multiple takes have been recorded over the same section of the timeline, including some partial takes to correct specific phrases in the voiceover being recorded. When you do this, the result looks like a series of cuts and overwritten clips, with the most recently recorded segments being the ones that play back over the previously recorded segments.



Overlapping recordings with Audio Track Layers turned off

However, if you choose View > Audio Track Layers, you'll see that all your recordings have actually been preserved via a vertical stack of overlapping audio clips.



Overlapping recordings with Audio Track Layers turned on, showing layering within the same track

The layering of audio clips in DaVinci Resolve means that the topmost superimposed clips in a layered stack like this mutes the audio of overlapping clips that are lower in the stack.

Using layering, it's easy to edit the best segments of the best takes, while preserving all other takes, simply by adding edits and rearranging clips in the stack so the best parts are on top.

For more information about audio layering, see Chapter 128, “Editing Basics in the Fairlight Page.”

Recording VSTi Instruments

DaVinci Resolve 15 introduced support for VSTi instruments working with connected MIDI controllers to trigger instrument sounds that can be recorded live on audio tracks of the Timeline. This is intended to be used for loading a VSTi sampler with foley sounds such as footsteps or punches, so you can perform these sounds in real time and record the result to another track as you watch performers walking or punching in the edit, even if you lack a recording booth with foley pits and props.

On the other hand, if you're a musician, there's nothing stopping you from loading VSTi musical instruments of different kinds for playback, and using the Fairlight page as a multi-track recorder. DaVinci Resolve doesn't have MIDI sequencing functionality, but you can record live playback straight to the Timeline, using layered audio to manage multiple takes for later re-editing. Bet you never thought you'd be recording music in DaVinci Resolve...



A VST Instrument (in this case Serato Sample) loaded into a track of the Timeline

To enable a MIDI controller in macOS:

- 1 If DaVinci Resolve is running, quit before connecting your MIDI controller and setting it up.
- 2 On macOS you'll use the Audio MIDI Setup utility to choose output hardware and select a speaker configuration to be made available on your system. In the Finder, use Spotlight and search for Audio MIDI Setup to open it.
- 3 In Audio MIDI Setup, choose Window > Show MIDI Studio. A window showing icons for all connected MIDI controllers appears. Your controller should be showing an icon. If it's not, you may need to install drivers for it.
- 4 Select the icon for your controller and turn on the "Enter test MIDI setup mode" button (it looks like a little keyboard) to test if your keyboard is connecting with the computer. If it is, then turn this off.

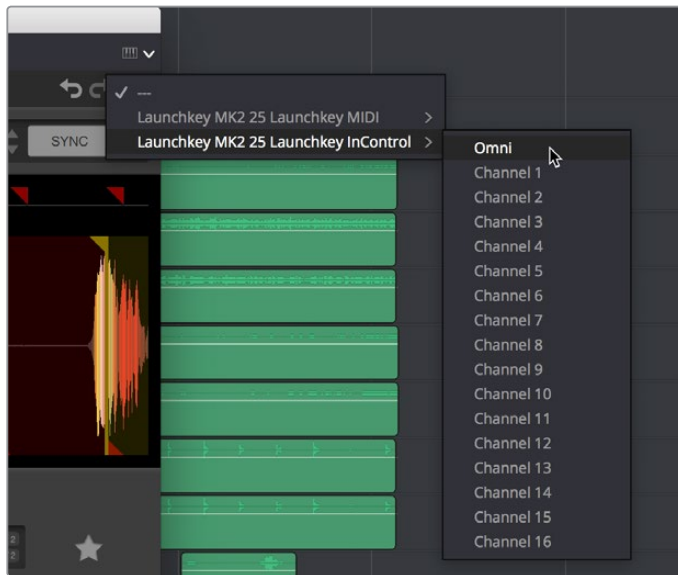
For more information on setting up MIDI on different systems, see the DaVinci Resolve Configuration Guide, available on the web from the Blackmagic Design support page at <https://www.blackmagicdesign.com/support/family/davinci-resolve-and-fusion>.

To set up the Fairlight page for VSTi instrument recording using a sampler:

- 1 Open DaVinci Resolve 15.
- 2 Make sure you have at least two available audio tracks in the Timeline, one for the instrument you'll be playing, and one to record into. This example will use tracks A4 and A5 for this.
- 3 Open the Effects Library, find a VSTi sampler you have installed on your system, and drag it to the track header of the track you want to use for playing, for example track A4.

Massively-featured sampler/synth combinations such as Native Instruments Kontakt and Steinberg Halion are ubiquitous and useful when you want to specifically map a collection of sound effects to specific keys or pads to create re-usable multi-purpose instruments. However, more streamlined samplers that emphasize automatic audio clip slicing such as Serato Sample (Windows and macOS) or Image Line Slicex (Windows only) can make short work of the more specialized task of loading library sound effects recordings (or custom recordings you create) with multiple footsteps, punches, keyboard presses, cloth rustles, or other foley activities, and quickly splitting them up into individually playable samples you can trigger with pads or a keyboard.

- 4 When the VSTi interface window appears, open the MIDI menu at the upper right-hand corner of the VSTi window and choose the correct MIDI channel from your MIDI controller's submenu. If you've selected the correct MIDI channel, the instrument should start responding to the keys or pads on your controller.



Enabling MIDI control

- 5 Next, configure the VSTi instrument you're using to play the sound effects you want to use for foley. In this example, the Serato Sample VSTi plug-in is being used to automatically slice up a recording of footsteps from one of Sound Ideas' many sound effects libraries.

Because the VSTi you added is patched to that track's Insert (if you look at the Mixer you should see that the I button is enabled on the channel strip the instrument is patched to), the Send is PRE the Instrument. This means you need to patch that track's Track Direct output to the input of another track to record the instrument.

- 6 Choose Fairlight > Patch Input/Output to open the Patch Input/Output window, then set the Source pop-up menu to Track Direct and the Destination pop-up menu to Track Input. Click Audio 4 to the left, and Audio 5 to the right, and click the Patch button; this sets you up to play the VSTi plug-in on track A4, and record its output on track A5.

Be aware that after patching Track Direct from the track with the instrument to the track you're recording onto, you also need to turn "Direct Output" on for that track in the Path Settings of that track's channel strip in the Mixer.

- 7 Open the Mixer (if necessary), click the Input pop-up menu at the top of the channel strip that shows the VSTi instrument you're using, and choose Path Settings. When the Path Settings window appears, click the ON button for Direct Output, then close the Path Settings window.

At this point, you're ready to begin recording.

To play and record a VSTi instrument:

- 1 Click the Record Arming button of the track you're recording to (in this example A5), move the playhead to where you want to begin recording, and then click the Record button to begin recording.
- 2 As the video of your program plays, use your MIDI controller to trigger sound effects as necessary. When you're finished, click the Stop button.

If necessary, you can record multiple takes using track layering until you get the timing right. When you're finished, you can remove the instrument from the track it's on since the recorded audio is all you need.

Chapter 127

ADR

(Automated Dialog Replacement)

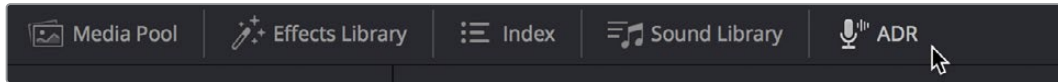
The Fairlight page of DaVinci Resolve has a sophisticated interface for doing ADR, or automated dialog replacement, in a structured and straightforward manner. Simple, yet powerful, cue list management, industry-standard audio beeps and visual cues, and sophisticated take management with star ratings and layered take organization help you manage the resulting recordings to use the best parts of each take in your program.

Contents

ADR (Automated Dialog Replacement)	2470
The ADR Interface	2470
Setting up to Do an ADR Session	2474
Creating and Importing ADR Cue Lists	2475
Recording ADR to the Timeline	2476

ADR (Automated Dialog Replacement)

Clicking the ADR button on the Interface toolbar opens up the celebrated Fairlight ADR panel, which provides a thoroughly professional workflow for doing automated dialog replacement. Dialog replacement, for those who don't know, is the process whereby audio professionals bring in actors to re-record unsalvageably bad dialog recordings from the comfort of their recording studios, line by line and with a great deal of patience.



The ADR panel on the Fairlight page

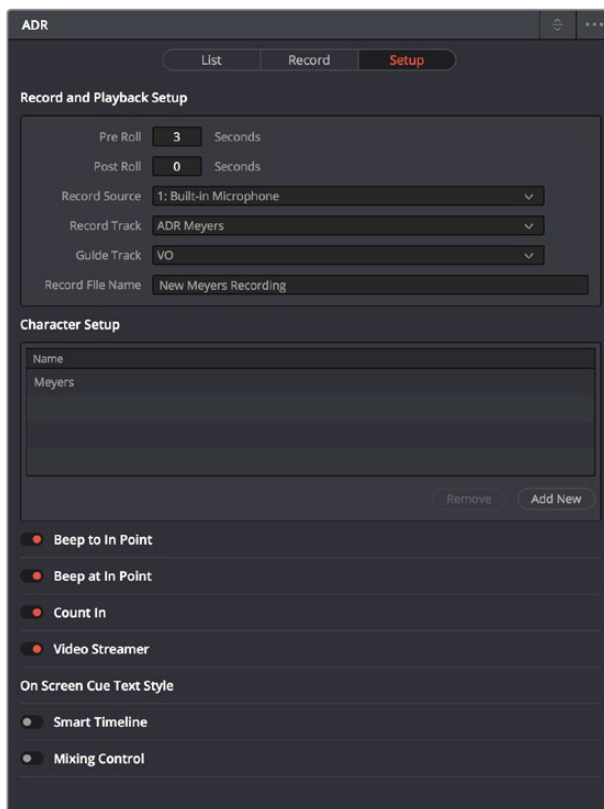
It's an old joke that ADR isn't really automatic, but the Fairlight page aims to give you all the help it can to make this a structured and straightforward process. Simple, yet powerful, cue list management lets you efficiently assemble a re-recording plan. Industry-standard audio beeps and visual cues via your BMD video output device help the actors in the booth nail their timings and their lines. Then, sophisticated take management with star ratings and layered take organization in the Timeline help you manage the resulting recordings to pick and choose the best parts of each take when you edit the results.

The ADR Interface

When open, the ADR interface consists of three panels to the left of the Timeline: a Record panel, a List panel, and a Setup panel. The controls of these panels are described in the order in which they're used.

The Setup Panel

As its name implies, the Setup panel is where you configure your ADR session.



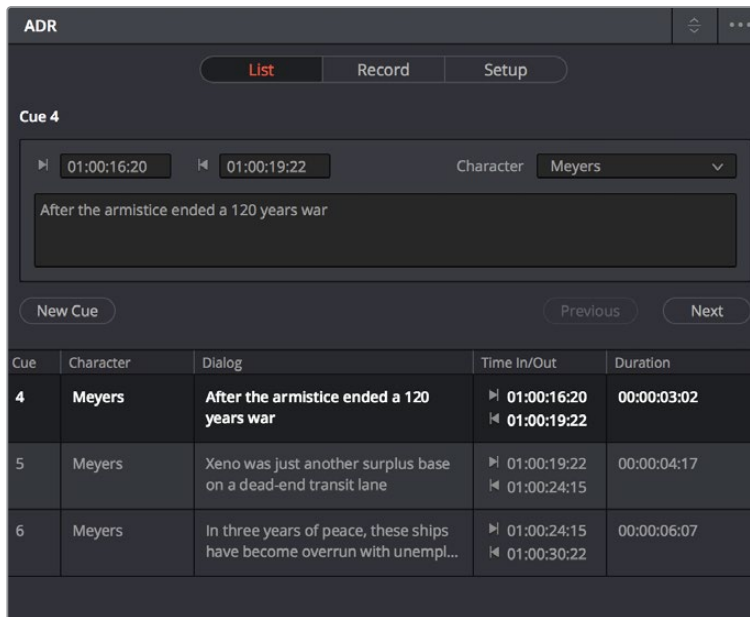
The Setup panel of the ADR interface

This panel presents the following controls:

- **Pre Roll and Post Roll:** Specifies how many seconds to play before and after each cue's specified In and Out points, giving actors a chance to listen to what comes before and after each cue in order to prepare. If you enable the Beep options below, beeps provide a countdown during the specified pre-roll.
- **Record Source:** (Disabled until you select a Record Track) A pop-up menu lets you choose the input you want to record from, creating a patch to the Record Track.
- **Record Track:** A pop-up menu lets you choose the track you want to record to. Selecting a track with this menu creates a patch from the Record Source to the Record Track, and automatically toggles Record Enable on.
- **Guide Track:** A pop-up menu lets you choose which track the original production audio you need to re-record is on. This is used for sending audio playback to the talent to use as a guide for recording their own replacement performance.
- **Record File Name:** A text entry field that lets you provide a name for the audio files being recorded to be saved with.
- **Character Setup:** A list for adding the names of all the characters that have dialog cues you'll be re-recording, to help with cue creation and management. An Add New button lets you add additional names to this list, while a Remove button lets you delete characters you no longer need.
- **Beep to In Point:** Enables a three-beep sequence to be heard leading up to the recording.
- **Beep at In Point:** Enables one last beep at the In point.
- **Count In:** An onscreen counter that counts down to the start of the cue.
- **Video Streamer:** A visual cue for the talent to watch during pre-roll to ready them for recording. A pair of vertical lines superimposed over the program being output to video that move toward one another across your video output screen during the pre-roll to the cue to give the talent a visual indication of the countdown to the beginning of the cue. When the beeps play, these lines stretch upward and down briefly. Both lines come together at the cue point, and a large cross is shown as recording begins.
- **Smart Timeline:** When turned on, this option automatically moves the playhead to each cue as it's selected, and zooms in to frame the duration of that cue in the Timeline.
- **Mixing Control:** Enables automated switching of audio playback, to independently control what the talent and the audio engineer hear at various stages of the ADR recording process. For example, with this enabled, the Guide track is not routed to the Control room while the engineer is reviewing a take.

The List Panel

This is where you create a list of cues you need to re-record, either from within the Fairlight page, or imported from a .csv file that someone provides you.



The List panel of the ADR interface

This panel presents the following controls:

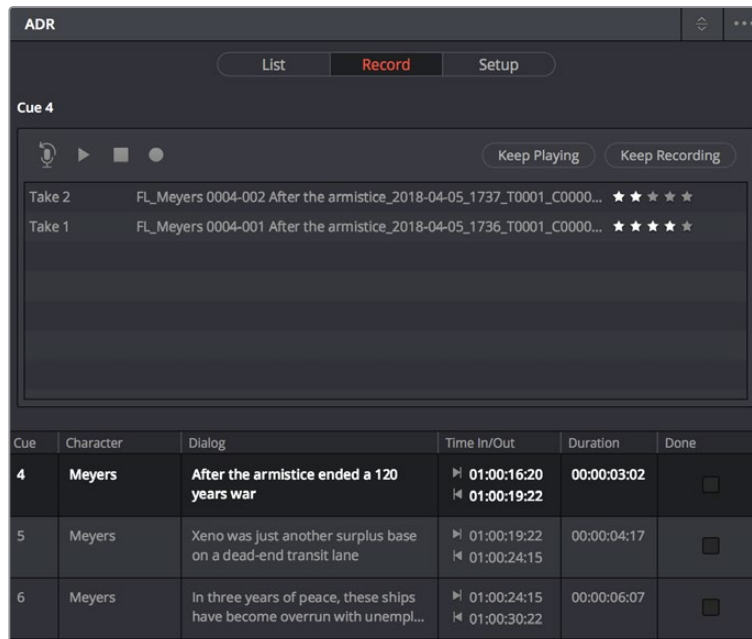
- **Cue editing controls:** Displays the data for the currently selected cue (or a cue that was just created). In and Out timecode fields store the Timeline In and Out points that were set when the cue was created but can be manually edited for fine tuning. A Character pop-up menu lets you choose which character that line of dialog belongs to. A text entry field lets you enter the dialog cue that's to be re-recorded, so you and the talent can both refer to it.
- **New Cue button:** Clicking this button adds a new cue to the list using whatever In and Out points have been set in the Timeline, and whatever character was last selected.
- **Cue list:** The list of all cues that have been entered or imported. The Cue list can be filtered using the Filter pop-up menu at the top-right of the ADR panel (next to the option menu). You can choose to show the cues for all characters, or for any selected combination of characters. You can also choose to hide all cues that are marked as done to experience the joy of this list shrinking more and more the closer you are to being finished.

Additionally, the ADR interface option menu has three commands pertaining to the List panel:

- **Import Cue List:** Lets you import a properly formatted .csv file to create cues that have been prepared in a spreadsheet. Correct formatting for cue lists you want to import is no headers, one line per cue, with four individual columns for In timecode, Out timecode, Character Name, and Dialog.
- **Export Cue List:** Lets you export the contents of the Cue list to a .csv file, for exchange or safe-keeping.
- **Clear Cue List:** Deletes all cues in the Cue list. It's recommended you export a copy of your Cue list before eliminating it completely, in case you ever need to revisit a cue.

The Record Panel

This is where you actually run the ADR recording session you've set up, using the dialog cues you've put into the Cue list.



The Record panel of the ADR Interface

This panel presents the following controls:

- **Record and rehearse controls:** Four transport controls and two buttons let you control recording during ADR sessions. These controls are only clickable when you've selected a cue from the Cue list to record.
 - **Rehearse:** Runs the section of the Timeline specified by a cue without actually recording anything, giving the talent an opportunity to run through their dialog and practice their timing and delivery. Beeps and on-screen streamers are not played during a rehearsal.
 - **Play:** Plays the currently selected take from the Take list (described below). If no take is selected, the most recently recorded one on top is played.
 - **Stop:** Immediately stops rehearsal, playback, or recording.
 - **Record:** Initiates recording of the cue to the specified audio track, with cue beeps and video streamer cues.
 - **Keep Playing:** At the end of a take you may wish to keep playing, so the talent can hear the next section of the track. Pressing the Keep Playing button at any time, even while recording, results in post roll being ignored and normal playback resuming after the cue's Out time.
 - **Keep Recording:** At the end of a take you may wish to keep recording until you manually stop. Pressing the Keep Recording button at any time, even while recording, results in the Out point of the current cue being ignored and recording continuing until you stop it.

- **Take list:** The Take list shows every take you've recorded for the current cue, with take number, name, and a five-star rating that you can set to keep track of which takes worked and which didn't. Earlier takes are at the bottom of this list, while recent takes are at the top (the same order in which the corresponding layered audio clips appear in the Timeline track they've been recorded to).
- **Cue list:** The list of all cues that have been entered or imported. The Cue list can be filtered using the Filter pop-up menu at the top-right of the ADR panel (next to the Option menu). You can choose to show the cues for all characters, or for any selected combination of characters. You can also choose to hide all cues that are marked as done to experience the joy of this list shrinking more and more the closer you are to being finished.
- **Cue list Done column:** A sixth column appears in the Record panel only, labeled Done. It contains check boxes for each cue that you can turn on to keep track of which cues you've successfully finished.

Additionally, the ADR interface Option menu has one command pertaining to the Record panel:

- **Record Early In:** Enables recording during pre-roll, in the event you're working with talent that likes to start early.

Setting up to Do an ADR Session

Setting up to record ADR is straightforward but requires some steps.

Patching tracks in preparation to record ADR:

- 1 In the Timeline, create two new audio tracks, one to record ADR to, and another to route the Oscillator through to play preview beeps.
- 2 Open Fairlight > Patch Input/Output to choose the Patch window
- 3 Choose Audio Inputs from the Source pop-up menu, and choose Track Inputs from the Destination pop-up menu, then patch the audio input for your recording microphone to the track you created to record onto in step 1.
- 4 Next, choose Osc from the Source pop-up menu, and patch the Beep output to the track you created to preview beeps in step 1.
- 5 Close the Patch Input/Output window.
- 6 To make sure you can hear the preview beeps, open the Mixer (if necessary), click the Input pop-up menu at the top of the channel strip that shows "Beeps," and choose Path Settings. When the Path Settings window appears, turn on the Thru button in the Record Level controls, and close the path settings.
Thru mode places a track into a "live" input mode, bypassing track playback in order to play the patched input. Thru mode is typically used for external sources that you want to bring into a mix. While a track is in THRU, there's no need to arm the Record button, the external source is always feeding to the mix.
- 7 If you're recording ADR to your main timeline, Solo the Guide track, the Record track, and the Beep Preview track to focus only on the audio you're re-recording.

Now you're ready to configure the Setup panel.

Configuring the Setup panel:

- 1 Open the ADR interface, and then open the Setup panel.
- 2 Choose the Pre Roll and Post Roll you want to use, in seconds. A pre roll of at least 3 seconds is recommended to give the talent time to get ready.
- 3 From the Record Source pop-up menu, choose the microphone you patched earlier.
- 4 From the Record Track pop-up menu, choose the Record track you created.
- 5 From the Guide Track pop-up menu, choose the track with the original production audio that you're replacing.
- 6 At the bottom of this panel, turn on the Preroll Cue options you and the talent want to use. Options include Beeps to provide an audible lead up to re-recording, and a Video Streamer that gives both visual cues and also displays the dialog text for that cue on screen for the actor to refer to, keeping their eyes on the screen.

Creating and Importing ADR Cue Lists

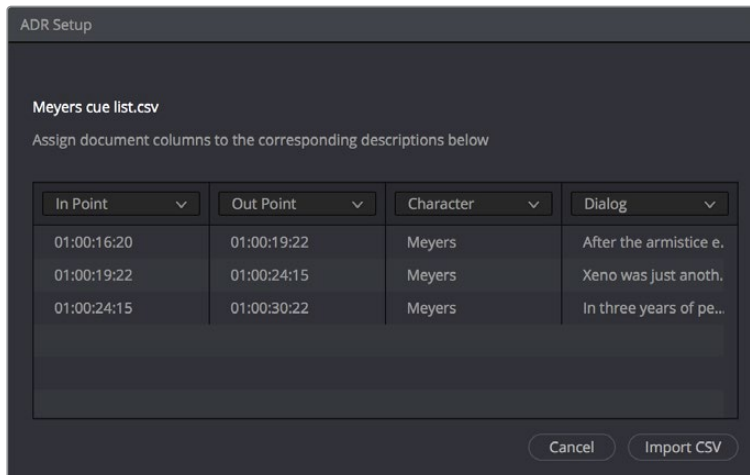
You must have a list of cues to be able to use the ADR interface properly. There are two ways you can create a Cue list to record with, make one on the Fairlight page, or import one. If you've been doing all of your dialog editing inside of DaVinci Resolve, you can go ahead and create a list by marking the sections of the Timeline you need to re-record and creating cues from those timings.

To manually add cues to the Cue list:

- 1 Open the Setup panel of the ADR interface, and use the Add New button in the Character Setup list to create all the character names you'll be creating dialog cues for. These will help you to filter and sort the list as necessary later on.
- 2 Next, open the List panel of the ADR interface. This is where all the controls for creating and editing cues are.
- 3 In the Timeline, set In and Out points to mark the section of dialog you want to turn into a cue. Those timecode values appear in the Cue Editing section of the List panel.
- 4 In the Cue Editing section, choose the character who's speaking that cue, and type the dialog they're speaking.
- 5 When you're done, click New Cue, and that cue will be added to the Cue list.
- 6 Repeat steps 3 through 5 until you're finished creating all the cues you intend to re-record. If you need to edit any cue, simply click to select that cue, and edit it in the Cue Editing section above.

To import a .csv file to the Cue list:

- 1 Choose Import Cue List from the ADR option menu, then use the dialog to choose the .csv file containing the Cue list you were given, and click Open.
- 2 An ADR Setup dialog appears, letting you assign the columns of the .csv file you selected to the relevant column of the ADR panel. Correct formatting for Cue lists you want to import is no headers, one line per cue, with four individual columns for In timecode, Out timecode, Character Name, and Dialog, but if any of these columns are transposed, you can correct this here.



Dialog for rearranging columns of cue data, if necessary

- 3 Click Import CSV. The cues should appear in the Cue list.

To export a .csv file from the Cue list:

- Choose Export Cue List from the ADR option menu, choose a location to save the file, and click Save.

Recording ADR to the Timeline

Once you've configured your workstation for recording, and you've set up a cue list to work with, it's time to start recording each cue.

To record a cue from the Cue list:

- 1 Open the Record panel of the ADR interface.
- 2 If you want to record a particular character's cues, you can turn off Show All Characters, and turn off all unnecessary characters, in the ADR Option menu.
- 3 With the list showing the character cues you need, select the cue you want to start recording. That cue contains the timecode necessary to determine which part of the Timeline to record to, and the playhead automatically moves to that part of the Timeline.
- 4 Click the Rehearse button to run through the cue with the talent a few times. Both audio and video corresponding to that cue will play, including pre roll and post roll.
- 5 When the talent is ready to try a take, click the Record button, and let the Fairlight page do the work of playing through pre roll with beep notifications and visual streamer cues, initiating recording, and then stopping recording automatically once the cue is done.
- 6 If you or the talent want to hear what the take sounds like again, you can select it in the Take list and click Play. Depending on how you like the take, you can mark it with the 5-star ratings control and then record another take.
- 7 To record another take, click the Record button again. New takes are placed on the same track using layered audio, so you can record as many takes as you like into the same area of the Timeline that corresponds to the media you're replacing. When you're finished recording takes, you'll have a neatly organized stack of alternate takes to draw upon as you edit the best parts from each recording.
- 8 When you're finished recording a cue, click the Done checkbox for that cue, and select the next cue you want to record. When you're finished re-recording dialog, simply close the ADR interface.

Chapter 128

Editing Basics in the Fairlight Page

You can use the Fairlight page to refine the editing of audio that was initially assembled in the Edit page, or you can use the Fairlight page to both record and edit audio programs from scratch. Because audio clips have properties that video clips do not, audio editing encompasses additional procedures that are not available in the Edit page. This chapter takes you through the fundamental steps of editing audio the Fairlight way.

Contents

Compatible Audio Formats	2481
Adding Audio Clips to the Timeline	2481
Overwriting Vs. Layering Clips That Overlap	2481
Choosing Parts of Clips to Edit in the Media Pool	2482
Dragging Individual Audio Clips Into the Timeline	2482
Drag and Drop Editing of Several Clips Into the Timeline at Once	2483
Support for Mixed Audio Track Formats from Source Clips	2483
Making Audio Clip Selections in the Timeline	2484
Clip Selection	2485
Track Selection	2486
Range Selection	2487
Automatic Selections in Selection Mode With Selected Tracks	2489
Automatic Selections in Range Selection Mode With Selected Tracks	2490
Locking Audio Tracks You Don't Want to Change	2491
Splitting Clips	2491
Trimming Clips Without Rippling the Timeline	2492
Seven-Point Editing	2492
Resizing the In and Out Points of a Clip	2492
Trim Start and Trim End	2493
Moving (Sliding) and Overwriting Clips	2493
Slipping	2494
Disabling and Re-Enabling Clips in the Timeline	2494
Deleting Audio Clips and Regions	2494
Cut, Copy, and Paste	2494
Conventional Cut, Copy, and Paste	2495
Using the Cut/Copy Head and Tail Commands	2497
Paste and Remove Attributes	2498
Copying and Pasting Clip Attributes	2498
Copying and Pasting Track Attributes	2499
Removing Attributes	2499

Audio Clip Layering	2499
Audio Compound Clips	2501
Audio Crossfades	2501
Fades and Crossfades	2502
Using Fades	2502
Fade In and Out to Playhead	2503
Creating Crossfades With Overlapping Fades	2503
Using Crossfades From the Edit Page	2504
Finding Clips in the Media Pool	2505
Changing Clip Color in the Timeline	2505
Editing Audio Clips in External Editors	2505
Sample Editing	2506

Compatible Audio Formats

DaVinci Resolve is compatible with WAVE, Broadcast WAVE, AIFF, MP3, AAC (M4A), CAF (macOS only), both MTS and QuickTime containers that use the AC3 audio format, and Enhanced AC-3 (macOS and Windows only). DaVinci Resolve is compatible with audio at sample rates including 32, 44.1, 48, 88.2, 96, and 192 kHz.

Adding Audio Clips to the Timeline

The Fairlight page offers a complete audio editing environment that lets you either record and assemble clips from scratch, or refine tracks full of audio clips that have been edited together in different ways. There are four ways of adding media to the Timeline in the Fairlight page, depending on the type of work you do:

- Recording new audio into one or more tracks (for more information, see Chapter 126, “Recording”)
- By dragging and dropping new audio clips from the Media Pool into the Fairlight timeline
- By editing audio clips into audio tracks on the Edit page
- By importing a project with audio clips

However audio clips come to be in your timeline, the rest of this chapter covers the myriad methods available to edit and sweeten the contents.

Overwriting Vs. Layering Clips That Overlap

When you add clips to the Timeline, what happens when you add a clip that overlaps another clip that’s already in the track you’re editing depends on the Timeline > Layered Audio Editing setting. By default, with Layered Audio Editing turned off, overwriting one audio clip with another results in the overlapping part of the overwritten clip being non-destructively deleted from the Timeline by the incoming clip.

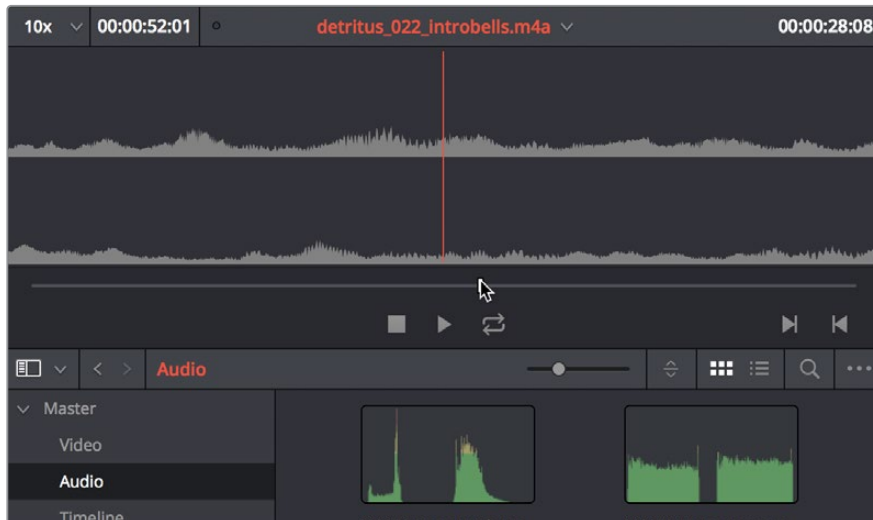
However, if you turn Layered Audio Editing on, then incoming clips do not overwrite overlapping clips in the Timeline; instead, they’re layered within that track, such that the incoming audio clip takes precedence over what was previously there, but overlapping audio segments that were previously in the Timeline are preserved, which can be seen when you choose View > Show Audio Track Layers.

In this way, you can choose whether you want to overwrite previously edited clips, or layer newly edited clips, as your needs require, regardless of whether or not Audio Track Layers are visible. Audio layering can be enabled in both the Edit and Fairlight pages.

For more information about audio layering, see the section later in this chapter.

Choosing Parts of Clips to Edit in the Media Pool

The Media Pool has a preview player at the top that provides a place to open selected source clips in the Media Pool, play them, add marks to log them, and set In and Out points in preparation for editing them into the Timeline via drag and drop. The Media Pool Preview Player effectively acts as a Source monitor for editing in the Fairlight page.



The preview player in the Media Pool

- Various viewing controls populate the title bar at the top. A pop-up menu at the upper left lets you choose a zoom level for the audio waveform that's displayed. To the right of that, a Timecode window shows you the duration of the clip or the duration that's marked with In and Out points. Next to the right, a real-time performance indicator shows you playback performance. In the center the title of the currently selected clip is shown, with a pop-up menu to the right that shows you the most recent 10 clips you've browsed. To the far left, a Timecode field shows you the current position of the playhead (right-clicking this opens a contextual menu with options to change the timecode that's displayed, and to copy and paste timecode).
- The center of the Media Pool Preview Player shows you the waveforms in all channels of the currently selected clip, at whatever zoom level is currently selected.
- Transport controls at the bottom consist of a jog bar for scrubbing, Stop, Play, and Loop buttons, and In and Out buttons.

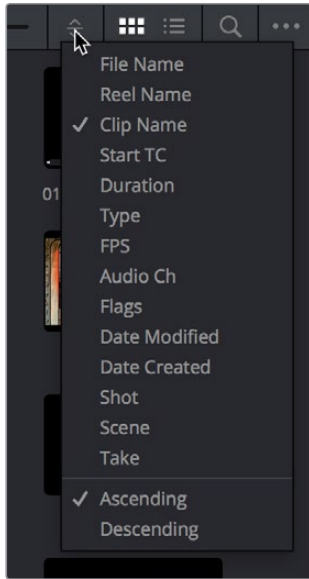
Dragging Individual Audio Clips Into the Timeline

You can show the Media Pool in the Fairlight page, and edit audio clips into the Timeline in their entirety by dragging and dropping individual clips onto whichever audio track you want them to appear.

Drag and Drop Editing of Several Clips Into the Timeline at Once

If you want to edit several clips into the Timeline at once by dragging them from the Media Pool, you'll probably want to do a bit of preparation to make sure they're edited in the right order.

- 1 Change the sort order of the Media Pool's browser area to put the clips into the order in which you want them to appear. In Thumbnail view you can use the Sort Order menu, but in List view you can click the header of any metadata column to sort by that column's data.



Using the Sort Order menu to change the sort order of clips in the Media Pool

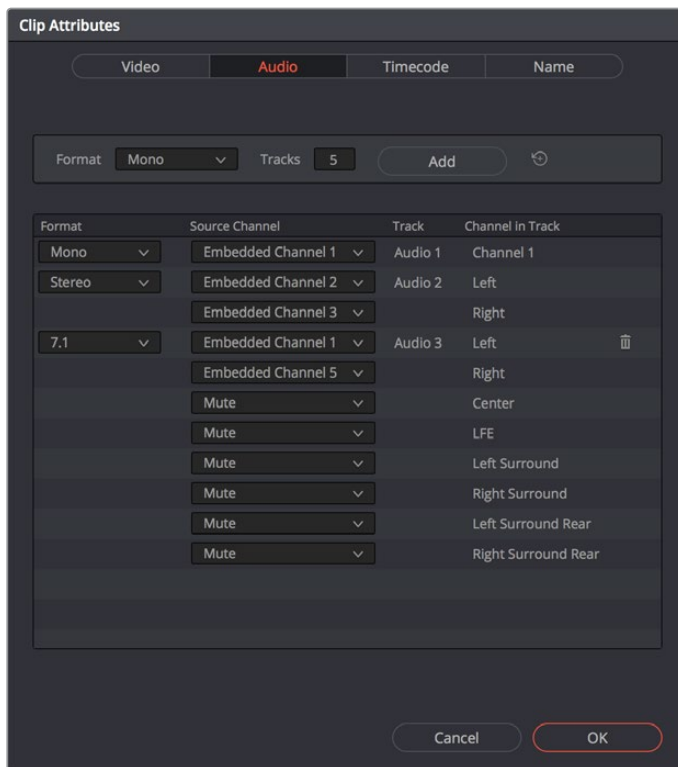
- 2 Use the Media Pool thumbnails, the Media Pool List view Filmstrip, or the Source Viewer to set In and Out points to define the part of each clip that you want to edit into the Timeline.
- 3 Select the Media Pool clips you want to edit into the Timeline by dragging a bounding box, Command-dragging multiple bounding boxes over different sets of clips, by Shift-clicking a range of clips, or by Command-clicking individual non-contiguous clips.
- 4 Drag any of the selected clips to the desired position in the Timeline to perform an overwrite edit.

The clip(s) you drag overwrite whatever other clips they overlap in the Timeline. Multiple clips dragged from the Media Pool will be edited in the order in which they're sorted in the Media Pool, using each clip's In and Out points.

Support for Mixed Audio Track Formats from Source Clips

As of DaVinci Resolve 15, there is support for media with multiple audio tracks that have differently formatted channels embedded within them. For example, a clip with one stereo track, one 5.1 surround track, and six mono tracks can all be appropriately set up in the Audio panel of Clip Attributes after that clip has been imported.

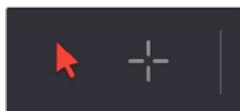
The Audio panel of Clip Attributes now has controls over what format (Mono, Stereo, 5.1, 7.1, Adaptive) the channels embedded within a particular audio track should be configured as. This means you can set up clips with multiple tracks, each one using different formats of audio employing different combinations of channels, which is useful for setting up imported audio mix files that you want to output when mastering a program.



Clip Attributes now lets you assign channels among different tracks with different channel assignments

Making Audio Clip Selections in the Timeline

Nearly every editing operation described in this chapter and others requires you to make a selection to define which clips will be affected. The two main editing modes in the Fairlight page are the Selection tool and the Range Selection tool. Which mode you choose determines how clips and clip segments are selected in the Timeline in preparation for all manner of editorial operations.



The Selection and Range Selection tools seen in the toolbar

In Selection mode, the process of making selections and working in the Fairlight page resembles that of the Edit page, although there are still key differences in terms of automatic behaviors that take place when you select tracks you want to work on.

To choose Selection mode:

- Click the Selection tool (the arrow) in the toolbar.
- Choose Trim > Selection Mode.
- Press A.

In Range Selection mode, the process of making selections and selecting tracks works more similarly to traditional Fairlight editing systems. This unlocks more of the power of Fairlight editing, enabling the easier selection of tracks and partial selection of clips for purposes of fast audio editing. However, these operations are very different from similar operations found on the Edit page.

To choose Range Selection mode:

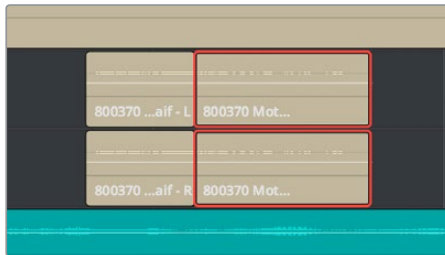
- Click the Range Selection tool (the crosshairs) in the toolbar.
- Choose Trim > Range Selection Mode.
- Press R.

Clip Selection

If you're doing simple operations to entire clips, you can select clips in the Timeline of the Fairlight page in most of the same ways you select them in the Edit page.

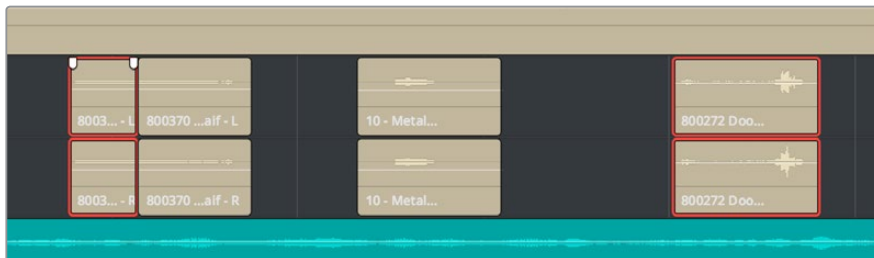
Methods of selecting clips:

Click any clip to select it.



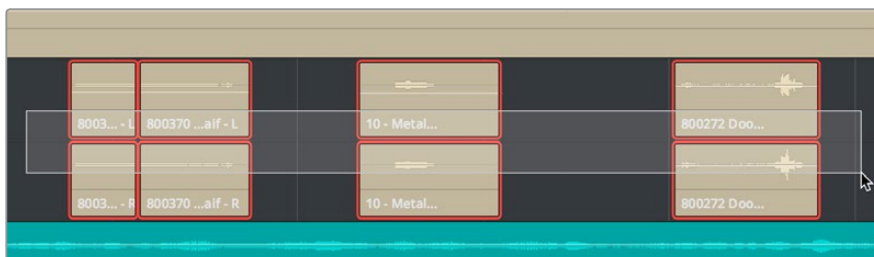
Click a clip to select it

Command-click multiple clips to select them all at once.



Command-clicking multiple clips selects those clips, even if they're separated by other clips

Click anywhere in the background of the Timeline and drag a bounding box over multiple clips.



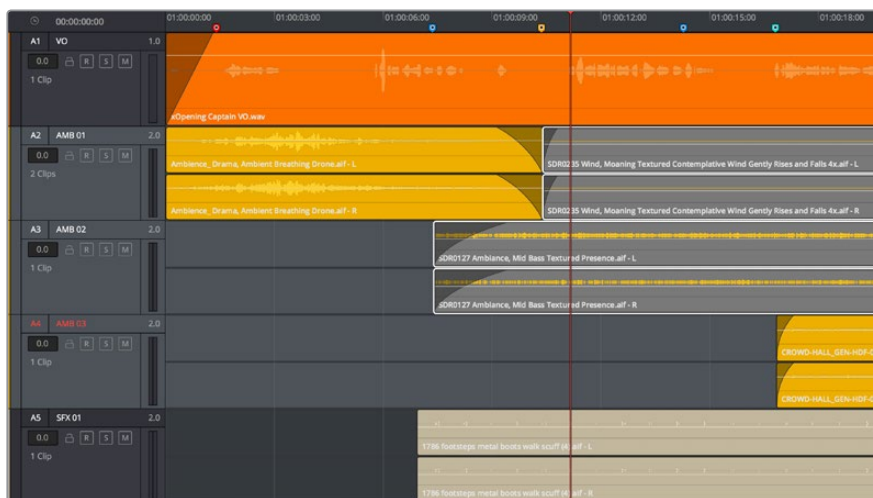
Dragging a bounding box over multiple clips selects all of them

Track Selection

The Timeline on the Fairlight page lets you select entire tracks, in order to simplify the process of choosing which clips on which tracks you want to be included in a particular operation, as well as to facilitate the automatic selection of clips that intersect the playhead for easy operation with keyboard shortcuts and the Fairlight Editing panel.

For example, if you want to copy clips on tracks A3 and A5, then you'll want to start by doing one of the following things:

- **In Selection mode:** You can select tracks by clicking or Command-clicking anywhere in the background area or on the track number of the track headers.
- **In Range Selection mode:** You can select tracks by clicking or Command-clicking anywhere either in the background area or on the track number of the track header, or in any unused area of the track itself in the Timeline.



Command-clicking multiple track headers selects those tracks

Were you to select tracks A3 and A5, then moving the playhead over the two clips you want to copy automatically selects them, and gets you ready for any operation you need to perform on both clips together, as seen in the previous screenshot. This is analogous to the use of the Auto Select controls on the Edit page, which define which clips and clip segments are automatically affected whenever you set In and Out points in the Timeline.

Methods of selecting and deselecting tracks in the Fairlight page timeline:

- **To select a single track:** Click anywhere in the background or on the track number of that track's header (not on a button). In Range Selection mode you can also click in any unused area of the track itself.
- **To deselect a single track:** Click anywhere in the background or on the track number of a previously selected track's header (not on a button). In Range Selection mode you can also click in any unused area of the track itself. If multiple tracks are selected, Command-clicking one will remove just that track from the selection.
- **To select multiple tracks:** Command-click in the track header background of every track you want to select. In Range Selection mode you can also Command-click in any unused area of the tracks themselves. Command-clicking an already selected track will deselect it.

- **To select multiple continuous tracks:** Click anywhere in the background or on the track number of a track header, and then drag a bounding box up or down over all other tracks you want to select. In Range Selection mode you can also drag a bounding box over any part of the tracks themselves, while also defining a range in which you want to work.
- **To move the selection to higher or lower tracks:** Press Control-Option-Up or Down Arrow to move the selection state to the next track higher (Control-Option-Up Arrow) or lower (Control-Option-Down Arrow). If multiple tracks are selected, then the multi-selection will be moved as a block; for example, selecting tracks A2 and A3 and then pressing Control-Option-Down Arrow will result in tracks A3 and A4 being selected.

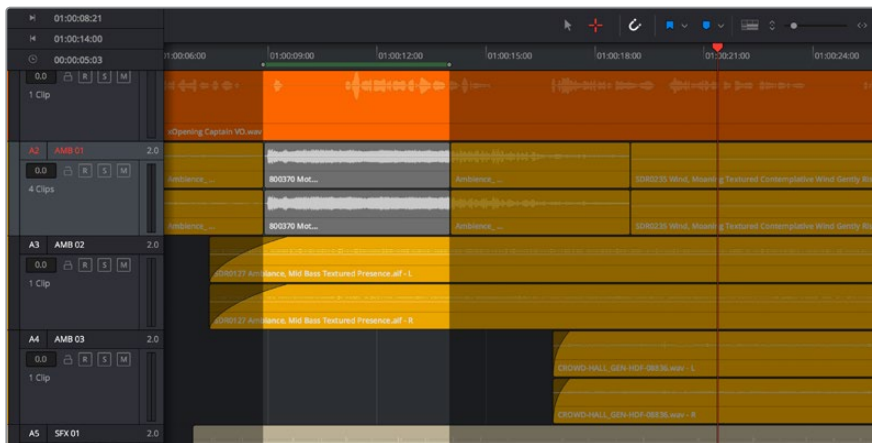
Range Selection

Pressing the R key enables Range Selection mode, in which you can create ranged selections with which to perform an operation to segments of one or more clips. Using the methods shown in this section, it's easy to select specific segments of larger clips so that you can move, delete, cut, copy, or paste words, phrases, musical bars, or sounds that you want to edit somehow.

For a range to act as a selection, it must also encompass the selection of one or more tracks in addition to one or more clip segments on those tracks. Ranges can also be defined by setting In and Out points on the Timeline. If you set In and Out points on the Timeline without selecting one or more tracks, then the range you define doesn't actually select anything; in this situation the range can be used for other purposes such as recording, but you'll be unable to make any editorial changes to clips falling within this range.

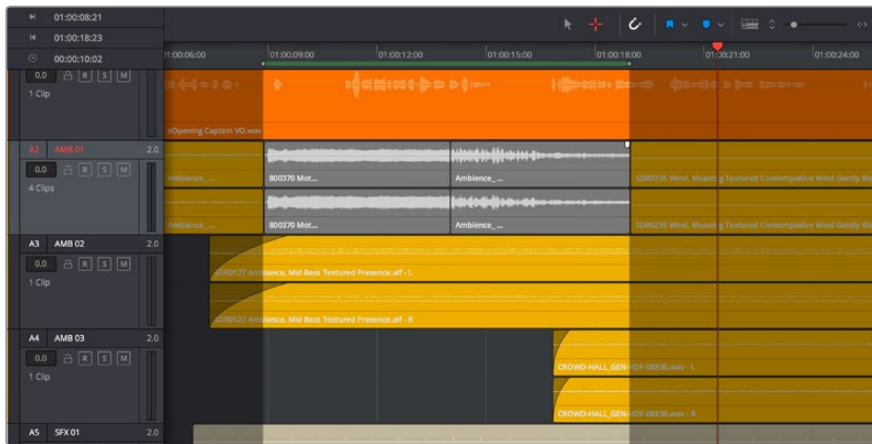
Methods of selecting clips via clicking and dragging:

- **To select a single clip:** Click any clip to select both it and the track it's on, and define a range in the Timeline that matches the duration of that clip.



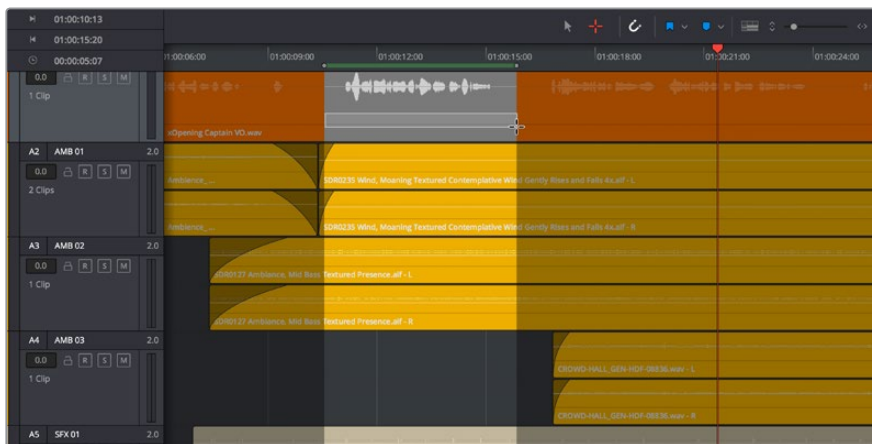
Click to select a single clip as well as the track it's on

- **To select multiple clips:** Command-clicking multiple clips to select them all at once defines a range in the Timeline that matches the total overlapping duration of all clips in the selection, from the beginning of the first selected clip to the end of the last selected clip.



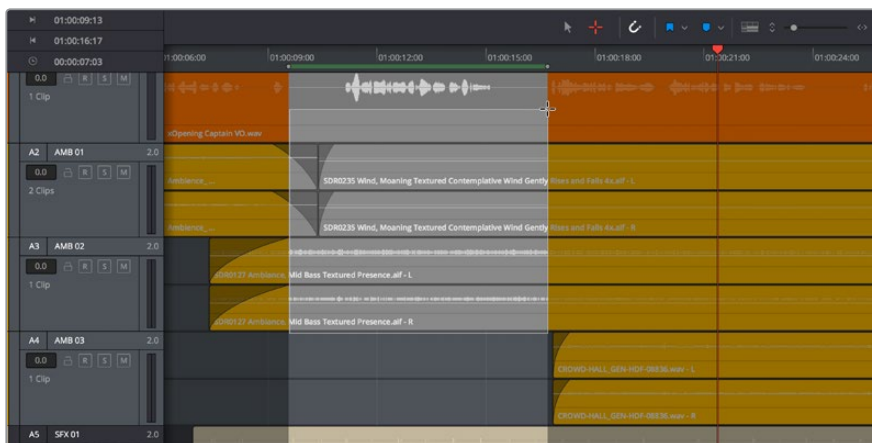
Range selection by Command-clicking multiple clips

- **To drag to select a range within a single clip:** With the Range Selection tool selected, drag anywhere on top of a clip to drag a bounding box over whatever segment of that clip (or of one or more clips) to select both that clip segment and the track it appears on. This is a good way of selecting part of a recording you want to move or delete.



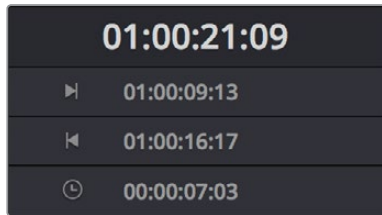
Ranged selection within a clip using a bounding box

- **To drag to select a range within multiple clips:** Click and drag a bounding box over whatever segment of one or more clips you want to select to select both those clip segments and the tracks they appear on. Or, Command-click and drag anywhere on top of any clip to drag a bounding box over whatever region of clips and tracks you like.



Ranged selection across multiple clips using a bounding box

In Range Selection mode, whenever you make a selection, the In and Out point fields update with the range that you've created.



The range fields showing you the In and Out point values that define the current range

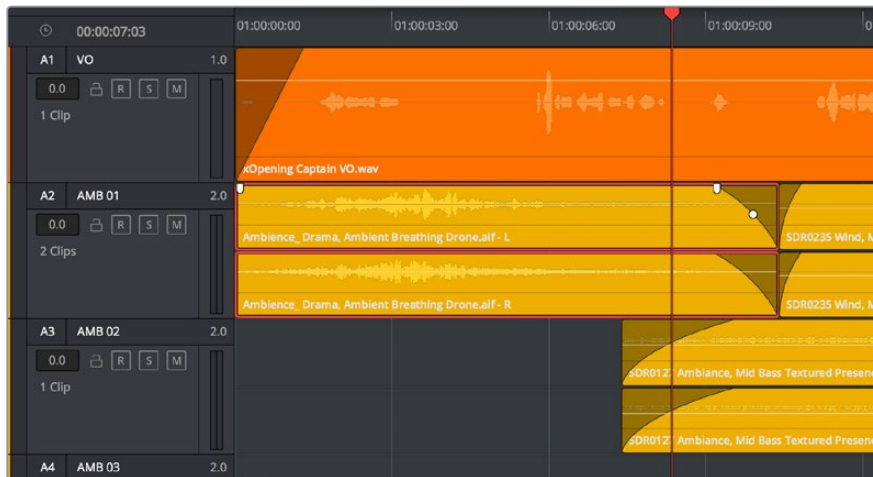
These ranges can be cleared if necessary.

Methods of clearing In and Out points to clear the current range:

- Press Option-I to clear the current In point.
 - Press Option-O to clear the current Out point.
- Press Option-X to clear both the In and Out points.

Automatic Selections in Selection Mode With Selected Tracks

In the default Selection mode (press A), all clips that intersect the playhead on selected tracks of the Timeline are automatically selected in their entirety. Clips selected in this way display an orange highlight.



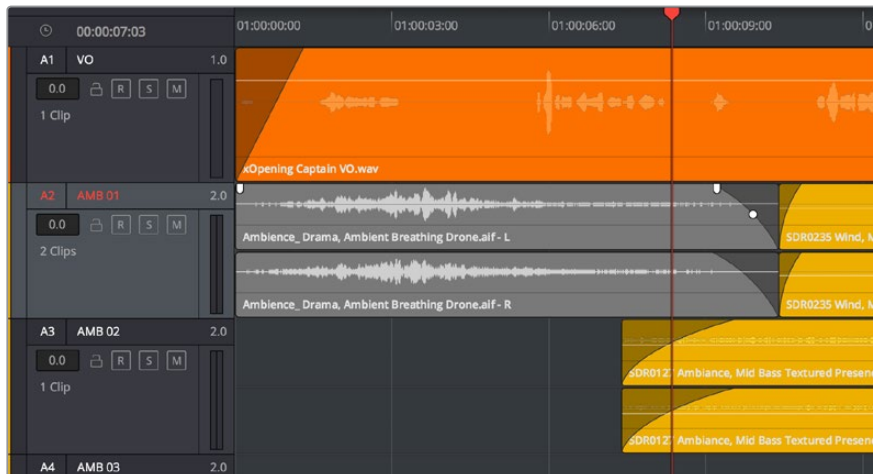
Clips intersecting the playhead in Selection mode are automatically selected with orange highlights

In this mode, the resulting selection allows whatever operation you perform to affect the entirety of whichever clips intersect the playhead. For example, pressing the Delete key will delete all selected clips in their entirety, and copying will copy the whole of each selected clip.

If you use the I (Mark In) and O (Mark Out) keys to define a range while in Selection mode, a range will be selected, suitable for various non-editing operations such as recording, but no clips or clips segments will be selected.

Automatic Selections in Range Selection Mode With Selected Tracks

In Range Selection mode (press R), all clips that intersect the playhead on selected tracks of the Timeline define a range in the Timeline that matches the total overlapping duration of all clips in the selection, from the beginning of the first selected clip to the end of the last selected clip.



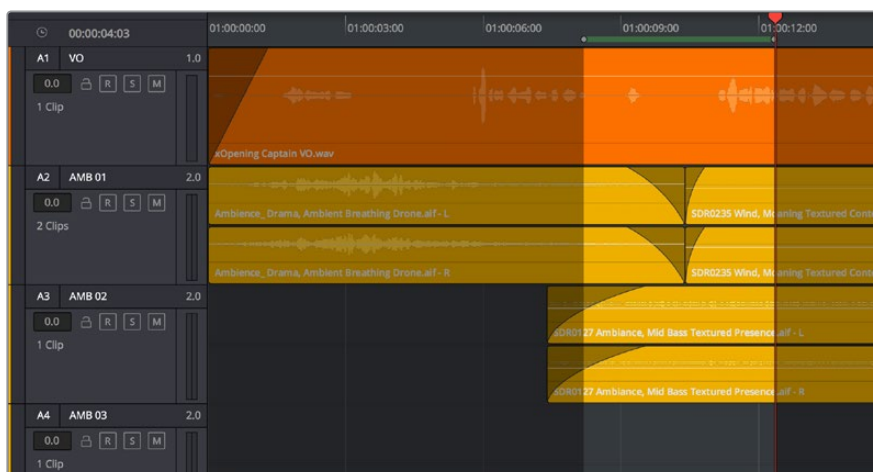
Clips intersecting the playhead in Range Selection mode are automatically selected with orange highlights

In this mode, the resulting selection allows whatever operation you perform to affect the entirety of whichever clips intersect the playhead. For example, pressing the Delete key will delete all selected clips in their entirety, and copying will copy the whole of each selected clip.

However, in this mode you can use the I (Mark In) and O (Mark Out) keys to define a range, and all clip segments falling into this range on selected tracks will be selected.

To automatically select clip ranges on multiple selected tracks:

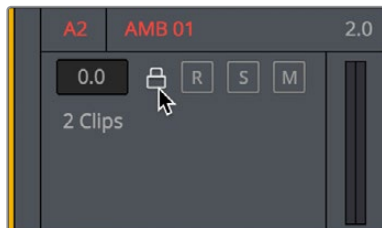
Use the I (Mark In) and O (Mark Out) keys to define a range in the Timeline, and all clip segments falling within this range on selected tracks will be selected



Selecting a range using In and Out points in the Timeline

Locking Audio Tracks You Don't Want to Change

Another step you can take to prepare before performing any kind of editorial operation is to lock tracks with media that you don't want to be affected by whatever it is you're about to do. For example, if you have a complex set of music edits on track A3 that you don't want to be affected by operations that will delete media that overlaps it, you can lock track A3 so those clips remain unaffected.



Locking an audio track

Clips on locked tracks cannot be moved, deleted, cut, or otherwise affected by editorial operations. Furthermore, parameters of locked clips cannot be edited in the Inspector. However, clips on locked tracks can be played back and mixed like any other audio clips.

To toggle the lock or unlock state of audio tracks in the Fairlight page, do one of the following:

- Click any track's lock control to toggle lock on and off.
- Click any track's lock control and drag over the lock controls of other tracks in the Timeline to quickly lock or unlock several adjacent clips.

Splitting Clips

In many situations you may find yourself splitting audio clips in order to separate multiple rolling takes.

To split one or more clips in either Selection or Range Selection mode:

- 1 Select each track that has a clip you want to split.
- 2 Move the playhead to intersect the clips you want to split at the frame where you want the split to happen.
- 3 Do one of the following:
 - a Choose Timeline > Split Clip or press Command-\ (backslash).
 - b Choose Timeline > Razor or press Command-B.

When you split a clip in the Edit page, a through edit appears to show that you currently have an edit with continuous timecode running from the outgoing to the incoming half. This is called a through edit and is displayed in the Edit page with a dotted line running along its edge so you know that it's special. The Fairlight page doesn't display through edits as of the time of this writing.

NOTE: Clips cannot be joined as of the time of this writing.

Trimming Clips Without Rippling the Timeline

Most basic adjustments in the Fairlight page only affect the selected clip or region of the Timeline. Clips to the right of the adjusted area of the Timeline are generally left alone so as not to inadvertently change sync when you don't expect it. This section covers the most basic parts of the Fairlight page's "seven-point editing" paradigm.

Seven-Point Editing

Each clip in the Timeline has seven draggable handles that affect audio editing.

- **In point:** The left edge of the clip, used to resize the beginning of the clip.
- **Out point:** The right edge of the clip, used to resize the end of the clip.
- **Fade In handle:** A handle at the upper left-hand corner of the clip that only appears when the mouse is positioned over that clip, used to fade the audio in, or as part of a crossfade between two audio clips. Fades can be reset (eliminated) by double-clicking the fade handle.
- **Fade In curve:** A handle at the center of the Fade In that only appears when the curve is exposed, used to adjust the power of the fade in. This handle can be dragged vertically to change the X-Level of the fade, and horizontally to change the X-Point of the fade. Fade curves can be reset by double-clicking the curve handle.
- **Fade Out handle:** A handle at the upper right-hand corner of the clip that only appears when the mouse is positioned over that clip, used to fade the audio out, or as part of a crossfade between two audio clips. Fades can be reset (eliminated) by double-clicking the fade handle.
- **Fade Out curve:** A handle at the center of the Fade Out curve that only appears when the curve is exposed, used to adjust the power of the fade out. This handle can be dragged vertically to change the X-Level of the fade, and horizontally to change the X-Point of the fade. Fade curves can be reset by double-clicking the curve handle.
- **Level:** Considered an editorial characteristic, the level of any given audio clip can be adjusted via a level overlay running across each clip. The level of any clip can be reset to the default 0.0 dB by double-clicking the level overlay.

Resizing the In and Out Points of a Clip

Trimming the head or tail of a clip in the Fairlight page means to resize the In or Out point of that clip, making it shorter or longer accordingly.

To resize the beginning or end of a clip:

- **To shorten or lengthen clips:** Move the pointer over the beginning or end of a clip, and when it turns into the Resize cursor, drag the In or Out point to the left or right to change the clip's length. As you drag the In or Out point of an audio clip in the Fairlight page, an overlay appears showing the waveform of all available media at the head (if you're dragging the In point) or tail (if you're dragging the Out point) of the clip you're resizing.



The overlay seen when resizing the In point of an audio clip in the Fairlight page

To quickly resize the beginning or end of a clip to the very beginning or end of available media:

- Double-click the In point of the clip to move the In point to the very beginning of that clip's media.
- Double-click the Out point of the clip to move the Out point to the very end of that clip's media.

If you resize a clip's In or Out point to overlap one or more neighboring clips in the Timeline, the overlapping parts of the neighboring clips will be overwritten by the clip you've resized.

Trim Start and Trim End

The Trim > Trim Start (Shift-[) and Trim End (Shift-]) commands let you move the In or Out point of all clips that intersect the playhead as either a ripple operation (in Trim mode) or a resize operation (in Selection mode). You do not need to make a selection to use Trim Start and Trim End, making these commands fast to use in the right situation. A classic use of Trim End is when you have several superimposed clips of different lengths that you want to either start or end at the same time.

- Trim Start resizes or ripples (depending on what mode you're in) all clips that intersect the playhead, so that each clip's In point is moved to the current playhead position.
- Trim End resizes or ripples intersecting clips so that each intersecting clip's Out point is moved to the current playhead position.

Clips that don't intersect the playhead are not affected. Furthermore, you can exclude clips on specific tracks from this operation by locking those tracks.

Moving (Sliding) and Overwriting Clips

Formerly called slipping in previous versions of Fairlight, sliding refers to moving a clip to the left or right in the Timeline, changing the timing of that clip's position in the edit.

To move or slide clips in the Timeline, do one of the following:

- **To move one or more selected clips in the Timeline:** Drag any clip in the Timeline to any other position. If you drag a clip to overlap another clip, the clip you're dragging overwrites the clip you're moving it over.
- **To nudge one or more selected clips in the Timeline using the keyboard:** Press the Comma key (nudge 1 frame left) or Period key (nudge 1 frame right) to roll the selected edit to the left or right. Shift-Comma and Shift-Period nudges by 5 frames.
- **To move one or more selected clips up or down to other tracks at the same time:** Hold the Shift key down while dragging clips up or down in the Timeline to lock their position in time while moving them to other tracks. Or, you can hold the Option key down and press Up or Down Arrow.

Sync Offset Indicator

Audio clips in the Fairlight page display an “out-of-sync” or sync offset indicators when they’re moved out of sync with the video items they’re linked to.

Slipping

Formerly called resyncing, slipping an audio clip keeps that clip in the same place in the Timeline while changing the range of media that appears in that spot. Slip edits do not change the duration of the overall Timeline, and they don’t move the clip’s position relative to the other clips in the Timeline. Slipping simply changes the range of media that clip represents.

NOTE: While available in previous versions of Fairlight, slipping is not available at the time of this writing.

Disabling and Re-Enabling Clips in the Timeline

Sometimes there’s one or more audio clips in the Timeline that you don’t want to play along with the rest of the edited sequence, but you don’t want to remove from the Timeline either, in case you change your mind later. For this reason, it’s possible to disable clips, effectively turning them off without removing them. Previous versions of Fairlight referred to this operation as Mute clip.

Disabled clips appear dimmed in the Timeline. They don’t play back, they’re not rendered, and they’re not output to video. However, their position is preserved in the Timeline, so you can always re-enable them at a later time if you change your mind and decide you want to use them.

To disable or re-enable one or more selected clips:

- Right-click part of the selection and choose Enable Clip from the contextual menu.
- Choose Clip > Enable Clip.
- Press D.

Deleting Audio Clips and Regions

You can delete any clip(s) or clip region(s) that you can select, in either Selection or Range Selection modes by pressing the Delete or Forward Delete keys, or by right-clicking a clip and choosing Delete Selected from the contextual menu. In the Fairlight page, deleting anything leaves a gap. You can not ripple delete anything.

Cut, Copy, and Paste

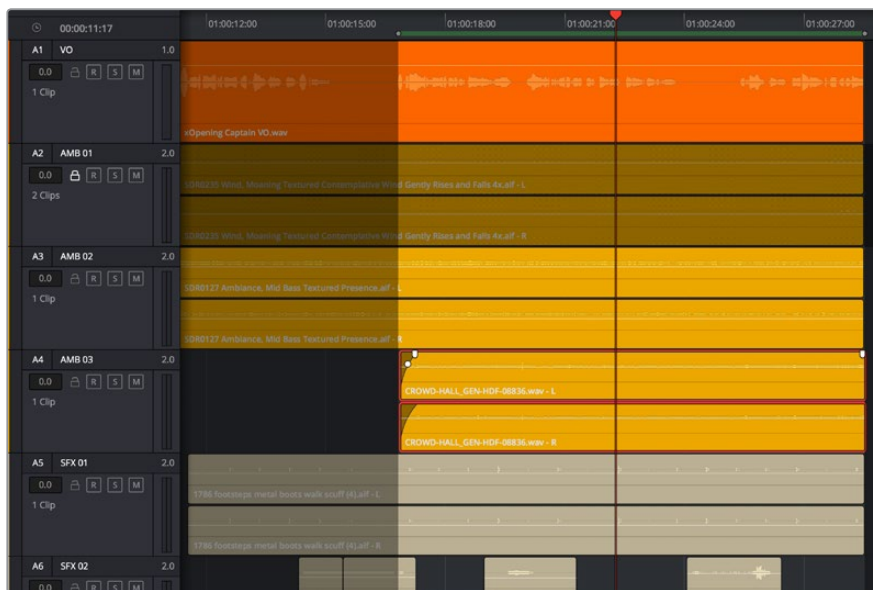
The Fairlight page has a unique copy and paste methodology that takes advantage of the “ghost” overlays that are used for the waveforms of selected audio clips. This method makes it easy to copy and paste clips using keyboard shortcuts and the JKL keys.

Conventional Cut, Copy, and Paste

The typical cut, copy, and paste commands expected of every software application are available in the Fairlight page, but with a unique twist that's particularly advantageous for users of the Fairlight control surface, or for anyone who uses the JKL transport key shortcuts to move around the Timeline for keyboard-driven editing.

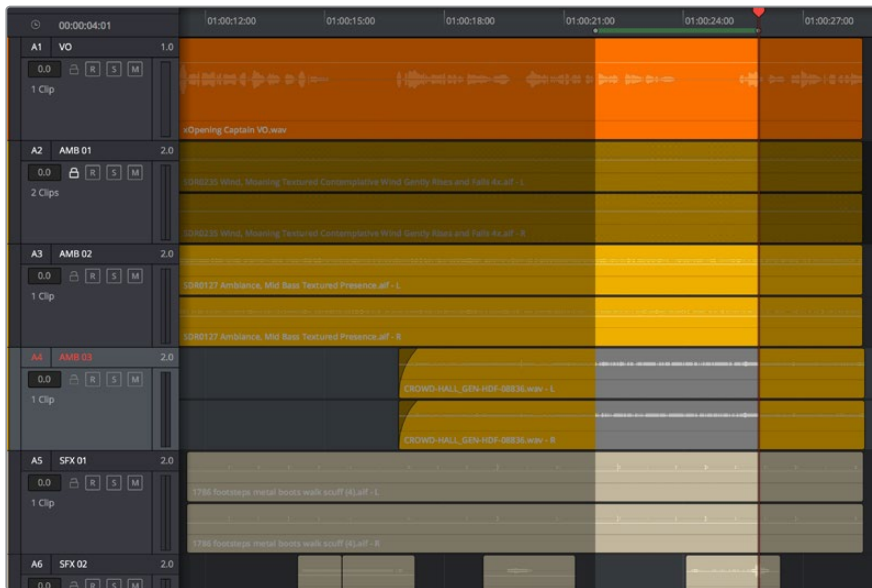
To cut or copy and paste either all or part of a clip:

- 1 If you're cutting or copying a whole clip, then choose either the Selection (press A) or Range Selection (press T) mode. If you're cutting or copying part of a clip, then make sure you're in Range Selection mode (press T).
- 2 To use the playhead to make a clip selection, select the track that contains the clip you want to copy or cut. If one or more tracks are already selected, you can use the Control-Option-Up or Down Arrow key shortcuts to move the track selection state up or down to the tracks with the clip you want to cut or copy.



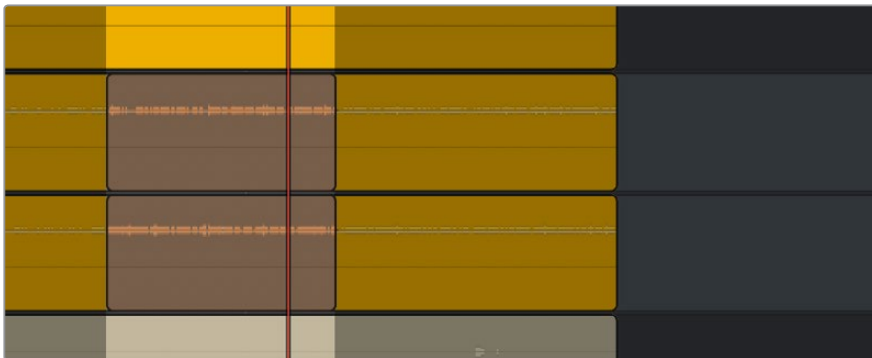
Selecting the track with a clip you need to cut

- 3 Do one of the following:
 - a To cut or copy a whole clip, move the playhead so that it intersects the clip you want to cut or copy. If the playhead intersects a clip on a selected track, that clip should become selected. You should note that even if you use the mouse to select a clip without selecting a track first, you should still move the playhead to intersect the clip you're copying or pasting, as this sets up an important reference point for the operation.
 - b To cut or copy segment of a clip, move the playhead so that it intersects the clip you want to cut or copy. If the playhead intersects a clip on a selected track, that clip should become selected. Then, using JKL and the I (In) and O (Out) keys, mark a range in the Timeline that includes the segment of the clip you want. That segment should appear highlighted as a result.



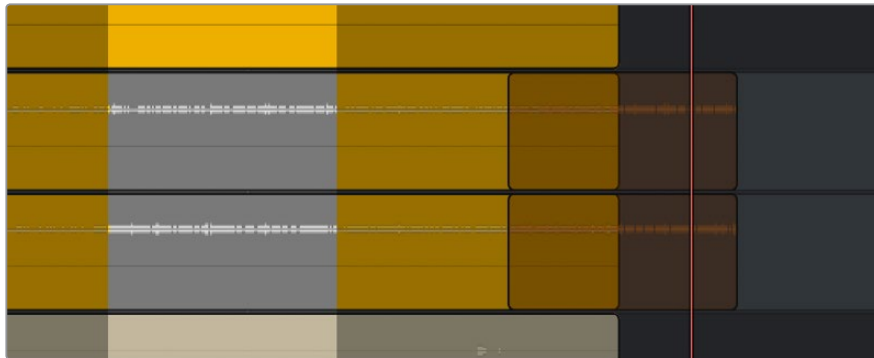
Cutting or copying a segment of a clip using In and Out points

- 4 Making sure the playhead is over the section of the waveform that you want to use as the frame to move the clip by, press Command-X to cut or Command-C to copy that clip (you can also right-click a clip and choose Copy or Cut). That clip will immediately become highlighted.



Cutting or copying a clip at the position of the playhead

- 5 At this point, there are two things you can do to position the cut or copied clip to the position in the Timeline at which you want to paste it:
 - a Moving the playhead will now also move the clip you cut or copied, shown as a ghost clip with waveform that's "attached" to the playhead at the frame you chose. Whether you drag the playhead with your mouse or use JKL to move the playhead through the Timeline, the cut or copied clip will move along with it, so that moving the playhead repositions the cut or copied clip on that track.
 - b If you want to move the cut or copied clip to another track, use the Control-Option-Up or Down Arrow key shortcuts to change the selected track; the ghost clip will move along with change in track selection.



Positioning the cut or copied clip before you paste it

This way, you can use the playhead to align the ghost waveform with other audio clips surrounding it in preparation for pasting it.

- 6 When the clip is positioned where you want it, press Command-V to paste the clip at the position you've chosen (you can also right-click a track and choose Paste from the contextual menu). The clip becomes solid, and you're finished.



The pasted clip

Using this method of cutting and pasting makes it quick to cut or copy clips using only keyboard commands, with the clip's ghost overlay making it easy to precisely align the clip you're pasting to fit exactly where you need it to, perfectly in sync.

Using the Cut/Copy Head and Tail Commands

Four additional commands make it easy to cut or copy portions of one or more clips that intersect the playhead, either from the In point to the current position of the playhead (the Head), or from the current position of the playhead to the Out point (the Tail).

To cut or copy the head or tail of a clip, and paste the result:

- 1 Using these commands, there's no need to make a partial selection, so you can use either the Selection (press A) or Range Selection (press T) modes.
- 2 Select the track that contains the clip you want to copy or cut. If one or more tracks are already selected, you can use the Control-Option-Up or Down Arrow key shortcuts to move the track selection state up or down to the tracks with the clip you want to cut or copy.
- 3 Move the playhead so that it intersects the clip you want to cut or copy at the frame you want to define, either the end of the head or the beginning of the tail. If the playhead intersects a clip on a selected track, that clip should automatically become selected. You should note that even if you use the mouse to select a clip without selecting a track first, you should still move the playhead to intersect the clip you're copying or pasting, as this sets up an important reference point for the operation.
- 4 Choose Edit > Cut/Copy Head/Tail to cut or copy the portion of the selected clip you want to paste. That portion of the clip will immediately become highlighted.
- 5 At this point, there are two things you can do to position the cut or copied head or tail of the clip to the position in the Timeline at which you want to paste it:
 - a a ghost clip with waveform that's "attached" to the playhead at the frame you chose. Whether you drag the playhead with your mouse or use JKL to move the playhead through the Timeline, the cut or copied clip will move along with it so that moving the playhead repositions the cut or copied clip on that track.
 - b If you want to move the cut or copied clip to another track, use the Control-Option-Up or Down Arrow key shortcuts to change the selected track; the ghost clip will move along with change in track selection.

This way, you can use the playhead to align the ghost waveform with other audio clips surrounding it in preparation for pasting it.

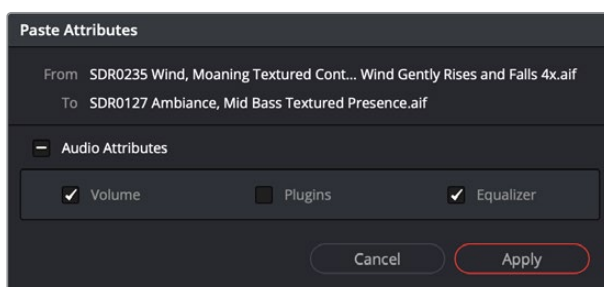
- 6 When the clip is positioned where you want it, press Command-V to paste the clip at the position you've chosen (you can also right-click a track and choose Paste from the contextual menu). The clip becomes solid, and you're finished.

Paste and Remove Attributes

The Fairlight page has Paste Attributes and Remove Attributes commands that allow for the copying and resetting of audio parameters and effects, similar to the same commands on the Edit page.

Copying and Pasting Clip Attributes

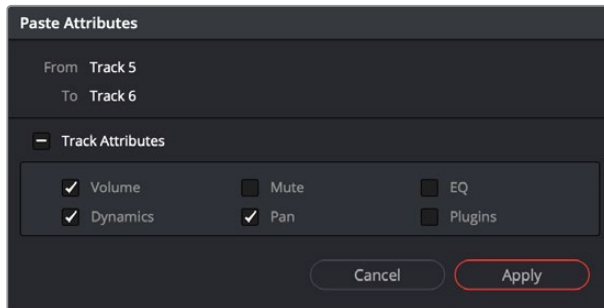
For clips, this works as simply as copying a clip, then selecting one or more audio clips and right-clicking another clip and choosing Paste Attributes from the contextual menu. A dialog appears letting you choose which audio attributes you want to paste before clicking Apply.



The Paste Attributes dialog in the Fairlight page

Copying and Pasting Track Attributes

For tracks, it works a little differently. Right-click on a track header and choose Copy Attributes to copy all track settings and effects. Then, select one or more other track headers, right-click the selection, and choose Paste Attributes. A dialog appears letting you choose which audio attributes you want to paste before clicking Apply.



The Paste Attributes dialog in the Fairlight page, used to copy attributes from one track to another

Removing Attributes

For either clips or tracks, you can right-click and choose Remove Attributes to open a dialog with which to choose which attributes you want to reset to their default settings.

Audio Clip Layering

Audio layering is a special audio editing mode that lets you superimpose multiple audio clips in the same track, with audio clips edited into the top layers muting overlapping sections of audio clips appearing on lower layers. With audio layering enabled, superimposed audio clips are treated similarly to superimposed video clips that have opacity set to 100%, with clips on top obscuring (or muting) clips underneath.



An example of multiple audio performance editing using layers, where the top layer mutes overlapping sections of audio clips in lower layers

Audio layering is incredibly useful for any situation where you're combining segments of multiple takes together to create a single voiceover, audio vocal track, or dramatic performance, as you can choose which segments to use via their superimposed position in the stack of clips appearing in that track, while at the same time you're preserving the other takes underneath in case you might want them later.

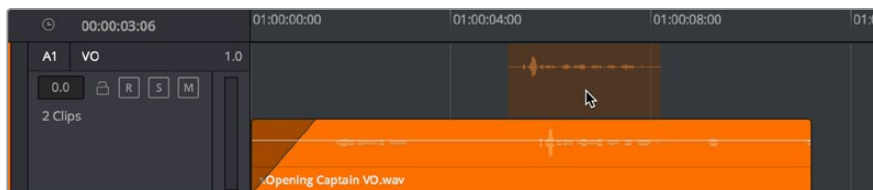
TIP: Track layering can be used on the Edit page as well.

To enable audio layering:

Choose Timeline > Layered Audio Editing so that a check mark appears by the command. All overlapping audio will be layered instead of overwritten from that point forward.

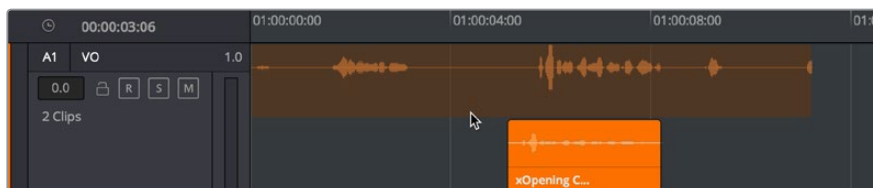
To view audio layering:

- 1 Choose View > Show Audio Track Layers to reveal track layers for each audio track (and each lane within a given audio track) in the Timeline. When layering is on, space appears at the top of each track in the Timeline which provides a region into which you can edit layered audio clips.
- 2 To edit an audio clip or segment as a layer within a particular audio track, drag it from elsewhere in the Timeline or from the Media Pool, and drop it into the empty area above whatever audio is already in that track.



Dragging an audio clip to become layered above another clip

- 3 Edit the different superimposed layers of audio such that the segments of each take that you like are on top. Only the topmost clip segments will be audible. Audio segments that overlap underneath are silent. To put another layer on top, drag it from its current position to the empty area at the top of the track.



Dragging a bottom audio layer to appear on top

- 4 When you're finished editing clips in track layers, choose View > Show Audio Track Layers again to hide the individual layers, so that only the topmost clips appear as a flat sequence in each track and lane.

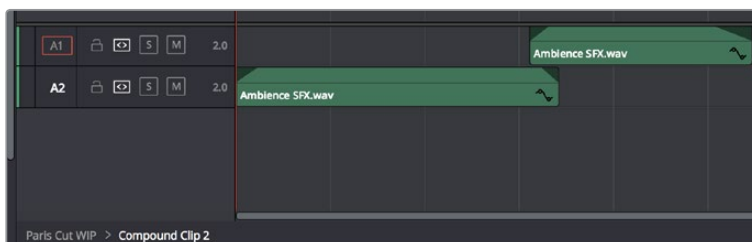


Hiding layers makes all audio layers appear on a single track, as if the top clips are overwriting what's underneath, except the muted material underneath is preserved

Audio Compound Clips

DaVinci Resolve supports audio compound clips, which are created just like any other compound clip, by selecting multiple audio clips, right-clicking one of them, and choosing New Compound Clip. Alternately, compound clips with video clips may now contain multiple audio items as well.

When compound clips containing audio are opened in the Edit or Fairlight pages by right-clicking an audio compound clip and choosing Open in Timeline, breadcrumb controls appear beneath the Timeline that let you exit the compound clip and get back to the master Timeline.

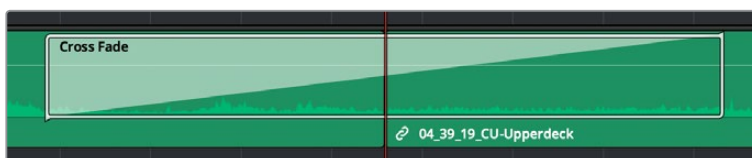


Opening an audio compound clip; note the path control at the bottom left of the Timeline

Audio Crossfades

You can add Cross Fade transitions to any edit point between two audio clips that have enough handles similarly to how you add video transitions, by dragging and dropping from the Effects Library, by right-clicking an edit and choosing an option from the contextual menu, or by selecting an audio edit point and choosing Timeline > Add Audio Only Transition (Shift-T).

Cross Fade transitions are a quick and easy way to fade the volume of the outgoing clip down while simultaneously fading the volume of the incoming clip up, letting you create a smooth aural transition between two audio clips.



An audio Cross Fade transition applied between two clips

You can double-click a Cross Fade transition to open it into the Inspector, revealing the following parameters:

- **Duration:** The duration of the transition, shown in both seconds and frames.
- **Alignment:** A pop-up that lets you choose the transition's position relative to the edit point it's applied to. Your choices are "End on Edit," "Center on Edit," and "Begin on Edit."
- **Transition style:** You can choose -3dB , 0dB , or $+3\text{dB}$ to set both the Fade In and Fade Out levels to the same value. For more information on what these levels mean, see the following parameter.
- **Fade In/Fade Out levels:** There are three options that affect the incoming and outgoing halves of the Cross Fade effect independently. 0dB applies a linear fade (this is the default). $+3\text{dB}$ applies a boosted curve; when applied to both Fade In and Fade Out, this can compensate for diminished levels in the middle of a Cross Fade. -3dB applies an attenuating curve, which deliberately lowers the level of the Cross Fade.

Crossfades can be created and edited on both the Edit and Fairlight pages.

Fades and Crossfades

Part of audio editing in the Fairlight page is the use of fades and crossfades. This section shows you how to create these effects for smoothly segueing from one audio clip to another.

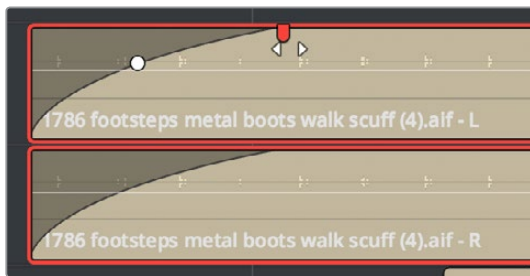
Using Fades

Like the Edit page, each audio clip has fader handles that appear at the upper right and left corners of a clip you're hovering the pointer over.



Fader handles appear when you hover the pointer over a clip

Pulling these handles out creates a fade effect with a duration equal to the length you extended the handle.



Creating a fade effect by pulling out one of the fader handles

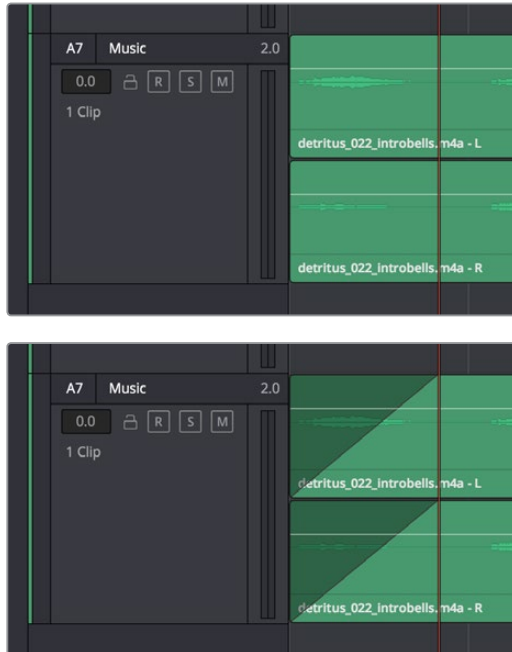
Once you've created a fade effect, you can adjust the curve of the fade by dragging the handle that appears right on top of the fader curve. Dragging the handle up and down affects the angle of the curve, and dragging the handle left and right affects the shape of the curve. In this way, you can create all manner of fade effects.



Adjusting the curve of the fade

Fade In and Out to Playhead

A pair of commands in the Trim menu let you move the playhead over a clip, and use the playhead position to “Fade In to Playhead” or “Fade Out to Playhead.” These commands work in both the Edit and Fairlight pages.



(Top) Placing the playhead where you want a fade in to end,
(Bottom) Using Fade In to Playhead

Creating Crossfades With Overlapping Fades

While a fade gradually fades a single track of audio up or down, a crossfade fades two overlapping clips at the same time, fading one clip up and another clip down, for the aural equivalent of a cross dissolve. There are currently two ways of creating a crossfade in the Fairlight page. Both depend on clip layering to allow you to have overlapping fades over overlapping clips.

To create a crossfade by overlapping two clips together:

- 1 Add a fade out to the end of one clip, and a fade in to the beginning of another clip. By default, all fades you add in this way are linear, although you can adjust them to whatever gain you want.



Adding fades to adjacent clips

- 2 Drag the first clip to overlap the second clip by the length of the fade you've created.



Dragging the clips to overlap, the overlapping parts will be preserved via clip layering

- Drop the clip. The overlapping fades will both be preserved thanks to clip layering, and a crossfade will appear in the Timeline.



The resulting crossfade

To create a crossfade over two clips that are already layered:

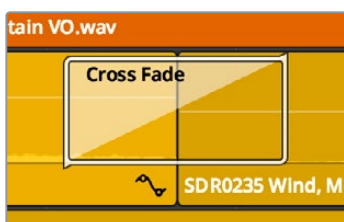
Drag a fader handle at the beginning or end of a clip that's layered, and a crossfade will automatically appear.



Creating a crossfade by adjusting the fader handle of a layered clip

Using Crossfades From the Edit Page

You can also add crossfades in the Edit page, but they appear in the Fairlight page as transitions in the Edit page style.



The resulting crossfade

Finding Clips in the Media Pool

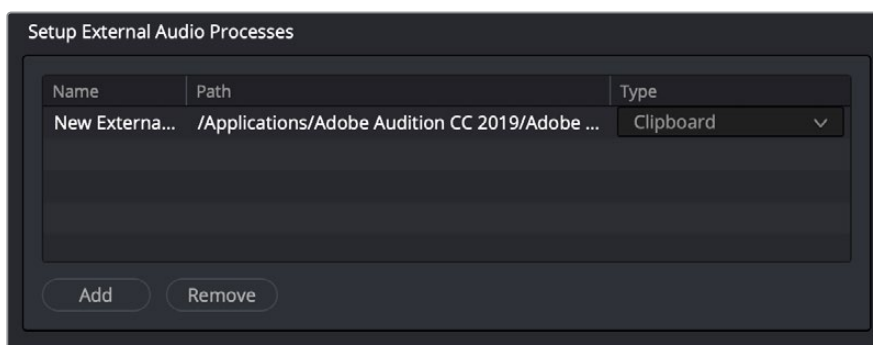
You can right-click any clip in the Timeline and choose Find in Media Pool to automatically select that clip in the Media Pool, for instances where you might want to edit another copy of that clip somewhere else in the Timeline, or re-edit another segment from that clip into the same area.

Changing Clip Color in the Timeline

You can right-click one or more selected clips in the Timeline to change the clip color, to be more organized. For example, you might set production audio clips containing dialog from different actors to different colors, or you could set clips with dialog, music, and effects to different colors in order to easily differentiate each clip's purpose.

Editing Audio Clips in External Editors

While working in the Fairlight page, you have the ability to process an audio file using a third-party application if necessary, in the event you need to use another application's capabilities to create an effect or solve an issue that can't be accomplished in the Fairlight page itself. To do this, you must first add one or more applications to the External Audio Process list in the Audio Plug-ins panel of the System Preferences.



The External Audio Process list configured to send audio to Adobe Audition

To add an external audio process:

- 1 Open the System tab of the DaVinci Preferences, and select the Audio Plug-ins panel.
- 2 Click the Add button in the “Setup External Audio Processes” section.
- 3 To give the audio process a different name, double click in the Name column and type a new name.
- 4 Double-click in the empty Path column for the new process, and choose an application to assign to that process from the dialog.
- 5 Choose the type of process you want it to be from the pop-up menu in the Type column.

Once you have one or more external audio applications configured in Preferences, you can use them to process any audio clip in the Fairlight page by right-clicking an audio clip and choosing the application you want to use from the External Audio Process submenu of the contextual menu.

When you do this, a duplicate of the audio clip media is copied (bounced) to the directory location specified by the “Save clips to” field of the Capture and Playback panel of the Project Settings. At that point, the external application is either opened or launched as a command from the command line (depending on how the external application has been configured in Preferences).

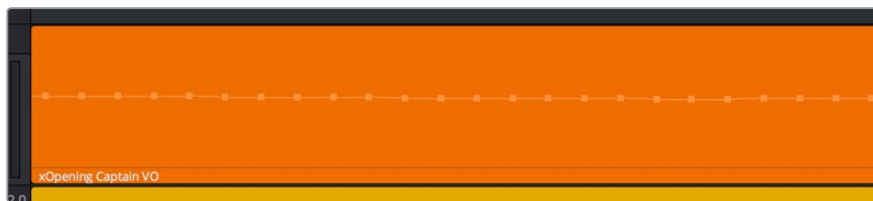
Once the bounced audio is opened in the external application, you can process it however you need to and bake in any changes made by saving/rendering/outputting and overwriting the original copied audio media file. DaVinci Resolve detects when changes have been made, and the altered result is automatically reimported as an additional audio layer on top of the original clip in the Timeline.

The way an audio application is configured in the DaVinci System Preferences dictates how the bounced audio file is passed to the external program. There are three choices:

- **Command Line:** As a command line parameter, if your audio application is able to be run from the Terminal.
- **Clipboard:** By placing the path to the bounced file in the clipboard, so you can paste it into the application which has been automatically launched, or import it via a File > Open dialog.
- **Reveal:** By revealing the bounced copy in the file manager of your workstation, so you can drag and drop it onto the application which has been automatically launched.

Sample Editing

You can zoom quite far into audio clips on the Fairlight page timeline, until you see the individual samples that comprise the audio waveform of each clip. Samples are represented by control points once you’ve zoomed in far enough.



When you zoom in far enough, you can see the individual samples of an audio clip as control points

You can non-destructively edit these control points to eliminate clicks and pops, and to effect other fixes to problem audio clips.

Methods of editing audio samples:

- **To see the editable audio samples:** Zoom all the way into an audio clip until you see the sample control points, using either Command-Plus or Command-Minus, the scroll wheel of your pointing device, or by holding down the ZOOM button of your Fairlight editing panel and turning the JOG/EDITING wheel.
- **To edit a single audio sample:** Click and drag that audio sample up or down to change its height.

- **To edit a section of samples:** Click and drag horizontally left or right across the samples you want to edit to “redraw” the waveform any way you’d like.



Black points show the previous levels when samples have been edited in a clip

Sample editing can be undone, just like any other editing procedure, as the edited sample points are stored non-destructively within the DaVinci Resolve project.

Chapter 129

Audio Clip Specific Inspector Adjustments

Each audio clip in a track has individual settings that are specific to that clip, which can be adjusted and animated in the Inspector. This makes it easy to adjust the levels and EQ of several clips to match one another, while reserving the track level for your overall mix. An additional set of clip-specific pitch controls make it easy to make small pitch adjustments, either static or keyframed, where necessary. This chapter describes how to use these clip-specific controls.

Contents

Audio Settings in the Inspector	2510
Making Adjustments in the Inspector	2510
Using the Inspector	2510
Making Simple Adjustments	2511
Adjusting Multiple Clips at the Same Time	2511
Animated Inspector Adjustments	2512
Paste and Remove Attributes	2513
Seeing Effects in the Timeline	2513
Setting Clip Volume	2514
Adjusting Volume in the Inspector	2514
Adjusting Volume in the Timeline	2514
Adding and Adjusting Volume Keyframes in the Timeline	2514
Normalize Audio Levels Command	2515
Clip Pan	2516
Clip Pitch Controls	2516
Clip EQ	2516
Master EQ Controls	2517
Graphical EQ Controls	2517
Bands 1 and 4	2517
Bands 2 and 3	2517
Paste and Remove Attributes for Clips and Tracks	2518

Audio Settings in the Inspector

Each selected clip, and each selected Main, Submix, or Auxiliary bus channel strip in the Mixer exposes some simple audio-related parameters in the Audio panel of the Inspector.

- **Clip Volume:** Each clip has a single volume control, which corresponds to the volume overlay over each audio clip.
- **Clip Pan:** (Only exposed for clips) A simple Pan slider that controls stereo panning.
- **Clip Pitch:** (Only exposed for clips) Each clip has two pitch controls, for altering clip pitch without altering clip speed. You can control pitch in Semi Tones and Cents.
- **Clip Equalizer:** (Only exposed for clips) Each clip also has a four-band EQ, complete with low-pass, high-pass, and parametric settings for fine tuning and problem-solving audio issues at the clip level.
- **Audio Effects:** If you've applied any FairlightFX, VST plug-ins, or Audio Unit plug-ins, those controls will also appear in the Inspector. For more information, see Chapter 132, "Audio Effects."

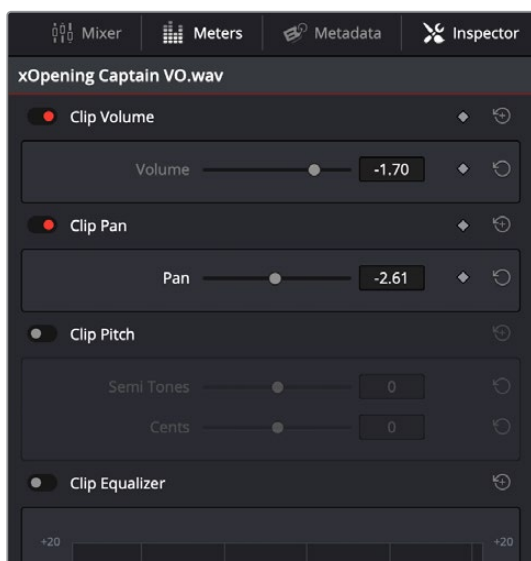
Additionally, when you apply other audio plug-ins from the Audio FX panel of the Effects Library, additional parameters and controls are exposed (covered towards the end of this chapter).

Making Adjustments in the Inspector

Clip-specific Volume, Pan, Pitch, and Equalization are adjusted and can be animated in the Inspector. This section walks you through how this works.

Using the Inspector

Audio clips in the Fairlight page expose similar controls to those found in the Audio Inspector Panel of the Edit page. Additionally, the Inspector will display controls for audio plug-ins that you apply to clips as well. All parameters are organized into groups, with a title bar providing the name of that group, along with other controls that let you control all parameters within that group at the same time.



Closed and open Inspector group controls in the Fairlight page

These controls include:

- **Enable button:** A toggle control to the left of the parameter group's name lets you disable and re-enable every parameter within that group at once. Orange means that track's enabled. Gray is disabled.
- **Parameter group title bar:** Double-clicking the title bar of any group of parameters collapses or opens them. Even more exciting than that, Option-double-clicking the title bar of one parameter group collapses or opens all parameter groups at once.
- **Keyframe and Next/Previous Keyframe buttons:** This button lets you add or remove keyframes at the position of the playhead to or from every single parameter within the group. When the button is highlighted orange, a keyframe is at the current position of the playhead. When it's dark gray, there is no keyframe. Left and right arrow buttons let you jump the playhead from keyframe to keyframe for further adjustment.
- **Reset button:** Lets you reset all parameters within that group to their default settings.

Making Simple Adjustments

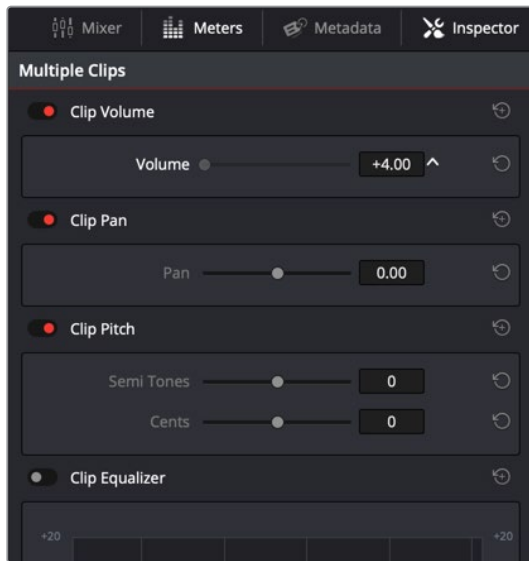
Every group of controls in the Inspector largely consists of sliders, checkboxes, pop-up menus, buttons, and the occasional custom control.

Adjusting Multiple Clips at the Same Time

There's an easy way to make adjustments to the Inspector parameters of multiple clips at the same time, without needing to use Paste Attributes (described later in this chapter). All you need to do is simultaneously select every clip you want to alter, and then modify the parameter in the Inspector that you want to change. As a result, every selected clip will be adjusted by the same amount. This works for compositing effects, transforms, text parameters, filters, and audio settings, just about anything that can be simultaneously exposed in the Inspector for multiple selected clips.

When you select multiple clips, the Inspector will display "Multiple Clips" as the title. If each of the selected clips have different values in the parameter you're adjusting, that parameter will have two dashes in the value field. There are two ways you can make adjustments to multiple clips:

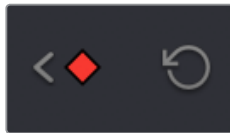
- If you want to make a relative adjustment to all selected clips while keeping their original offsets from one another, then drag the virtual slider in the parameter field which will display a + or – before however many units your adjustment is.
- However, if you want to set all selected clips to the same value, you can double-click in the number field, type the value, and press Return.



Making a relative adjustment of plus 4.00 in the Volume level of all selected clips

Animated Inspector Adjustments

Keyframing in the Edit page works slightly differently than when using the Keyframe Editor in the Color page. Most simple keyframing tasks can be performed in the Inspector using three buttons that appear to the right of any parameter that's capable of being keyframed. It takes two keyframes at minimum to create an animated effect.



The three keyframe controls that appear in the Inspector, from left to right: Previous keyframe, Create/Delete keyframe, Next keyframe

Methods of keyframing parameters in the Inspector:

- **To add a keyframe:** Select a clip, open the Inspector, then move the Timeline playhead to the frame where you want to place a keyframe, and click the Keyframe button next to the parameter of the Inspector you want to animate. Once you've added at least one keyframe to a parameter, all other adjustments you make to parameters in the Inspector, or using the onscreen Transform/Crop controls in the Timeline Viewer, add new keyframes automatically if the playhead is at another frame.
- **To move the playhead to the next or previous keyframe:** Click the small left- or right-hand arrow to either side of a parameter's keyframe control to jump the playhead to the next or previous keyframe. You can also press Right-Bracket (]) and Left-Bracket ([) to go from keyframe to keyframe.
- **To edit an existing keyframe of a parameter:** Move the playhead to be on top of the keyframe you want to edit, and then change that parameter, either in the Inspector, or using the onscreen controls of the Timeline Viewer.

Methods of changing keyframe interpolation in the Inspector:

- **To change a keyframe to Ease In or Ease Out:** Eased keyframes create animated changes that begin slowly and accelerate to full speed, or slow down gradually to decelerate to a stop. This only works when you have two or more keyframes creating an animated effect. Move the playhead to a frame with a keyframe using the next/previous keyframe controls, then right-click the orange keyframe button and choose Ease In, Ease Out, or Ease In and Out, depending on which keyframe you're editing and the effect you want to create.
- **To change a keyframe to Linear:** Move the playhead to a frame with a keyframe using the next/previous keyframe controls, then right-click the orange keyframe button and choose Linear.

Methods of deleting keyframes and disabling keyframed effects:

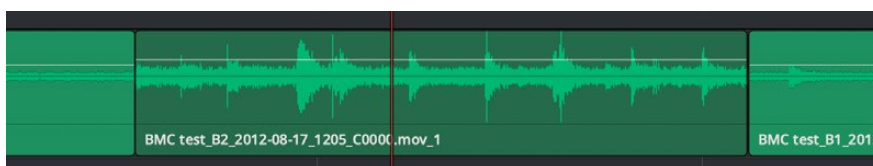
- **To delete a single keyframe:** Open the Inspector, move the Timeline playhead to a frame with a keyframe, and click the orange Keyframe button in the Inspector to delete it.
- **To delete all keyframes for one parameter:** Click the reset button to the right of a parameter's keyframe control in the Inspector.
- **To delete all keyframes in a group of parameters in the Inspector:** Click the reset button to the right of a parameter group's title bar in the Inspector.
- **To disable or enable a single parameter's keyframed effect:** In the Timeline, click the toggle control at the left of a parameter's keyframe track. Orange means that track's enabled. Gray is disabled.
- **To disable or enable a group of parameters in the Inspector:** Click the toggle control at the left of a parameter group's title bar in the Inspector. Orange means that group is enabled. Gray is disabled.

Paste and Remove Attributes

The Fairlight page has Paste Attributes and Remove Attributes commands that allow for the copying and resetting of audio Inspector parameters and effects, similar to the same commands on the Edit page. For more information on how to do this, see Chapter 128, "Editing Basics in the Fairlight Page."

Seeing Effects in the Timeline

When you adjust any clip's Inspector controls, or add any kind of plug-in to a clip in the Timeline, be it an adjustment in the Inspector or a plug-in you've applied, clips with that effect applied appear a darker shade of whatever color they are. Removing all effects from a clip (for example, using the Remove Attributes command) returns that clip to its original color. This makes it easy to see, at a glance, which clips have effects, and which clips don't.



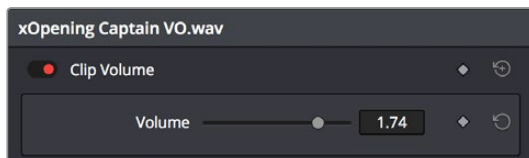
A closeup of the Timeline with a darker clip with effects between two other regularly-colored clips without effects

Setting Clip Volume

Each audio clip, or audio item in the case of audio clips with linked audio on multiple tracks, has its own Volume level. This means that audio clips with multiple channels share a common Volume setting. There are several ways you can adjust these levels simply.

Adjusting Volume in the Inspector

Each clip has individual Volume parameters that are accessible in the Audio panel of the Inspector when one or more audio clips are selected.



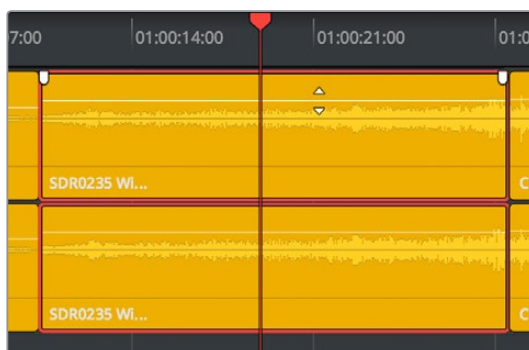
The Volume parameters available for audio clips in the Inspector

Selecting an audio clip in the Timeline and adjusting its Volume only alters the volume levels of that clip, which lets you adjust basic levels for individual clips in your program. The Volume control affects every channel within that clip simultaneously.

If you select multiple clips in the Timeline, then adjusting the Volume or Pan sliders or virtual sliders for all of them simultaneously will make a relative adjustment to all of the clips, preserving their offsets from one another. If you want to set all clips to the same level, then making a numeric adjustment will set all selected clips to the same absolute level.

Adjusting Volume in the Timeline

Each clip (or item) of audio in the Timeline has a Volume overlay that lets you set that clip's level by simply dragging it up or down with the pointer. This overlay corresponds to the Volume parameter in the Inspector.



Dragging a Volume overlay to adjust the clip level

Additionally, you can click any clip's Audio Curve Editor button, at the bottom right-hand corner of each audio clip, to open an audio-specific Curve Editor with which you can keyframe not just Volume, but Pan, and the parameters of any audio filters you might have applied to that clip.

Adding and Adjusting Volume Keyframes in the Timeline

Mixing audio by adding and adjusting individual keyframes can be a fast and effective way of balancing clip levels with one another and of fixing clip-specific dynamic level problems. When manually editing any audio parameter curve, you can use the following procedures.

Methods of adjusting the Volume curve using the pointer:

- **To adjust any curve segment:** Position the pointer over the overall segment for clips with no keyframes, or position it between any two keyframes, directly on top of the curve segment you want to raise or lower. When the move cursor is displayed, click and drag up to raise the Volume, or down to reduce the Volume.
- **To add keyframes to the level curve:** Hold the Option key down and click the curve to place a keyframe at that frame. You must add at least two keyframes to create an automated change in Volume.
- **To adjust a keyframe in any direction:** Move the pointer over a keyframe so that the four-way cursor appears, and then click and drag up or down to change the Volume, or side to side to change its timing.
- **To adjust a keyframe in only one direction:** Move the pointer over a keyframe so that the four-way cursor appears, and then click and drag in the intended direction of adjustment, either vertically to change the volume of the clip at that frame, or horizontally to move the keyframe to a different point in time. Once you start dragging a keyframe into a particular direction, keyframe movement is constrained in that direction until you release that keyframe.
- **To select one or more keyframes:** Click any keyframe to select it.
- **To select multiple discontinuous keyframes:** Command-click all keyframes you want to select, whether they're next to one another or not.
- **To select multiple contiguous keyframes:** Click the first keyframe you want to select, and then shift-click the last keyframe you want to select, and all keyframes between will also be selected.

Normalize Audio Levels Command

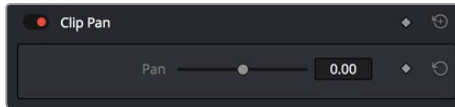
The Normalize Audio Levels command automatically adjusts the level of clips to peak at a specific target level, measured in dBFS. This is only a volume adjustment; no dynamics are applied, so the result of using this command is that the loudest parts of each selected clip are going to match one another at the target level. This command is also available in the Edit page.

To normalize one or more selected audio clips:

- 1 Right-click one of the selected clips and choose Normalize Audio Levels
- 2 A dialog appears with two options. Choose the Reference Level that you want to set the peak volume of the selected clips to match, and then choose how you want to set the level of multiple selected clips:
 - When Set Level is set to Relative, all selected clips are treated as if they're one clip, so that the highest peak level of all selected clips is used to define the adjustment, and the volume of all selected clips is adjusted by the same amount. This is good if you have a series of clips, such as a dialog recording, where the levels are consistent with one another, and you want to normalize all of them together.
 - When Set Level is set to Independent, the peak level of each clip is used to define the adjustment to that clip, so that the volume of every selected clip is adjusted by an amount specific to that clip. The end result may be a set of very different volume adjustments intended to make the peak levels of each audio clip match one another. This is good if, for example, you're trying to balance a series of different sound effects with one another that have very different starting levels.

Clip Pan

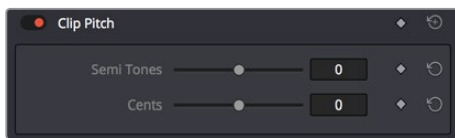
Each audio clip in the Timeline has a simple stereo Pan control that lets you pan that clip. While most professional mixes will restrict panning to the more robust panner found in the Fairlight page Mixer, this simple clip-based Pan control is useful for editors of visuals working in the Edit page to quickly create simple panning effects to aid in a craft edit. Dragging the slider lets you pan audio left to right. This control is centered at 0 by default.



Clip Pan Control

Clip Pitch Controls

Each audio clip in the Timeline has Clip Pitch controls that let you alter the pitch of a clip without changing the speed. Two sliders let you adjust clip pitch in Semi Tones (large adjustments, a twelfth of an octave) and Cents (fine adjustments, 100th of an octave).



Clip Pitch control in the Inspector

Clip EQ

Each audio clip in the timeline has a four-band equalizer that has both graphical and numeric controls for boosting or attenuating different ranges of frequencies within that clip, before it even gets to the EQ built into the mixer. Each band has controls for the filter type (Bell, Lo-Shelf, Hi-Shelf, Notch), Frequency, Gain, and Q-factor (sharpness of the band), with the available controls for each band of EQ changing depending on the filter type.

When a channel strip's EQ is enabled, the EQ button displays the equalization curve that's being applied. This indicator cannot be adjusted; you must open the EQ window to make modifications.



The channel strip's EQ indicator, (Left) EQ is at detent, (Right) EQ is adjusted

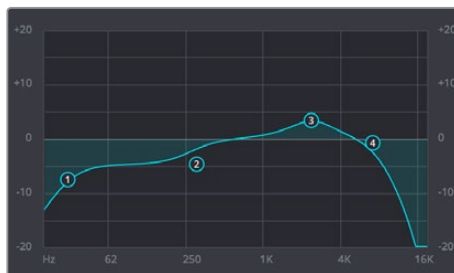
Master EQ Controls

The Equalizer window has the following overall controls:

- **Enable button:** Turns the overall EQ effect off and on, without resetting the controls.
- **Reset button:** Resets all controls of the EQ window to their defaults.

Graphical EQ Controls

A graph at the top shows a curve with handles that correspond to each of the enabled EQ bands listed below. You can drag any numbered handle to boost or attenuate the range of frequencies governed by that band, using whatever type of equalization that band has been set to.



The EQ graph with user-draggable handles

Dragging the numbered handles on this graph in turn modifies the parameters of the corresponding band, and changing each band's parameters will also alter the EQ graph, which serves the additional purpose of providing a graphical representation of the equalization being applied to that track.

Bands 1 and 4

The outer two sets of band controls let you make high-pass and low-pass adjustments, if necessary.

- **Band enable button:** Turns each band of EQ on and off.
- **Band filter type:** Bands 1 and 4 can be switched among four specific filtering options for processing the lowest or highest frequencies in the signal. These include (from top to bottom) Hi-Shelf, Hi-Pass, Lo-Pass, and Lo-Shelf.
- **Freq:** Adjusts the center frequency of the EQ adjustment.
- **Gain:** Adjusts the amount by which the affected frequencies are affected. Negative values attenuate those frequencies, while positive values boost those frequencies.

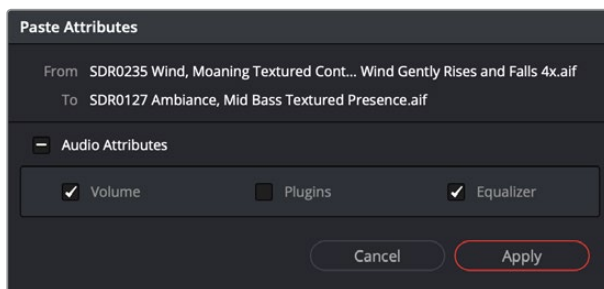
Bands 2 and 3

- The middle two sets of band controls let you make a wide variety of equalization adjustments.
- **Band enable button:** Turns each band of EQ on and off.
- **Band filter type:** Bands 2–5 can be switched among four different filtering options (from top to bottom): Lo-Shelf, Bell, Notch, and Hi-Shelf.
- **Frequency:** Adjusts the center frequency of the EQ adjustment.

- **Gain:** Adjusts the amount by which the affected frequencies are affected. Negative values attenuate those frequencies, while positive values boost those frequencies.
- **Q Factor:** Adjusts the width of affected frequencies. Lower values include a wider range of frequencies; higher values include a narrower range of frequencies.

Paste and Remove Attributes for Clips and Tracks

The Fairlight page has Paste Attributes and Remove Attributes commands that allow for the copying and resetting of audio parameters and effects, similar to the same commands on the Edit page.



The Paste Attributes dialog in the Fairlight page

Chapter 130

Mixing in the Fairlight Page

The Mixer is the spider at the center of the web that is the Fairlight page, and provides the primary tools you'll use to mix the various audio tracks of your program into a harmonious whole using EQ, Dynamics, Panning, level control, and VST and Audio Units audio effects of all kinds, all with full automation, to hone your sound and balance each track's elements with the others. This chapter focuses on explaining the various functions of the Mixer so you can harness its power for yourself.

Contents

Introduction to Mixing	2521
The Mixer	2521
Tracks and Buses	2521
Customizing the Onscreen Mixer Controls	2522
Showing and Hiding Channel Strips Using the Index	2523
Selecting Channel Strips and Tracks	2523
Track Organization	2524
Input	2524
Effects	2525
Insert	2525
EQ	2525
Master EQ Controls	2526
Graphical EQ Controls	2527
Bands 1 and 6	2527
Bands 2–5	2528
Dynamics	2528
Master Dynamics Controls	2529
Expander/Gate	2529
Compressor	2530
Limiter	2533
Aux	2533
Pan	2534
The Stereo and Surround Pan Controls	2534
The 3D Audio Pan Controls	2535
Bus Assignment Buttons	2536
Fader Groups (VCA Groups)	2537
Making Fader Group Assignments	2537
Using Fader Groups	2538
Recording Fader Automation for Groups	2538
Arm, Solo, and Mute Buttons	2538
Fader Controls	2539
Bouncing Audio	2540
Third-Party Control Panel Support for Mixing	2541

Introduction to Mixing

This chapter describes the use of the Mixer to adjust the levels and fine-tune the audio of each track in the timeline. It's focused on the function of the channel strip controls, with the following exceptions:

- For more information about bussing, see Chapter 124, “Setting Up Tracks, Buses, and Patching.”
- For more information about recording audio, see Chapter 126, “Recording.”
- For more information about recording automation, see Chapter 131, “Automation Recording.”

The Mixer

The Audio Mixer provides a set of graphical controls you can use to assign track channels to output channels, adjust EQ and dynamics, set levels and record automation, pan stereo and surround audio, and mute and solo tracks. At its most basic, each audio track in your timeline corresponds to an individual channel strip in the Mixer, and by default there's a single Main bus labeled M1 that combines all these tracks into an overall mix.



The Audio Mixer, with channel strips corresponding to the tracks in the Timeline

Tracks and Buses

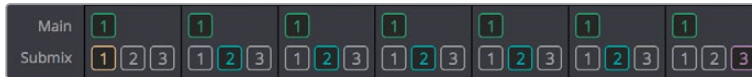
Once you start creating buses, the Audio Mixer exposes two sets of channel strips. The leftmost set of channel strips correspond to the audio tracks in the Timeline, while the right-most set of channel strips expose sets of controls for each Main, Sub (submix), and Aux (auxiliary) bus that you've created.



The Audio Mixer is divided into two sections, one for tracks (at left) and one for buses (at right)

If you have more tracks and buses than can be displayed all at once given the width of your computer display, then each half of the mixer has independent scroll bars so you can choose which tracks and which buses you want to see next to one another.

Each audio track's channel strip has a set of Main and Sub bus buttons that let you assign the audio output by that channel strip to a Sub (typically used to combine different subsets of tracks into submixes) or to a Main (typically used to output or render overall mixes). Each Sub and Aux's channel strip has a set of Main buttons so that different combinations of Subs can be assigned to each Main. Main channel strips have no buttons because, from a busing perspective, they're the final output.



Main and Submix buttons let you assign tracks to buses, and buses to other buses

Customizing the Onscreen Mixer Controls

The Option menu at the upper right-hand corner of the Mixer provides a number of different options for customizing the look of the Mixer, as well as which controls are shown or hidden.

First, you have the options of showing the Full Track Mixer or the Small Track Mixer. While the Full Track Mixer provides more room for buttons and controls that are large enough you don't have to squint to see them, the Small Track Mixer lets you have many more channel strips onscreen at one time, for those times where you're doing incredibly ambitious mixes.



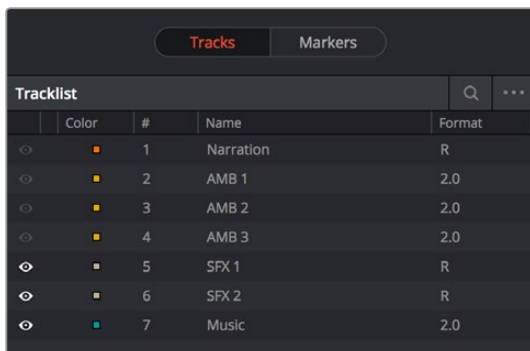
The Small Track Mixer view

Second, there's an option to Show Labels, which are the control names listed in a column to the left of the mixer channel strip area. If you're first getting started, these Labels are useful, but once you've gotten used to the layout of the Mixer, hiding these will give you a bit more room to work with for another channel strip or two.

Third, there's a set of options that let you toggle the visibility of specific channel strip controls, so you can hide controls you know you're not going to be using, or that you've used but no longer need to adjust or want to protect from accidental adjustment by a wandering mouse or pen.

Showing and Hiding Channel Strips Using the Index

You can use the Tracks panel of the Index to hide tracks you don't need to work on in order to create more room for tracks you need to see. To quickly show or hide a number of tracks, you can click and drag over the eyeball button of each track for which you want to reverse the visibility.



The Tracks panel of the Index hiding tracks 1–4 on both the Timeline and the Mixer

Selecting Channel Strips and Tracks

When you select a track in the Timeline, you also select that track's accompanying channel strip, and vice versa. It's possible to select multiple tracks in the Timeline and thereby select multiple channel strips, but you can also Command-click to select multiple channel strips in order to select multiple tracks.

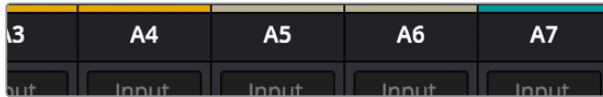


Selecting multiple channel strips results in the selection of multiple tracks

Track Organization

Each channel strip has three organizational properties that let you keep track of which channel strip is responsible for which part of the mix.

- **Track color:** Each track can be differently color-coded, to help you keep organized. These colors appear in the timeline track header, the mixer, and the meters to help you keep track of which track corresponds to which channel strip and meter.
- **Track number:** The number of the timeline audio track corresponding to each channel strip appears here.



The track color and track number appear at the top of each channel strip

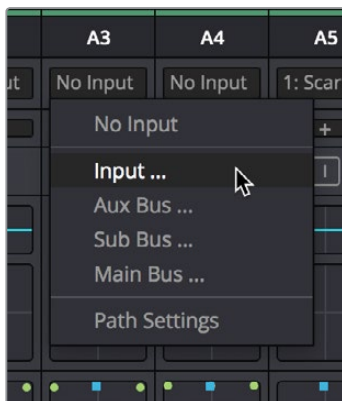
- **Track name:** This mirrors the track name found in the header controls of the timeline. If you customize an audio track's name in the timeline, that name appears here.



Each track's name appears between the assignment buttons and the arm/solo/mute buttons

Input

A pop-up menu that lets you patch inputs, patch buses, and configure the input settings of audio signals routed through Blackmagic hardware interfaces.



The Input pop-up menu provides shortcuts for patching different buses using the Patch Input/Output window

For more information on using the options of the insert menu, see Chapter 124, “Setting Up Tracks, Buses, and Patching.”

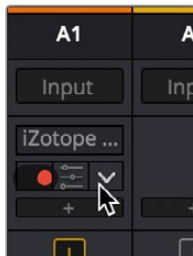
Effects

When you apply VST or Audio Unit effects to a track from the Effects Library, those effects appear here. Clicking the Plus button opens a pop-up menu with which you can apply any VST or AU effects installed on your machine to that track.



Moving the pointer over the plus to add effects

Hovering the mouse over any listed effect reveals controls for enabling/disabling each effect, opening an effect's custom controls, and deleting that effect.



Moving the pointer over an effect reveals controls for that effect

For more information on using audio effects, see Chapter 132, “Audio Effects.”

Insert

Enables the routing of effects from Blackmagic audio interface hardware to outboard effects boxes and back again. This button can be toggled to enable/disable such routing.

EQ

Double-clicking exposes a four-band parametric equalizer with additional Hi and Lo Pass filters, that has both graphical and numeric controls for boosting or attenuating different ranges of frequencies of audio on each track. You can select from among four types of EQ filtering from the Equalizer Type pop-up menu, with options for Earth (the default), Air, Ice, and Fire. Each band has controls for the filter type (Bell, Lo-Shelf, Hi-Shelf, Notch), Frequency, Gain, and Q-factor (sharpness of the band), with the available controls for each band of EQ changing depending on the filter type.



The channel strip EQ window

When a channel strip's EQ is enabled, the EQ button displays the equalization curve that's being applied. This indicator cannot be adjusted, you must open the EQ window to make modifications.



The channel strip's EQ indicator, (Left) EQ is adjusted, (Right) EQ is detent

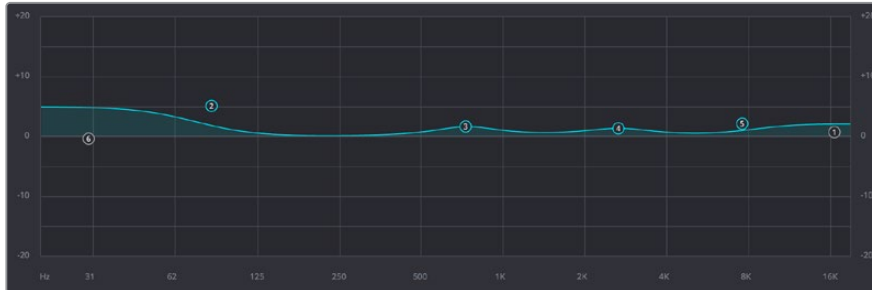
Master EQ Controls

The Equalizer window has the following overall controls:

- **Enable button:** Turns the overall EQ effect off and on, without resetting the controls.
- **Reset button:** Resets all controls of the EQ window to their defaults.
- **Equalizer Type:** Changes the EQ control functionality to emulate different EQ characteristics from “classic” mixing consoles. There are four options:
 - **Earth:** (Default) Native Fairlight controls
 - **Air:** Emulates the SSL 4K
 - **Ice:** Emulates the Neve V
 - **Fire:** Emulates the Focusrite
- **Gain fader:** A post-EQ level control that lets you boost or attenuate the signal to compensate for the EQ adjustment you're making raising or lowering the level.

Graphical EQ Controls

A graph at the top shows a curve with handles that correspond to each of the enabled EQ bands listed below. You can drag any numbered handle to boost or attenuate the range of frequencies governed by that band, using whatever type of equalization that band has been set to.



The EQ graph with user-draggable handles

Dragging the numbered handles on this graph in turn modifies the parameters of the corresponding band, and changing each band's parameters will also alter the EQ graph, which serves the additional purpose of providing a graphical representation of the equalization being applied to that track.

Bands 1 and 6

The outer two sets of band controls let you make high-pass and low-pass adjustments, if necessary. They're off by default.

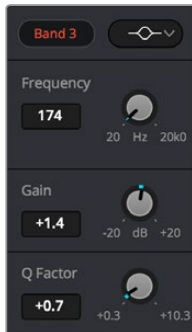


The Band 1 and 6 controls

- **Band enable button:** Turns each band of EQ on and off.
- **Band filter type:** Bands 1 and 6 can be switched among four specific filtering options for processing the lowest or highest frequencies in the signal. These include (from top to bottom) Hi-Shelf, Hi-Pass, Lo-Pass, and Lo-Shelf.
- **Frequency:** Adjusts the center frequency of the EQ adjustment
- **Gain:** Adjusts the amount by which the affected frequencies are affected. Negative values attenuate those frequencies, while positive values boost those frequencies.

Bands 2–5

The middle four sets of band controls let you make a wide variety of equalization adjustments. They're on by default, to make it easy to begin making adjustments.



The Band 3 controls

- **Band enable button:** Turns each band of EQ on and off.
- **Band filter type:** Bands 2–5 can be switched among four different filtering options (from top to bottom) Lo-Shelf, Bell, Notch, and Hi-Shelf
- **Frequency:** Adjusts the center frequency of the EQ adjustment
- **Gain:** Adjusts the amount by which the affected frequencies are affected. Negative values attenuate those frequencies, while positive values boost those frequencies.
- **Q Factor:** Adjusts the width of affected frequencies. Lower values include a wider range of frequencies, higher values include a narrower range of frequencies

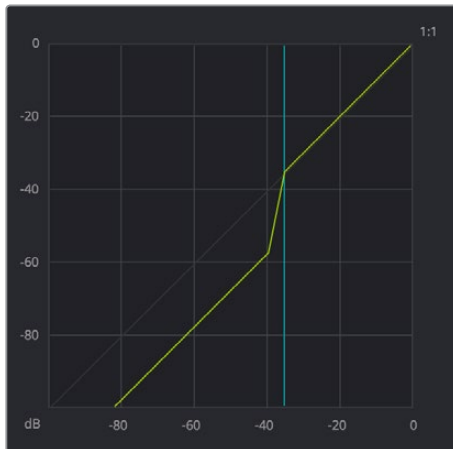
Dynamics

Double-clicking exposes a set of dynamics controls with three sets of controls corresponding to an Expander or Gate, a Compressor, and a Limiter that can be used separately or in concert to manage the dynamics of the audio on that track.



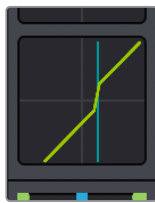
The channel strip Dynamics control window

When you enable whatever combination of dynamics controls you need for that track, the dynamics graph updates with curves that show you how the signal is being affected by the Expander or Gate, Compressor, and/or Limiter settings that are being applied.



The dynamics graph shows how the signal is being affected by the current settings

With these dynamics enabled, the Dynamics button on the channel strip displays these curves, so you know what's happening to that channel. This indicator cannot be adjusted, you must open the Dynamics window to make modifications.



The channel strip's Dynamics indicator, (Left) Dynamics at detent, (Right) Dynamics adjusted

Master Dynamics Controls

The Dynamics window contains the following overall controls at the top of the window:

- **Reset button:** Resets all controls of the EQ window to their defaults.
- **Make Up fader:** A post-Dynamics level control that lets you boost the signal to compensate for dynamics settings that have lowered the level.

Expander/Gate

The first of three sets of dynamics parameters, these controls can be switched between expansion and gating. *Expansion* emphasizes differences in volume by lowering the level of soft parts of the signal relative to the level of louder parts, and can be used to minimize noise while increasing the dynamic range of a signal. Gating reduces the level or even silences parts of a signal that fall below a certain level threshold in order to reduce or eliminate noise in quiet parts of a recording.

- **Expander:** A button that lets you enable these controls and switch them to perform expansion.
 - **Threshold:** Sets the signal level below which gain reduction occurs. Defaults to -35dB . The range is from -50 to 0dB .
 - **Range:** Unused for expansion.
 - **Ratio:** Sets the gain reduction ratio (input to output) that's applied to signals which fall below the threshold level. Defaults to 1:1.1. The range is 1.0:1 to 10:1.
 - **Attack:** Adjusts how quickly the sidechain detector applies expansion when a signal exceeds the threshold. Defaults to 1.4mS (milliseconds). The range is 0 to 100mS.
 - **Hold:** Keeps dynamics from being triggered again until a certain amount of time has passed, in mS. Defaults to 0mS. The range is from 0 to 4000mS.
 - **Release:** Adjusts how quickly or gradually the sidechain detector stops applying dynamics when a signal goes back below the threshold. Defaults to 93mS. The range is 0.03 to 4.03mS.

- **Gate:** A button that lets you enable these controls and switch them to perform gating.
 - **Threshold:** Sets the signal level below which gain reduction occurs. The range is from -50 to 0dB .
 - **Range:** Sets the maximum amount of gain reduction that will be applied when the signal falls below the gate threshold. Once the signal has fallen below the level determined by the gate threshold minus the gate range, no gain reduction is applied. The default is 18. The range is from 0 to 60.2dB.
 - **Ratio:** Unused for gate.
 - **Attack:** Adjusts how quickly the sidechain detector applies gating when a signal exceeds the threshold. Defaults to 1.4mS. The range is 0 to 100mS.
 - **Hold:** Keeps dynamics from being triggered again until a certain amount of time has passed, in mS (milliseconds). Defaults to 0mS. The range is from 0 to 4000mS.
 - **Release:** Adjusts how quickly or gradually the sidechain detector stops applying dynamics when a signal goes back below the threshold. Defaults to 93mS. The range is 0.03 to 4.03mS.

Compressor

The second set of dynamics parameters let you apply compression, which detects the envelope of an audio signal in order to automatically change its level. Typically used to detect and reduce the peaks of an audio signal so that the overall level can be boosted without clipping, thus reducing the dynamic range of a given signal. Compression is often used to allow voices to have more presence within a mix, and to smooth out changes in the levels of tracks with too much dynamic range for the task at hand.

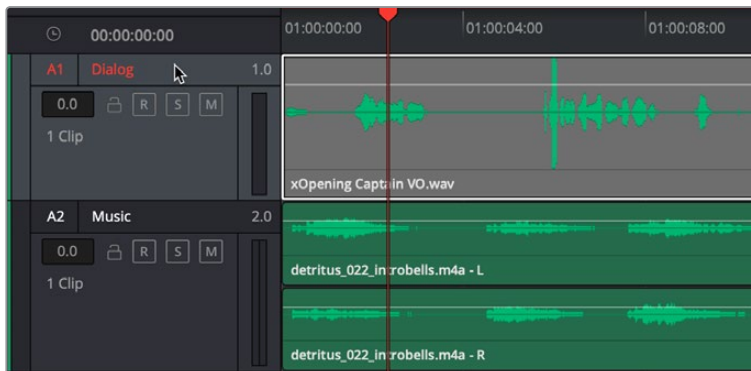
- **Compressor:** A button that lets you enable compression.
 - **Threshold:** Sets the signal level above which compression is applied. The default is -15dB . The range is -50 to 0dB .
 - **Ratio:** Adjusts the compression ratio. This sets the gain reduction ratio (input to output) applied to signals which rise above the threshold level. The default is 2.0:1. The range is 1.0:1 to 10:1.
 - **Attack:** Adjusts how quickly the sidechain detector applies compression when a signal exceeds the threshold. The default is 1.4mS (milliseconds). The range is 0 to 100mS.

- **Hold:** After the attack phase has been completed, the Hold parameter controls how long this initial attenuation is maintained, before entering the release phase. Defaults to 0mS. The range is from 0 to 4000mS.
- **Release:** Adjusts how quickly or gradually the sidechain detector stops applying dynamics when a signal goes back below the threshold. The default is 93mS. The range is 0.03 to 4000mS.
- **Send:** Enable Send when you want to use the audio levels of the currently selected track to attenuate those of another track using sidechain compression. For example, you can turn on the compressor and enable Send for all tracks with dialog, in order to use those levels to attenuate the levels of another track containing music.
- **Listen:** Enable Listen when you want to use the audio levels of tracks that you set to Send to attenuate the levels of the currently selected track. If there are no tracks with Send enabled, then the current track is compressed as usual, using itself as the sidechain.

The following procedure shows how to set up a Compressor to automatically attenuate, or “duck” a music track whenever someone speaks in clips on one or more other tracks of the Timeline.

To use sidechain compression to automatically “duck” music in the presence of dialog on other tracks:

- 1 Edit dialog into one track of the Timeline, and edit overlapping music into another track of the Timeline.



Choosing the track header in the Fairlight timeline to add Dynamics

- 2 Click the track header or channel strip of a track with dialog to select that track, and then double-click the Dynamics indicator on the channel strip to open the Dynamics window.
- 3 Turn on the Send button to automatically send all levels from that track to the sidechain of a Compressor on another track (it’s not necessary to turn on Compressor for this). If you hover the pointer over the Send button, a tooltip will show you which tracks of the current timeline are set to Send.
- 4 If you have multiple tracks with dialog, you can repeat steps 2-3 for each so that the output levels of all dialog are sent to the sidechain.



Turning on Send in the Compressor of a track with dialog

- 5 Next, click the track header or channel strip of a track with music to select that track. If you haven't closed the Dynamics window, the header will show you that the Dynamics controls are now those of the newly selected track.
- 6 Turn on Compressor, and then turn on the Listen button to automatically feed all "sent" levels to the sidechain of the Compressor on this track. If you hover the pointer over the Listen button, a tooltip will show you which tracks of the current timeline are set to Listen.
- 7 At this point, you need to lower the Threshold and raise the Ratio controls to the appropriate levels so that as dialog is heard, the music is compressed to be less loud. You may also want to raise Hold so this gain reduction doesn't fluctuate too wildly, and raise Release so the volume adjustment doesn't end too abruptly.



Turning on Listen in the Compressor of a track with music

If you've set this up correctly, then during playback the Sidechain meter should show the levels of the dialog tracks with Send enabled, and the Gain Reduction meter should show you how much the gain of the music track is being reduced when triggered by the dialog being fed to the Sidechain.

As a result, you should hear that whenever speech plays, the music volume is automatically lowered. Adjust Threshold and Ratio to set the amount of this gain reduction, and adjust Attack, Hold, and Release to set how quickly gain reduction responds to changes in the Sidechain level (as defined by the Send levels).

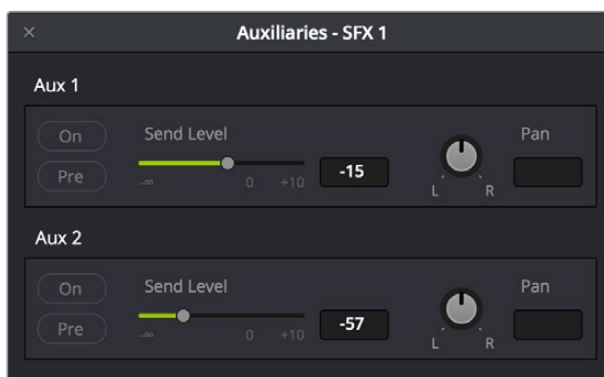
Limiters

The third set of dynamics parameters let you apply limiting, which imposes a hard limit on the maximum level allowed for a particular signal.

- **Limiters:** A button that lets you enable Limiting.
 - **Threshold:** Sets the maximum allowable output level. The default is -21dB . The range is from -50 to 0dB .
 - **Attack:** Adjusts the attack rate time constant of the sidechain detector. The default is 0.71mS . The range is 0 to 100mS .
 - **Hold:** Keeps dynamics from being triggered again until a certain amount of time has passed, in mS (milliseconds). Defaults to 0mS . The range is from 0 to 4000mS .
 - **Release:** Adjusts how quickly the sidechain detector stops applying dynamics when a signal goes back below the threshold. The default is 90mS . The range is 0.03 to 4.03mS .

Aux

Lets you route that track's channels through an Aux send bus. Each Aux bar corresponds to a specific Aux bus that you created. Double-clicking any of these bars opens up the Auxiliaries window, with which you can enable or disable auxiliaries, set each one to be routed pre the channel strip or post the channel strip (the default), and set the send level and pan value for each Aux bus. The controls for multiple Aux buses appear stacked within a single window.



The Auxiliaries control window for a mix with two Aux Buses

Each Aux bus you create exposes the following controls in the Auxiliaries window:

- **On:** Turns that Aux send on or off.
- **Pre:** Switches that Aux send to be processed either pre or post fader. Turning this button on enables that track to send levels to the Aux bus before level adjustments on that track are applied. One common use of this is to enable a plug-in applied by the Aux bus to continue to produce a “wet” version of that track’s audio while the mixing level is set all the way down, while raising the mixing level up mixes a “dry” version of the audio track against the “wet” levels produced by the Aux bus effect. For example, with Pre turned on you could slowly mix fade the original track level up over time over an Aux bus with a Delay effect to create the illusion that the echos of someone talking down a long hallway are giving way to a character’s own voice as they walk closer to the microphone.

- **Send Level:** Adjusts the amount of signal sent from the selected feed to the auxiliary bus. The range is OFF to +10dB.
- **Pan:** Provides panning across stereo Aux bus destinations.

The level to which you set an Aux bus will be shown within the bar that represents that Aux bus in the Mixer's channel strip.



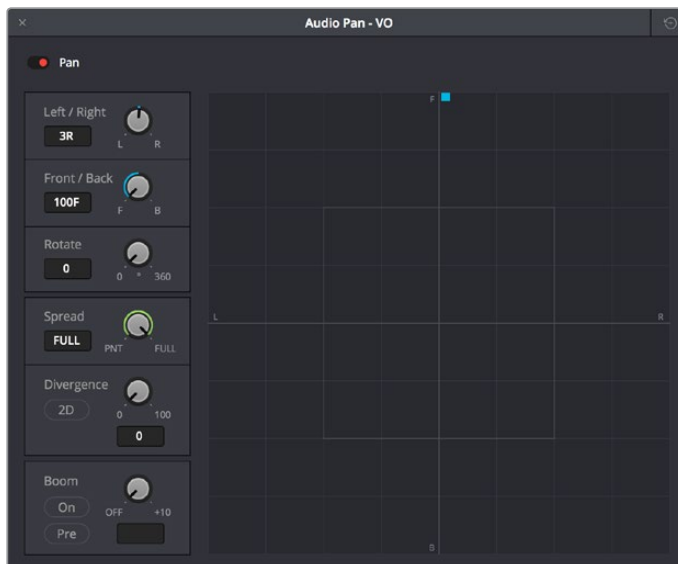
The Auxiliaries levels shown in the channel strip of the Mixer

Pan

The Mixer provides access to two kinds of pan controls, depending on whether you're doing stereo and surround or 3D positioning in your mix.

The Stereo and Surround Pan Controls

A Pan control that's compatible with stereo and surround panning. You can drag the panning handle within this control to adjust panning for stereo or surround mixing, or you can double-click this control to expose a large Pan window. What controls are available in the Pan window depend on the mapping of the audio track, but both stereo and surround panning controls are available, with corresponding numeric controls. You can either adjust panning using the graphical Pan control, or you can adjust specific panner characteristics using the controls to the left.



The Pan control window

When a channel strip's Pan control is enabled, the Pan area displays the panning that's being applied. Unlike the EQ or Dynamics controls, you can adjust a channel's panning by dragging the handles that appear within this small area of the channel strip.



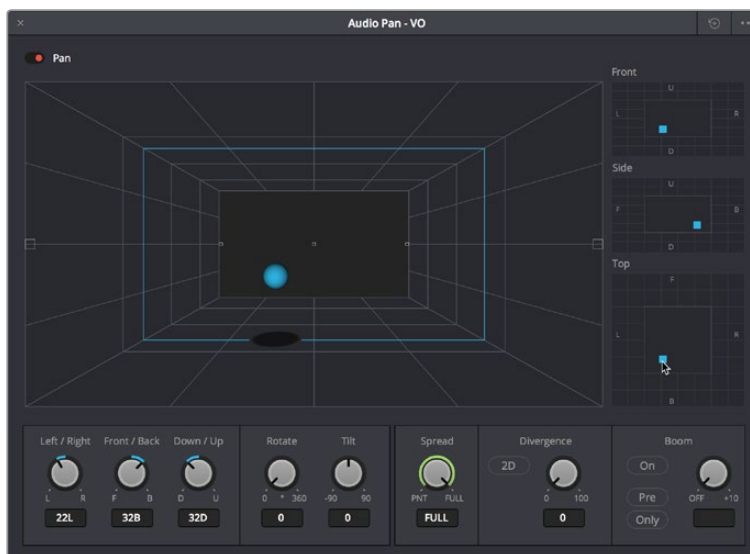
The channel strip's Pan indicator

The Audio Pan window contains the following controls:

- **Left/Right:** Changes the balance of signal between the left and right side speakers you're outputting to, depending on what speaker format you're mixing to. At its simplest, accommodates stereo output.
- **Front/Back:** Changes the balance of signal between the front and back sets of speakers you're outputting to, depending on what speaker format you're mixing to.
- **Rotate:** Simultaneously adjusts the left/right and front/back pan controls in order to rotate a surround mix about the centre of the room.
- **Spread:** Only available when a linked group of mono tracks is selected. Spread adjusts the perceived size of a surround mix.
- **Divergence:** Spreads the signal for an individual feed across more of the adjacent loudspeakers, making the perceived size of the sound source larger.
- **Boom:** The send level of that track to the LFE part of the mix.
 - **On:** Enables this functionality.
 - **Pre:** Lets you adjust the “dry” part of the signal separately from the “wet” part of the signal when effects are applied.

The 3D Audio Pan Controls

Option-double-clicking on the Pan control of the Mixer opens an alternate 3D Audio Pan window. Whereas the regular Pan window lets you do stereo and conventional 5.1 and 7.1 surround panning, the 3D Audio Pan window lets you do the kind of spatial audio positioning enabled by advanced surround formats such as Auro 3D and NHK 22.2 (more information about specific support for these and other formats will come later).



The 3D Pan window

The 3D Audio Pan window has a few more controls than the ordinary Pan window:

- **Pan enable:** Toggles the entire panning effect on and off.
- **Panner viewer:** A large 3D representation of the listener’s perceived sound stage, with a blue sphere that represents the position of the track’s audio being positioned within that space, which casts a shadow straight down on the floor and projects a blue box on the four walls of this space to indicate its position more concretely.
- **Front panner:** A 2D panning control that represents the horizontal left/right axis and the vertical up/down axis, letting you make these specific spatial adjustments.
- **Side panner:** A 2D panning control that represents the horizontal front/back axis and the vertical up/down axis, letting you make these specific spatial adjustments.
- **Top panner:** A 2D panning control that represents the horizontal left/right axis and the vertical front/back axis, letting you make these specific spatial adjustments.
- **Left/Right:** A 1D knob that changes the balance of signal between the left- and right-side speakers you’re outputting to, depending on what speaker format you’re mixing to.
- **Front/Back:** A 1D knob that changes the balance of signal between the front and back sets of speakers you’re outputting to, depending on what speaker format you’re mixing to.
- **Rotate:** A 1D knob that simultaneously adjusts the left/right and front/back pan controls in order to horizontally rotate a surround mix about the center of the room.
- **Tilt:** A 1D knob that simultaneously adjusts the left/right and up/down pan controls in order to vertically rotate a surround mix about the center of the room.
- **Spread:** Only available when a linked group is selected. Spread adjusts the perceived size of a surround mix.
- **Divergence:** Spreads, or bleeds, the signal of an individual feed across the adjacent loudspeakers, making the perceived size of the sound source larger. A 2D button lets you set how this is done. With the 2D button turned off, divergence creates a one-dimensional bleed between the left/right planes only. With the 2D button turned on, divergence creates a two-dimensional bleed between both the left/right and front/back planes of sound.
- **Boom:** The send level of that track to the LFE part of the mix. An On button enables this functionality, while a Pre button lets you adjust the “dry” part of the signal separately from the “wet” part of the signal when effects are applied.

Bus Assignment Buttons

Two sets of buttons let you route audio from one channel strip’s output to Sub and Main buses that you’ve set up for your mix.



The channel strip’s bus assignment buttons

- **Main:** These buttons let you assign a track or Sub’s channels to one or more of the main busses.
- **Submix:** These buttons let you assign that track’s channels to one or more submix buses.

Fader Groups (VCA Groups)

You can assign multiple faders to a Fader Group, also referred to as “VCA group,” which is controlled by a dedicated group channel strip that appears at the right of the mixer. Fader Groups let you simultaneously adjust multiple faders using one group fader, for instances where that will help you manage the levels of complex collections of audio tracks.

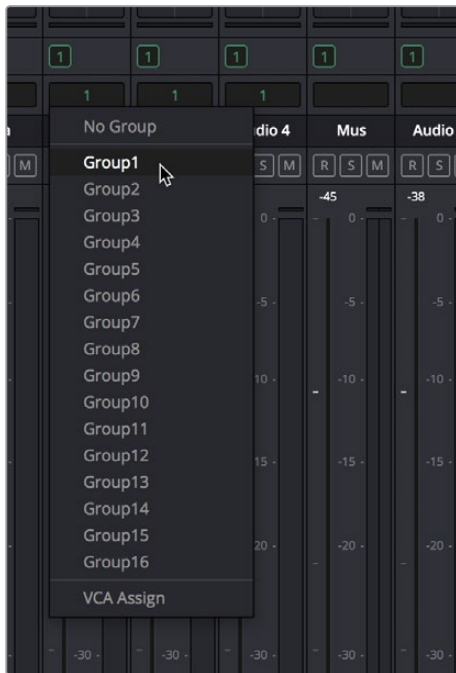
The controls for doing this are found in the Group label area of each control strip, which also display which group each fader has been assigned to.



Group Labels in each control strip, above the control strip label

Making Fader Group Assignments

You can assign any fader to one of 16 groups by right-clicking the group label area and choosing a group from the pop-up that appears. If a fader is already assigned to a group, you can choose “No Group” to remove it.



Right-clicking a Group Label reveals a pop-up menu that lets you assign faders to or remove faders from groups

Using Fader Groups

Once you've assigned multiple faders to a group, a dedicated channel strip for that group appears. Making adjustments to the group channel strip simultaneously controls all the faders, solo buttons, and mute buttons of all channel strips that are members of that group, as seen below.



Adjusting the Group 1 fader also adjusts the faders for Audio 1, 3, and 4 that are assigned to that group

While in a group, you can still move the faders of each individual channel strip independently to make relative adjustments. Channel strip faders only move together when you adjust the group fader, and while the group fader is being moved, each individual fader's relative offset from other faders in that group is maintained, as seen in the previous screenshot, where the Group 1 fader is moving the faders in tracks Audio 2, 3, and 4, but each individual channel strip fader in this group is offset from the others.

Recording Fader Automation for Groups

You can record automation data to the group fader, and all faders in that group will follow even though they're not actually automated themselves. This makes it easy to record complex automation involving multiple faders when you still might want the freedom to finely adjust each individual fader later on.

Arm, Solo, and Mute Buttons

Identical to the controls found in the track header controls of each timeline audio track.



The channel strip's Arm, Solo, and Mute buttons

- **Record Arm:** (highlights red when enabled) Lets you enable a track to be recorded onto.
- **Solo:** (highlights green for Solo, blue for Solo Safe) Lets you mute all other tracks in order to play a track you need to focus on in isolation. If solo is enabled for multiple tracks, all soloed tracks will play, and all non-soloed tracks will be muted. This affects rendering, so if one or more tracks are soloed, the muted tracks won't be output or rendered.
 - **Solo Safe:** Command-Option-click a Solo button to put it into “Solo Safe” mode. Tracks set to Solo Safe, in which the Solo button is highlighted in blue, always play even if Solo is enabled for other tracks. This is good for tracks you want to continue listening to for reference even as you solo other specific tracks you want to pay more attention to.
- **Mute:** (highlights orange when enabled) Turning on Mute disables audio playback from that track. This affects rendering, so if one or more tracks are muted, they won't be output or rendered.

TIP: You can click a button and drag across multiple channel strips to turn that button on or off for multiple tracks easily.

Fader Controls

Each track's vertical fader lets you control the level that's output by that track, either using your mouse, or using the physical fader of your Fairlight console. If you're working with a console, then the onscreen faders serve as a visual reference of what levels are set.



The fader area

- **dB:** Shows you the volume, in decibels, that track is currently set to.
- **Fader:** Each track's vertical fader can be dragged with your mouse or other pointing device to adjust the volume of that track and perform automation recording. Dragging up increases volume, dragging down decreases volume. Fader handles turn red while you record levels automation, and they turn green when automation has been recorded for that track.

Methods of adjusting channel faders:

- **To change the level of that channel with the mouse:** Click and drag any fader up or down.
- **To reset the level of that channel to 0 dB:** Double-click a fader's handle. This does not work after you've recorded automation for a track.

Bouncing Audio

Bouncing audio refers to mixing and rendering audio from one or more Timeline tracks onto another track of the Timeline, in the process “baking in” processor intensive effects and complicated or intricate audio edits to create a new continuous piece of audio media that's written to the directory location specified by the “Save clips to” field of the Capture and Playback panel of the Project Settings.

There are two commands available for bouncing audio on the Fairlight page when you hit the wall with how many tracks and effects you can mix in real time.

- Timeline > Bounce Selected Tracks to New Layer
- Timeline > Bounce Mix to Track

To use Bounce Selected Tracks to New Layer:

- 1 Set In and Out points to define the range of the Timeline you want to bounce. If you don't do this, nothing will happen.
- 2 Command click the track headers or mixer channel strips of all tracks you want to bounce in order to select them.
- 3 Choose Timeline > Bounce Selected Tracks to New Layer.

The audio on each track is processed and rendered and appears as the top layer of audio on that track. While View > Show Audio Track Layers is turned off, it will appear as if the new bounced audio is the only clip on that track. However, the original audio with live effects is still available as the bottom of the stack of layered audio on that track, and turning View > Show Audio Track Layers on will show this. The bounced audio is a new audio media file that's written to the directory location specified by the “Save clips to” field of the Capture and Playback panel of the Project Settings.

To use Bounce Mix to Track:

- 1 Choose Timeline > Bounce Mix to Track. The Bounce Mix to Track window appears, showing each main, submix, and auxiliary that's currently available.
- 2 In the Destination Track column, set which mixes you want to bounce by choosing either New Track, or choosing a specific existing track from the pop-up menus.
- 3 Click OK.

The specified mix is processed, mixed, and bounced to the specified track as a new piece of audio. This creates new audio media that's written to the directory location specified by the “Save clips to” field of the Capture and Playback panel of the Project Settings.

TIP: There's also a Bounce Audio Effects command in the contextual menu of audio clips in the Timeline that have audio plug-ins applied to them. For more information, see Chapter 132, "Audio Effects."

Third-Party Control Panel Support for Mixing

DaVinci Resolve supports HUI- and MCU-compatible third-party mixing control panels with up to eight faders, such as the Mackie MCU Pro Control Surface, connected via USB MIDI, and selectable in the Control Panels panel of the Resolve System Preferences. Supported basic panel controls that correspond to Fairlight features at the time of this writing include the following.

Transport controls including:

- Rewind (REW)
- Fast Forward (FF)
- Stop (double-press the Stop button for Home in the Timeline)
- Play (double-press the Play button to "play again")
- Record (press Record+Play to begin recording if one or more tracks is record-enabled)
- Jog control (Press SCRUB and rotate the jog wheel)

Channel Strip controls including:

- Rotary controls for panning, with Rotary Value display and Rotary touch
- Alphanumeric Track Name display
- Record button to record-enable tracks (only works if an input is patched to a track input)
- Solo, with a double-press selecting or de-selecting that track
- Mute
- Select to select the track corresponding to that channel strip
- Fader control and optional Level display
- Channel and Fader Bank buttons to move left and right among banks of channel strips
- Double-press the Fader Bank Left button to move the playhead Home in the mixer (track 1)
- Double-press the Fader Bank Right to move to the Master channel strips

Marker buttons:

- Marker to add a marker
- Pressing the Marker+Stop buttons sets Home
- Pressing the Marker+FF/REW buttons jumps the playhead forward or backward

Additional supported controls for control panels that have them include:

- Master Solo clear/restore
- Undo (pressing the Undo+Option buttons does Redo)
- Arrows to move the selection

- Zoom horizontal and vertical controls
- Audio Tracks, to turn Automation On/Off
- Write/Trim/Touch/Latch switches
- Nudge controls
- Cut, Copy, and Paste

Monitoring controls include:

- Level control
- Dim
- Mute
- Alt Speaker

For more information on third-party mixing control panel support, see the Blackmagic Support site at <https://www.blackmagicdesign.com/support/family/davinci-resolve-and-fusion>.

Chapter 131

Automation Recording

The Fairlight page provides simple, flexible, and comprehensive facilities for recording and editing mix automation data. Once recorded, all feed and bus mix parameter automation can be played back in perfect synchronization with the audio, including channel parameters, bus assignments, inserts, and direct outs.

The Fairlight page is designed to allow the operator to record every static and dynamic parameter change you make in the process of balancing the mix of tracks in the timeline. Mixer adjustments may be recorded for one or multiple parameters or channels at a time. Additionally, more adjustments may be added with each automation recording pass, which lets you create complex and detailed mixes that can be frame-accurately replayed at will.

This chapter covers automation mixing using the combined controls of the onscreen mixer and timeline. For more information on basic mixing operations, see Chapter 130, “Mixing in the Fairlight Page.”

Contents

Automation Recording	2545
What You Can Automate	2545
Automation Controls	2545
How to Record Automation	2546
Recording Automation for Multiple Tracks	2546
Recording Automation for Specific Individual Tracks	2547
Viewing Automation in the Timeline	2548
Overwriting Automation	2548
Editing Automation	2549
Drawing Automation Keyframes	2549
Adjusting and Deleting Automation Keyframes	2550
Adjusting and Deleting Multiple Keyframes	2550
Adding New Keyframes	2551
Playing Automation	2552

Automation Recording

While the recording of keyframe automation is most commonly associated with either the onscreen mixer or the Fairlight console, you can also record automation using controls found in the Inspector, or using the controls of the EQ, Dynamics, and Pan windows, thereby enabling you to record automation for the various audio effects that you've applied to a track.

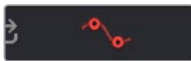
Recording automation refers to creating high-fidelity data that records changes you make to onscreen controls and/or Fairlight console controls, in real time as the Timeline plays, that will then control how those parameters will play back. In this way, you can create a dynamic mix where different audio level, pan, and EQ, dynamics, and other audio filter settings change over time to fade swells of music up and down, pan the sound effect of a car driving by from the left to the right speaker, or slowly increase the strength of a reverb effect applied to foley footsteps as a character walks into a long, dark cavern.

What You Can Automate

You can record automation for nearly every control in the mixer for channel strips corresponding to individual tracks, track groups, or busses, including the fader. Additionally, you can record automation for controls found in audio plug-ins that you use in your mix.

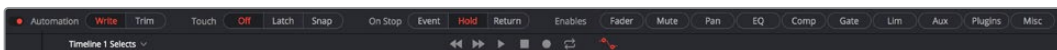
Automation Controls

The automation button, to the right of the transport controls, lets you show and hide the Automation toolbar.



Clicking the Automation button displays the automation toolbar

The Automation toolbar has buttons for each option that's available for preparing to record automation in your mix.



Options found in the Automation toolbar

The Automation toolbar displays the following options:

- **Automation:** Controls how automation data is recorded.
 - **Write:** Records absolute changes to control automation.
 - **Trim:** Records relative changes to control automation in order to increase or reduce levels that have already been recorded.
- **Touch:** Defines what happens when you first adjust an automatable control.
 - **Off:** No automation is recorded.
 - **Latch:** Automation is recorded once you begin moving a control and continues recording after you release the control.
 - **Snap:** Automation is recorded once you begin moving a control and stops recording after you release the control; there is a brief interpolation from the last level you set to the prior recorded level.

- **On Stop:** Defines what happens when you release an automatable control.
 - **Event:** The last recorded automation value overwrites previous levels to the start of the next available recorded automation data (or event) in that track.
 - **Hold:** Deletes all previously recorded mixing data after what you've just recorded, to hold the last recorded level for the rest of that track.
 - **Return:** The last recorded automation value is interpolated to ramp back to the previously recorded automation values on that track.
- **Enables:** The following buttons let you enable or disable different controls for recording automation.
 - **Fader:** Automates track and bus volume.
 - **Mute:** Automates the mute button.
 - **Pan:** Automates all pan controls.
 - **EQ:** Automates all EQ controls.
 - **Comp:** Automates just the Compressor controls in the Dynamics window.
 - **Gate:** Automates just the Gate controls in the Dynamics window.
 - **Lim:** Automates just the Limiter controls in the Dynamics window.
 - **Aux:** Automates the Auxiliary controls in the Auxiliaries window.
 - **Plug-ins:** Automates all plug-ins.
 - **Misc:** Automates the parameters of VST and Audio Unit plugins.

How to Record Automation

There are two different ways you can set up the recording of automation for levels, panning, EQ, Dynamics, and other audio controls in the mixer.

Recording Automation for Multiple Tracks

You can use the following steps to record automated changes to any audio control in any control strip:

- 1 Open the Automation toolbar, and do the following three preparatory steps:
 - a Choose whether you're going to write new automation, or trim automation that's already recorded. Write mode is appropriate when you're recording automation for the first time, or when you're overwriting previous automation with brand new values. Trim mode is appropriate when you're making incremental changes to previously recorded automation.
 - b Next, choose Touch and On Stop behaviors that are appropriate for the kind of automation recording you need to do.
- 2 Move the playhead to the beginning of the section of the timeline you want to record automation for.
- 3 Next, initiate playback using any method (Spacebar, L, Play button, third-party or Fairlight audio control panel), and make whatever adjustments you want to the controls for which you've enabled automation recording. As you make adjustments, the affected fader control turns red to let you know you're recording automation.
- 4 When you're finished, stop playback using any method (Spacebar, K, Stop button, third-party or Fairlight audio control panel). Automation recording stops as well.

Recording Automation for Specific Individual Tracks

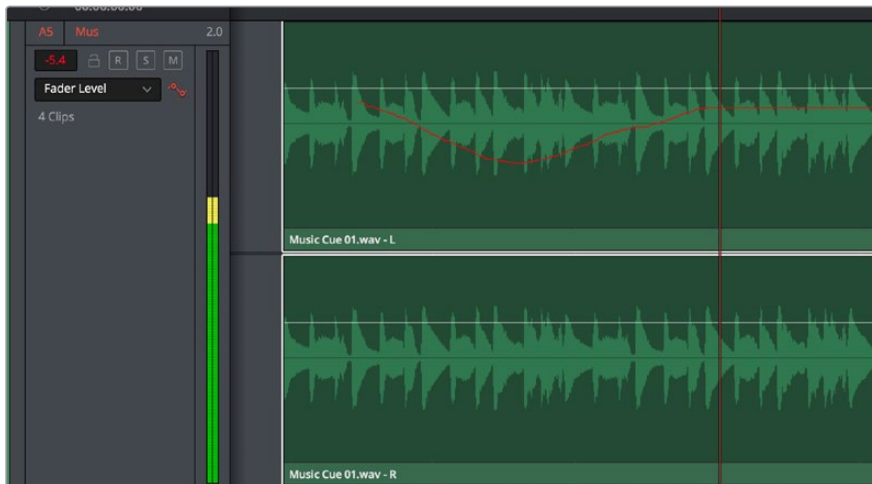
You can use the following steps to record automated changes to controls in specifically armed control strips:

- 1 Open the Automation toolbar, and do the following three preparatory steps:
 - a Choose whether you're going to write new automation, or trim automation that's already recorded. Write mode is appropriate when you're recording automation for the first time, or when you're overwriting previous automation with brand new values. Trim mode is appropriate when you're making incremental changes to previously recorded automation.
 - b Next, set Touch to Off, which disables across-the-board automation recording and requires you to arm specific tracks that you want to automate.
- 2 Click the automation arm button above the fader of any Mixer track to which you want to record automation. Even though the Touch control is set to off, moving a control on an armed channel strip will record automation in Latch mode.



The automation arming button above a fader in the Mixer

- 3 Move the playhead to the beginning of the section of the timeline you want to record automation for.
- 4 Next, initiate playback using any method (Spacebar, L, Play button, third-party or Fairlight audio control panel), and make whatever adjustments you want to the controls for which you've enabled automation recording. While you make adjustments, the affected fader control turns red to let you know you're recording automation. If you're displaying the same automation data in the Timeline that you're recording, you can see the new automation being drawn in real time, in red.



Automation being displayed while it's recorded

- 5 When you're finished, stop playback using any method (Spacebar, K, Stop button, third-party or Fairlight audio control panel). Automation recording stops as well. Displayed automation turns green once recording has stopped.

If you don't like what you've done, you can undo and start over, or you can edit the automation using methods described later in this chapter. Or, you can back the playhead up and overwrite automation at any time with new automation.

Viewing Automation in the Timeline

Once you've recorded automation keyframes for a particular parameter, they can be made visible in an automation graph in the Timeline. While the automation controls are visible, an additional pair of controls appear in the header of each audio track. A pop-up lets you choose which automation waveform to view, with options for Fader, Mute, Pan, EQ, Compressor, limiter, Aux, and Plugins controls.

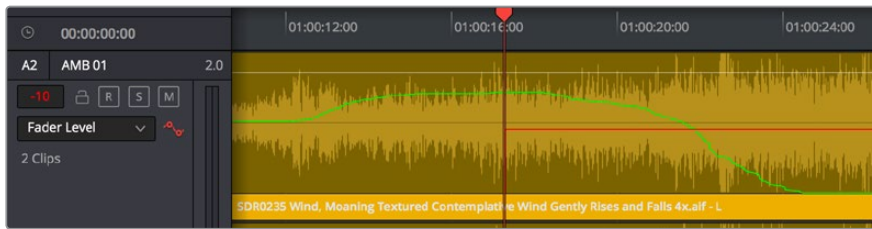


Mixing automation for the Fader shown in the Timeline

At the time of this writing, automation data cannot be cut, copied, or pasted.

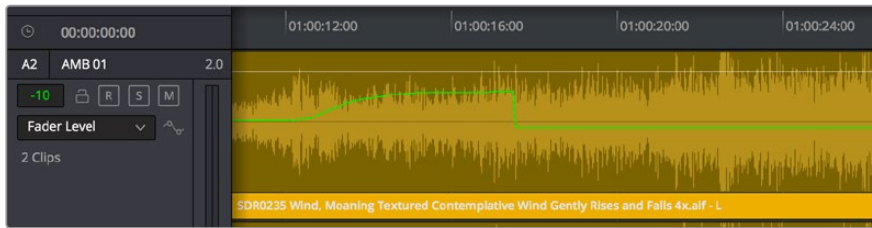
Overwriting Automation

Once you've recorded automation for a particular clip, you can overwrite that automation in subsequent passes. Using either of the previously described methods of recording automation, adjusting the levels of a track control with previously recorded automation displays a red line that shows the new level relative to the previously recorded level.



Setting new levels to overwrite previously recorded automation displays a red line

Pressing play to actually record this new automation will overwrite the previous levels at this new value.



New automation overwrites the previous levels

Editing Automation

When the automation toolbar is displayed, two additional tools appear in the regular toolbar. From left to right, these are the Pencil and the Select Range tools. These tools let you edit automation in different ways.

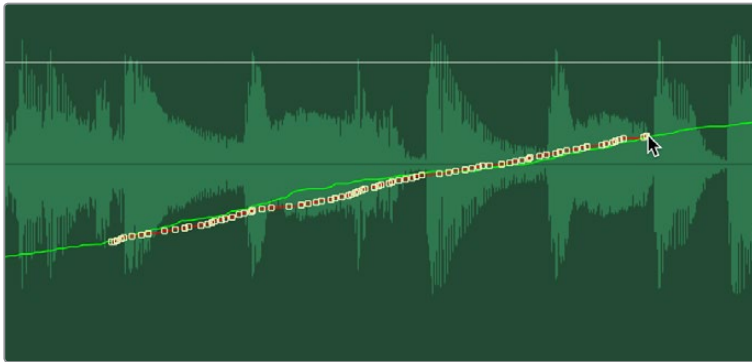


The Pencil and Select Range tools appear when you open the Automation toolbar

Drawing Automation Keyframes

You can use the pencil tool to literally draw new automation curves in the Timeline for whichever parameter's automation data is visible. This can be a good way to smooth out ragged sections of automation without needing to re-record everything you did.

Simply click the Pencil tool, choose the automation data you want to edit in a track of the Timeline using the pop-up menu in the track header, and then click and drag to draw a new curve. While you're drawing, the new curve appears in red, while the old curve appears in green, to help you see what you're doing. When you're finished, release the pointer button and the automation curve will be redrawn.



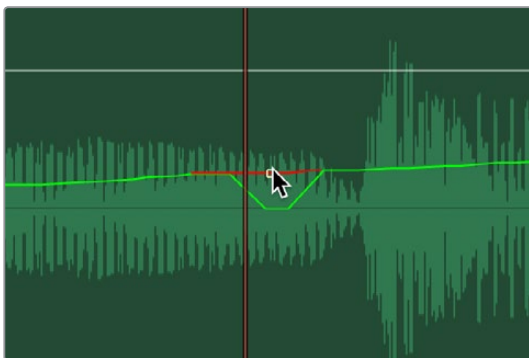
Using the Pencil tool to smooth out a section of automation

Adjusting and Deleting Automation Keyframes

The Select Range tool lets you adjust automation in two different ways.

Adjusting Individual Keyframes

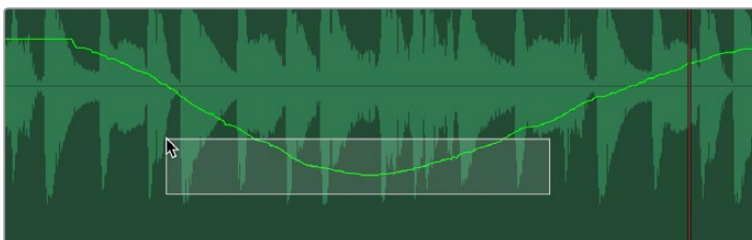
Using the Select Range tool, you can click and drag any automation keyframe up or down and left or right (bounded by its neighboring keyframes) to adjust it directly. When zoomed in, this can be an effective way of making minute adjustments to troublesome keyframes. The segment of automation affected by the keyframe you're dragging appears red to show you the new curve you're creating, while the previously recorded curve remains green. When you release the pointer button, the new shape will be drawn.



Using the Select Range tool to adjust an automation keyframe

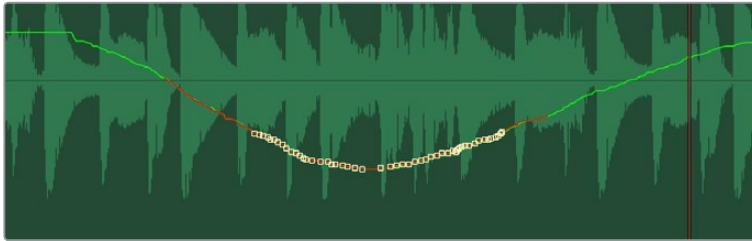
Adjusting and Deleting Multiple Keyframes

You can also use the Select Range tool to drag a bounding box to select multiple keyframes, in preparation for moving them or deleting them.



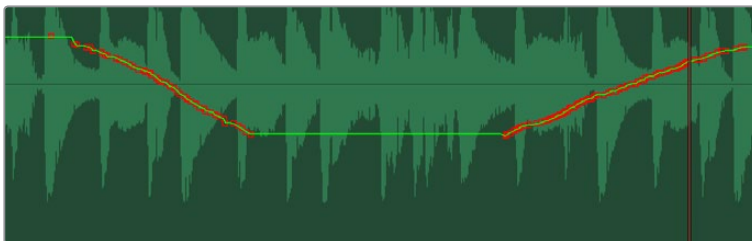
Dragging a bounding box over a section of automation using the Select Range tool

Once you release the box, that section of keyframes becomes highlighted.



Multiple automation keyframes selected

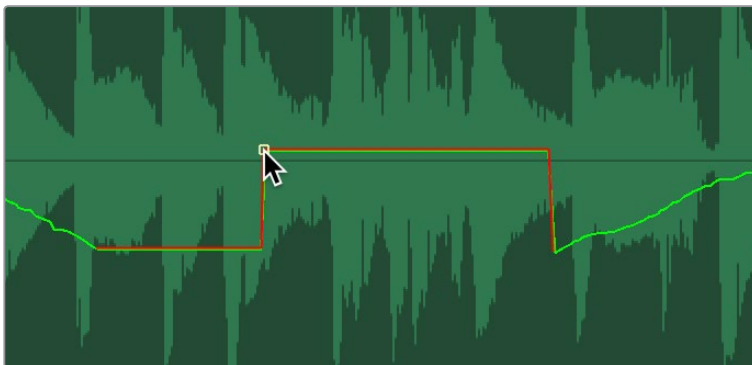
Once it's highlighted, you can drag the selection to move it, or you can press the Delete key to delete it. The remaining section of the curve flattens out to fit the first and last keyframe of the selection.



The newly flattened section of the automation curve after deleting the selected keyframes

Adding New Keyframes

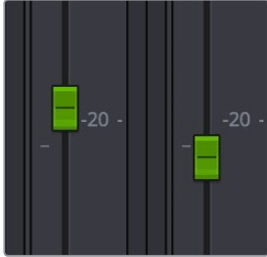
You can also use the Select Range tool to add new keyframes to an automation curve. However, these are not Bezier keyframes, so they only let you create a single level adjustment at that frame. If you make a large adjustment with only a single new keyframe, you'll end up with a squared off section of automation. For this reason, adding new keyframes should only be done when making small adjustments, unless you intend to create an abrupt change.



Adding and adjusting a keyframe using the Select Range tool, exaggerated for print

Playing Automation

After you've automated a mix, playing it back is as simple as moving the playhead to an area of the timeline prior to the recorded automation, and initiating playback. As the timeline plays, the onscreen controls for each automated parameter are shown in green, and move and update to show the recorded levels for those controls.



Green controls show which ones have recorded automation during playback

Chapter 132

Audio Effects

Audio plug-ins let you apply effects to the audio clips in your mix, such as echo or reverb, noise reduction, aural enhancement, click and pop removal, and so on. DaVinci Resolve is compatible with a wide variety of third-party VST and Audio Unit effects for audio processing, and these can then be used either in the Edit or Fairlight pages. This chapter goes through the different methods available for applying and customizing effects for clips and for tracks.

Contents

About Audio Plug-Ins	2555
FairlightFX	2555
VST and VSTi	2555
Audio Units	2555
Using Audio Plug-Ins	2556
Applying Audio Plug-Ins to Buses	2559
Dealing With Processor Intensive Plug-Ins	2559
Caching Audio Clips With Plug-Ins	2560
Bouncing Audio Clips With Plug-Ins	2560

About Audio Plug-Ins

Single or multiple plug-ins can be applied to clips and to tracks. A total of 96 mono channels of plug-ins can be applied (a stereo plug-in uses two of these channels, a 5.1-aware plug-in six channels, and so on). Plug-ins are accessed via each track's control strip, or via the Inspector which provides access to both clip and track plug-ins.

FairlightFX

FairlightFX are a DaVinci Resolve-specific audio plug-in format that runs natively on macOS, Windows, and Linux, providing high quality audio effects with professional features to all DaVinci Resolve users on all platforms.

VST and VSTi

VST (Virtual Studio Technology) is an audio plug-in standard created by Steinberg. The VST standard allows third-party developers to create VST plug-ins for use within VST host applications, or to create VST host applications themselves. The VST plug-in standard is the most widespread audio plug-in standard in use today, with thousands of available plug-ins spanning the gamut from EQ and compression to reverb, denoising, de-essing, aural exciting, and much more.

The Fairlight page supports VST effects from Mono to 7.1 - and beyond. These effects can be inserted on mono channels or Link Groups. If a stereo VST effect is inserted on a LCR, LCRS, or 5.1 Link Group, the left and right channels will be allocated to left and right Link Group channels automatically.

As of this writing, DaVinci Resolve supports VST version 2.4. VST effects are available on macOS and Windows workstations, but not on Linux.

VST Effects versus VST Instruments (VSTi)

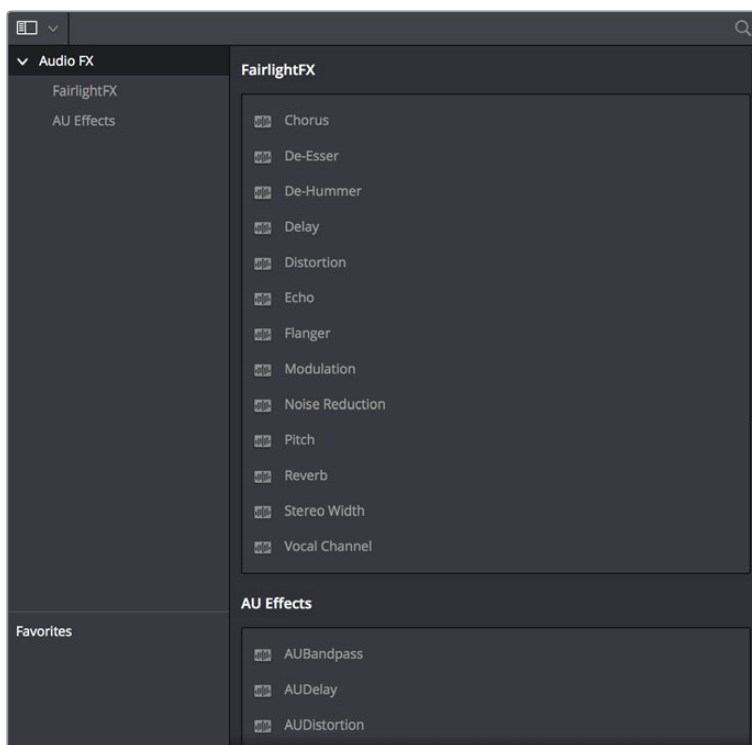
A VST effect is a type of VST plug-in that is used to process audio. A VST effect might be a Reverb, Compressor, or EQ. VST Instruments are typically used to synthesize sound or play back sampled audio. VSTs have rapidly replaced hardware synthesizers and dedicated samplers due to their flexibility, repeatability, and low cost.

Audio Units

Audio Units are an audio plug-in API created by Apple. Similarly to VST, Audio Units (AU) can either process audio, or work as instruments. Audio Units are only available on macOS workstations.

Using Audio Plug-Ins

FairlightFX are pre-installed on all DaVinci Resolve installations. If you install additional VST or Audio Unit effects on your workstation, they appear in the Audio FX panel of the Effects Library, organized in separate categories.



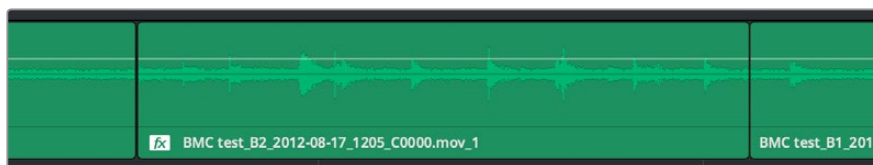
Audio plug-ins in the Effects Library

Audio plug-ins let you apply effects to individual audio clips or entire tracks worth of audio, to add creative qualities such as echo or reverb, or to take care of mastering issues using noise reduction, compression, or EQ.

Methods of applying audio plug-ins to clips on the Fairlight page:

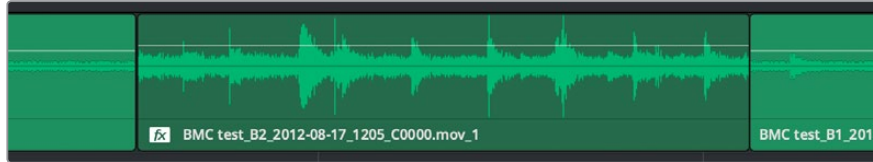
- **To apply an audio filter to a clip:** Drag any filter from the Audio FX panel of the Effects Library onto the clip in the Timeline you want to apply it to.
- **To apply an audio filter to multiple clips:** Select all of the clips you want to apply an audio filter to, then drag any filter from the Audio FX panel of the Effects Library onto any of the selected clips.

When you apply an audio plug-in to a clip, a badge appears to the left of that clip's name bar in the Timeline to let you know there's an effect applied to it.



Timeline clips with audio plug-ins applied appear with a badge

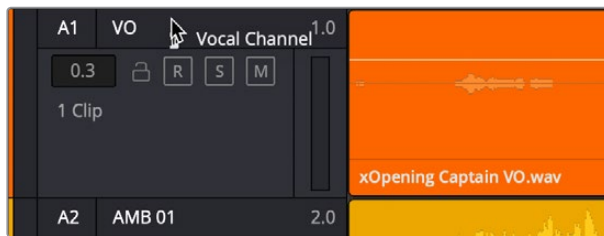
Also, when you apply any kind of an effect to a clip in the Timeline, be it an adjustment in the Inspector or a plug-in you've applied, clips with that effect applied appear a darker shade of whatever color they are. Removing all effects from a clip (for example, using the Remove Attributes command) returns that clip to its original color. This makes it easy to see, at a glance, which clips have effects, and which clips don't.



A closeup of the Timeline with a darker clip with effects between two other regularly-colored clips without effects

Methods of applying audio plug-ins to tracks on the Fairlight page:

- **To apply an audio filter to an entire track in the Timeline:** Drag any filter from the Effects Library onto the track header.



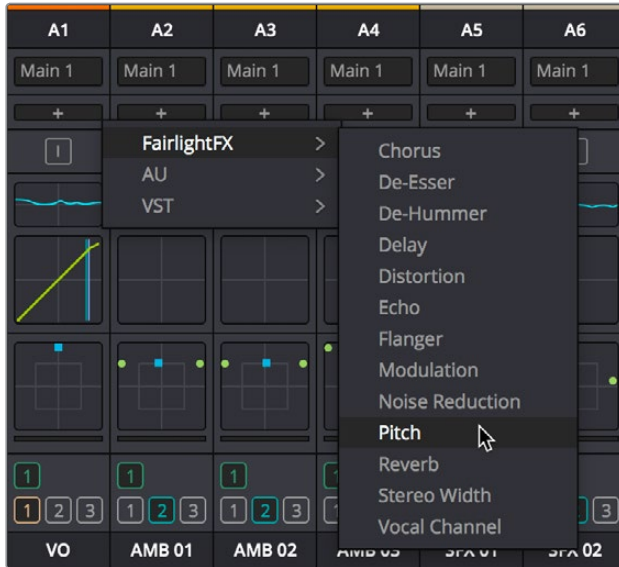
Applying an audio filter to a whole track via the Timeline

- **To apply an audio filter to a track or bus in the Mixer:** Drag any filter from the Audio FX panel of the Effects Library onto the clip in the Timeline you want to apply it to.



Applying an audio filter to a whole track via drag and drop to the Mixer

- **To apply an audio filter to a track or bus using the Mixer controls:** Click the plus button in the channel strip of the track you want to apply an effect to, and then choose a filter from the pop-up menu that appears.



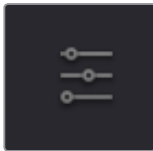
Applying an audio filter to a whole track via the Mixer's own controls

To edit a clip's audio plug-ins:

- Select that clip and open the Inspector. All audio plug-ins applied to that clip appear under the volume and pan controls, with that filter's controls appearing directly in the inspector.

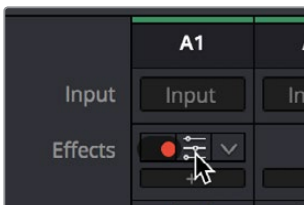
To edit a track's audio plug-ins, do one of the following:

- Click in the background of the Timeline header to select that track, and then open the Inspector. Click the custom UI button for that filter to open its controls.



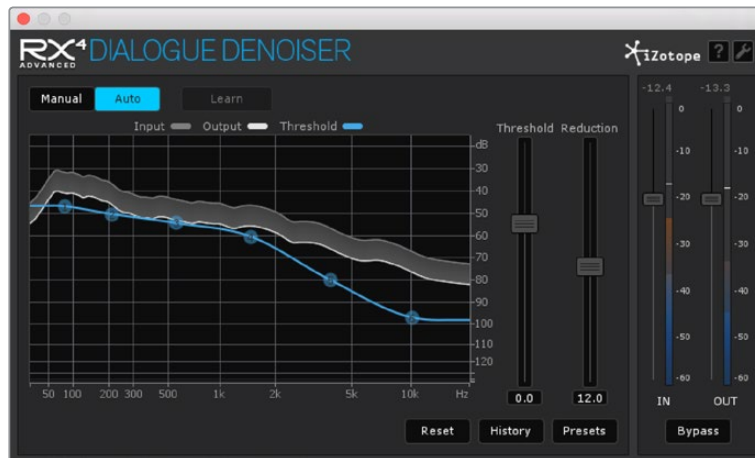
The custom UI button for audio plug-ins in the Inspector

- Move the pointer over the plugin's name in the Effects area of the Mixer, and click on the custom UI button to open its controls.



The custom UI button for audio plug-ins in the Mixer

Nearly all FairlightFX, VST, and Audio Unit audio plug-ins have a custom user interface that makes it much easier to manipulate that filter's controls. These can be opened from within DaVinci Resolve.



The custom audio filter interface for iZotope RX4

Methods of working with audio plug-ins in the Inspector:

- **To rearrange the order of multiple video filters applied to a clip:** Click the move up or move down buttons in any filter's title bar, to the left of each filter's Trash Can button.
- **To disable or re-enable a filter:** Click the toggle button at the far left of each filter's title bar.
- **To remove a filter:** Click the Trash Can button.
- **To reset any filter parameter:** Click the Reset button at the far right of the parameter you want to reset.
- **To open or collapse a filter's parameters:** Double-click the title bar.
- **To open or collapse the parameters of all filters:** Hold the Option key down and double-click any filter's title bar.

Once applied to a clip or track, audio plug-ins can also be keyframed or automated just like volume and pan settings, to create dynamic audio effects that change over time.

Applying Audio Plug-Ins to Buses

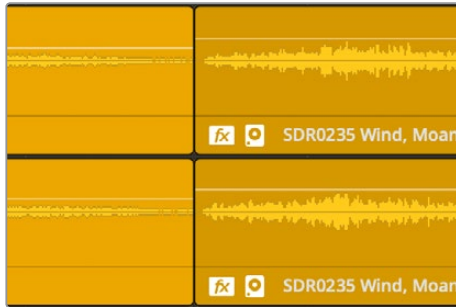
You can apply audio plug-ins to Main and Sub buses just like any other track, with which to apply any audio mastering effects operations you require to individual submixes, or even to an entire main.

Dealing With Processor Intensive Plug-Ins

As you apply more and more plug-ins directly to clips in complicated mixes, you may discover you lack the processing power to play all audio tracks and effects in real time. When this happens, there are two ways you can ease the burden that audio clip effects are placing on your workstation.

Caching Audio Clips With Plug-Ins

One quick fix is to manually enable the caching of one or more selected audio clips with audio effects applied to them to improve your project's performance. Once an audio clip is cached, all plug-in effects are "baked in" and that clip's audio waveform updates to reflect the altered audio. Cached clips appear with a small badge to the right of the FX badge in the name bar of the clip.



A cache badge lets you know this audio clip has cached effects

This is a non-destructive operation that has no lasting effect on the source media of cached clips. You can still alter a cached clip's plug-in parameters whenever you want. Opening the graphical controls of a cached clip temporarily suspends audio caching, and when you're finished, the clip is automatically re-cached and its waveform is updated to reflect the change so long as Cache Audio Effects remains enabled.

To cache audio effects for one or more selected clips:

Right-click an audio clip with a plug-in applied and choose Cache Audio Effects to enable audio effect caching for that clip. If you right-click one of multiple selected clips, you'll enable Cache Audio Effects for all selected clips at once. Once enabled, that clip will be continue to be cached (and re-cached if you change the plug-in's parameters) until you manually disable audio caching.

To disable audio caching for one or more selected clips:

Right-click an audio clip that's been cached and choose Cache Audio Effects to disable audio effect caching for that clip.

Bouncing Audio Clips With Plug-Ins

Another way of easing the burden of audio clip effects on your system is to bounce the effected clip to another layer. This creates a new piece of audio media with the effect "baked in," which is written to the directory location specified by the "Save clips to" field of the Capture and Playback panel of the Project Settings.

To bounce one or more selected audio clips with effects to another layer:

Right-click an audio clip with a plug-in applied and choose Bounce Audio Effects. If you right-click one of multiple selected clips, you'll Bounce Audio Effects for each selected clip all at once. After bouncing an audio clip with effects, the original clip will be muted.

Bounced clips no longer have editable effects, but you can always choose View > Show Audio Track Layers to see the original underlying clip that still has the original plug-in effect applied, and you can unmute it, move it back up to the top, edit the effect, and bounce another version of the clip, which appears as the topmost layer.

Chapter 133

FairlightFX

DaVinci Resolve 15 introduced FairlightFX, a DaVinci Resolve-specific audio plug-in format that runs natively on macOS, Windows, and Linux, providing high-quality audio effects with professional features to all DaVinci Resolve users on all platforms. Thirteen new audio plug-ins that can be used both in the Edit and the Fairlight page include a wide variety of plug-ins for repairing faulty audio, creating effects, and simulating spaces. This chapter explains what they do and how to use them.

Contents

Common Controls For All FairlightFX	2563
Chorus	2563
De-Esser	2564
De-Hummer	2565
Delay	2566
Distortion	2567
Echo	2569
Flanger	2570
Modulation	2571
Noise Reduction	2573
Pitch	2574
Reverb	2575
Soft Clipper	2576
Stereo Fixer	2577
Stereo Width	2578
Vocal Channel	2579

Common Controls For All FairlightFX

Before going into the specific controls of each FairlightFX plug-in, there are some common controls that all plug-ins share, found at the top of the custom GUI window for each plug-in.



Common controls for all FairlightFX

- **Presets:** A cluster of controls that let you recall and save presets specific to each plug-in.
 - **Add Preset button:** Click this button to save the current settings of the FairlightFX you're using. A dialog lets you enter a Preset name and click OK.
 - **Preset pop-up menu:** All presets for the currently open plug-in appear in this menu.
 - **Previous/Next preset buttons:** These buttons let you browse presets one by one, going up and down the list as you evaluate their effects.
- **A/B Comparison:** A set of buttons that lets you compare two differently adjusted versions of the same plug-in. The A and B buttons let you create two sets of adjustments for that plug-in, and toggle back and forth to hear which one you like better. The arrow button lets you copy the adjustments from one of these buttons to the other, to save the version you like best while experimenting further.
- **Reset:** A single reset control brings all parameters in the current plug-in to their default settings.

Chorus

An effects plug-in. A classic Chorus effect, used to layer voices or sounds against modulated versions of themselves to add harmonic interest in different ways.

An animated graph shows the results of adjusting the Modulation parameters of this plug-in, giving you a visualization of the kind of warble or tremolo that will be added to the signal as you make adjustments.



The Chorus FairlightFX

Chorus has the following controls:

- **Bypass:** Toggles this plug-in on and off.
- **Input Format:** (Only visible when Echo is inserted on a multi-channel track.) Lets you choose how multiple channels are input to the echo. Stereo sets separate Left and Right channels. Mono sums Left and Right to both channels. Left inputs the Left channel only, and Right inputs the Right channel only.
- **Delay:** The amount of delay between the original sound and the Chorus effect.
 - **Delay Time:** Length of the Chorus delay lines.
 - **Separation:** Time separation of the delay voices.
 - **Expansion:** Sets L/R length differences, phase offset of modulators
- **Modulation:** These controls adjust the low frequency oscillator (LFO) that drives the tremolo of the chorus effect in different ways.
 - **Waveform:** Specifies the shape of the LFO that modulates the rate of the Chorus, affecting the timing of the oscillations. There are six options: Sine (smooth oscillations), Triangle (sudden oscillations), Saw1, Saw2 (jerky oscillations), Square (hard stops between oscillations), and Random (randomly variable oscillations).
 - **Frequency:** Rate of LFO controlling the Chorus. Lower values generate a warble, higher values create a tremolo.
 - **Pitch:** Amount of frequency modulation, which affects the pitch of the Chorus.
 - **Level:** Depth of level modulation. Affects the “length” of the segment of Chorus that’s added to the sound. Low values add only the very beginning of the Chorus effect, high values add more fully developed Chorus warble or tremolo.
- **Feedback:**
 - **Amount (%):** The percentage of signal fed back to the Chorus Delay Line. Values can be positive or negative, the default is 0 (no effect). Increasing this parameter adds more of the Chorus effect to the signal, lowering this parameter adds more of the inverted Chorus effect to the signal. At values closer to 0, only a faint bit of Chorus can be heard in the audio, but at values farther away from 0 (maxing at +/- 99), a gradually pronounced Chorus becomes audible.
 - **Bleed (Hz):** Amount of feedback which bleeds into the opposite channel (Stereo mode only).
- **Output:** Controls for adjusting the final output from this plug-in.
 - **Dry/Wet (%):** A percentage control of the output mix of “dry” or original signal to “wet” or processed signal. 0 is completely dry, 100% is completely wet.
 - **Output Level (dB):** Adjusts the overall output level of the affected sound.

De-Esser

A repair plug-in specific to dialog. The De-Esser is a specialized filter that’s designed to reduce excessive sibilance, such as hissing “s” sounds or sharp “ts” sounds, in dialog or vocals.

A graph shows you which part of the signal the controls are set up to adjust, while reduction and output meters let you see which part of the signal is affected and what level is being output.



The De-Esser FairlightFX

The De-Esser has the following controls:

- **Bypass:** Toggles this plug-in on and off.
- **Frequency Range:** Two controls let you target the frequency of the “s” sound for a particular speaker.
 - **Target Frequency:** A knob that lets you target the frequency of the offending sibilance. Sibilant sounds are usually found in the range of 5 - 8kHz.
 - **Range:** switches the operational mode of the De-esser. Three choices (from top to bottom) let you switch among Narrow Band, Wide Band, and All High Frequency which processes all audio above the source frequency.
- **Amount:** Adjusts the amount de-essing that’s applied.
- **Reaction Time:** Adjusts how suddenly de-essing is applied. There are three choices.
 - **Relaxed:** Equivalent to a slow attack.
 - **Fast:** Equivalent to a fast attack.
 - **Pre-emptive:** A “lookahead” mode.

De-Hummer

A repair plug-in with general applications to any recording. Eliminates hum noise that often stems from electrical interference with audio equipment due to improper cabling or grounding. Typically 50 or 60 cycle hum is a harmonic noise, consisting of a fundamental frequency and subsequent partial harmonics starting at twice this fundamental frequency.

A graph lets you see the frequency and harmonics being targeted as you adjust this plug-in’s controls.



The De-Hummer FairlightFX

De-Hummer has the following controls:

- **Bypass:** Toggles this plug-in on and off.
- **Frequency:** Target source fundamental frequency. A knob lets you make a variable frequency selection, while radio buttons let you select common frequencies that correspond to 50Hz/60Hz electrical mains that are the typical culprits for causing hum.
- **Amount:** Adjusts how much De-Hum extraction you want to apply.
- **Slope:** Adjusts the ratio of fundamental frequency to partial harmonics, the adjustment of which lets makes it possible for various kinds of hum to be targeted. For example, a value of 0 biases hum extraction towards the fundamental frequency, while a value of 0.5 gives equal extraction of all harmonics (up to 4), and finally a value of 1.0 targets the higher frequency partials.

Delay

An effects plug-in. A general purpose stereo delay effect, suitable for tasks varying from track doubling, to early reflection generation, through simple harmonic enhancement. Processes in stereo or mono, depending on the track it's applied to.

A graph shows the timing and intensity of the echoes generated by this plug-in on each channel, and an Output meter displays the output level of the resulting signal.



The Delay FairlightFX

Delay has the following controls:

- **Bypass:** Toggles this plug-in on and off.
- **Input mode:** (Only visible when Delay is inserted on a multi-channel track.) Lets you choose how multiple channels are input to the delay. Stereo sets separate Left and Right channels. Mono sums Left and Right to both channels. Left inputs the Left channel only, and Right inputs the Right channel only.
- **Filters:** Alters the proportion of frequencies that are included in the delay effect. When the Delay plug-in is inserted on a Mono Channel, the Left and Right sections are replaced with a single “Delay” section.
 - **Low Cut (Hz):** A global High Pass filter.
 - **High Cut (Hz):** A global Low Pass filter.
- **Delay:** Adjusts the timing of the delay.
 - **Left/Right Delay (ms):** Delay time of each channel.
 - **Left/Right Feedback (%):** Feedback % of the Left or Right channel back to itself. A negative value equates to % of feedback with a phase reverse from the original signal.
- **Feedback:** Controls for adjusting the amount of bleed between channels.
 - **High Ratio:** Adjusts the frequency of a damping filter for the feedback signal.
 - **Stereo Bleed:** Adjusts the proportion of signal from Left and Right channel feedback which feeds into the opposite channel. When the Delay plug-in is inserted on a Mono channel, Stereo Bleed control does not appear.
- **Output:** Controls for adjusting the final output from this plug-in.
 - **Dry/Wet (%):** A percentage control of the output mix of “dry” or original signal to “wet” or processed signal. 0 is completely dry, 100% is completely wet.
 - **Output Level (dB):** Adjusts the overall output level of the affected sound.

Distortion

An effects plug-in. Creates audio distortion that’s useful for sound design and effects, ranging from simple harmonic distortion simulating an audio signal going through primitive or faulty electronics (such as bad speakers, old telephones, or obsolete recording technologies), all the way to mimicking an overdriven signal experiencing different intensities of hard clipping (think someone yelling through a cheap bullhorn, megaphone, or PA system). This plug-in includes soft tube emulation in the output stage.

An animated graph shows the results of adjusting the Distortion parameters of this plug-in, giving you a visualization of the kind of harmonic distortion, waveshaping, and clipping that will be modifying the signal as you make adjustments. Input and Output meters let you see how the levels are being affected.



The Distortion FairlightFX

Distortion has the following controls:

- **Bypass:** Toggles this plug-in on and off.
- **Filters:** Two filters let you simulate devices reproducing limited frequency ranges.
 - **LF Cut:** Low frequency distortion shaping.
 - **HF Cut:** High frequency distortion shaping.
- **Distortion:** Three sets of controls let you create the type and intensity of distortion you want.
 - **Mode buttons:** Switch the operational mode of distortion. The one to the left, Distortion, creates harmonic distortion. The button to the right, Destroy, is a more extreme polynomial waveshaper.
 - **Distortion:** Adjusts the amount of distortion that's applied to the signal. Higher values distort more.
 - **Ceiling:** Adjusts the level of input signal that triggers clipping.
 - **Output:** Controls for adjusting the final output from this plug-in.
 - **Dry/Wet (%):** A percentage control of the output mix of “dry” or original signal to “wet” or processed signal. 0 is completely dry, 100% is completely wet.
 - **Output Level (dB):** Adjusts the overall output level of the affected sound.
 - **Auto Level button:** Applies automatic compensation for gain added to the signal due to the distortion being applied. Having this button turned on prevents the signal from becoming dramatically and unexpectedly increased, while turning it off frees you to do what you want, if what you want is to hear a lot of distortion.

Echo

An effects plug-in. A classic Echo effect, simulating the fate of the cursed Oread from Greek mythology. Processes in stereo or mono, depending on the track it's applied to.

A graph shows the timing and intensity of the echoes generated by this plug-in on each channel, and an Output meter displays the output level of the resulting signal.



The Echo FairlightFX

Echo has the following controls:

- **Bypass:** Toggles this plug-in on and off.
- **Input Format:** (Only visible when Echo is inserted on a multi-channel track.) Lets you choose how multiple channels are input to the echo. Stereo sets separate Left and Right channels. Mono sums Left and Right to both channels. Left inputs the Left channel only, and Right inputs the Right channel only.
- **Filters:** Alters the proportion of frequencies that are included in the delay effect. When the Delay plug-in is inserted on a Mono Channel, the Left and Right sections are replaced with a single “Delay” section.
 - **Low Cut (Hz):** A global High Pass filter.
 - **High Cut (Hz):** A global Low Pass filter.
 - **Feedback:** Adjusts the frequency of a damping filter for the feedback signal.
- **Left Channel:** Parameters that independently affect delay on the Left Channel. When the Echo plug-in is inserted on a Mono Channel, the Left Channel and Right Channel sections are replaced with a single “Echo” section with only the Delay Time, Feedback Delay, and Feedback controls.
 - **Delay Time:** Global Delay time for the Left Channel.
 - **Feedback Delay:** Echo Delay time for the Left Channel.
 - **Feedback:** Feedback percentage of the Left channel back to itself.
 - **L > R Feedback:** Percentage of Left feedback signal which feeds back to Right Channel.
- **Right Channel:** Parameters that independently affect delay on the Right Channel.
 - **Delay Time:** Global Delay time for the Right Channel.
 - **Feedback Delay:** Echo Delay time for the Right Channel.
 - **Feedback:** Feedback percentage of the Right channel back to itself.
 - **R > L Feedback:** Percentage of Right feedback signal which feeds back to Left Channel.

- **Output:** Controls for adjusting the final output from this plug-in.
 - **Dry/Wet (%):** A percentage control of the output mix of “dry” or original signal to “wet” or processed signal. 0 is completely dry, 100% is completely wet.
 - **Output Level (dB):** Adjusts the overall output level of the affected sound.

Flanger

An effect plug-in, giving that unmistakable Flanger sound dating from the days of dual tape machines with a slight delay added to one in periodic intervals causing flanging as they got back in sync with one another. Typically used to add a sort of warbling harmonic interest to a signal, in a wide variety of ways.

An animated graph shows the results of adjusting the Modulation parameters of this plug-in, giving you a visualization of the kind of warble that will be added to the signal as you make adjustments.



The Flanger FairlightFX

The Flanger has the following controls:

- **Bypass:** Toggles this plug-in on and off.
- **Input mode:** (Only visible when the Flanger is inserted on a multi-channel track.) Lets you choose how multiple channels are input to the Flanger. Stereo sets separate Left and Right channels. Mono sums Left and Right to both channels. Left inputs the Left channel only, and Right inputs the Right channel only.
- **Modulation:** A low frequency oscillator (LFO) used to drive the Flanger effect.
 - **Waveform (Hz):** Specifies the shape of the LFO that modulates the rate of the Flanger. The three choices are Sine (a smooth change in rate), Triangle (a jerky change in rate), and Sawtooth (an abrupt change in rate). Affects the timing of the warble that is added to the sound.
 - **Rate (%):** Speed of the LFO, affects the speed of the warble that is added to the sound. Low rate values create a slow warble, while high rate values create more of a buzz.
 - **Depth:** Affects the “length” of the warble that is added to the sound. Low values add only the very beginning of a warble, high values add more fully developed warble.
- **Width:** Consists of a single parameter, Expansion, which sets Left/Right channel length

differences, along with the phase offset of modulators.

- **Feedback:** These controls determine, in large part, how extreme the Flanging effect will be.
 - **Amount (%):** The percentage of signal fed back to the Delay Line. Values can be positive or negative, the default is 0 (no effect). Increasing this parameter adds more of the Flange effect to the signal, lowering this parameter adds more of the inverted Flange effect to the signal. At values closer to 0, only a faint phase shift can be heard in the audio, but at values farther away from 0 (maxing at +/- 99), a gradually increasing warble becomes audible. The type of warble depends on the Modulation controls.
 - **LPF Filter (Hz):** Lets you filter the range of frequencies that will affect the feedback signal.
- **Output:** Controls for adjusting the final output from this plug-in.
 - **Dry/Wet (%):** A percentage control of the output mix of “dry” or original signal to “wet” or processed signal. 0 is completely dry, 100% is completely wet.
 - **Output Level (dB):** Adjusts the overall output level of the affected sound.

Modulation

An effect plug-in. General purpose modulation plug-in for sound fx/design. Four effects combine an LFO, FM adjustment, AM adjustment, Sweep and Gain filters to allow simultaneous frequency, amplitude and space modulation. In conjunction with the additional Rotation controls, simple Tremelo and Vibrato effects can be combined with auto-filter and auto-Pan tools in order to provide texture and movement to a sound.

An animated graph shows the results of adjusting the Modulator, Frequency, and Amplitude parameters of this plugin, giving you a visualization of the kind of modulations that will be applied to the signal as you make adjustments. Output meters let you see what level is being output.



The Modulation FairlightFX

Modulation has the following controls:

- **Bypass:** Toggles this plug-in on and off.
- **Modulator:** A low frequency oscillator (LFO), shown in blue in the animated graph.
 - **Shape:** Specifies the shape of the LFO waveform that modulates the audio. Six options include Sine, Triangle, Saw1, Saw2, Square, Random.
 - **Rate (Hz):** Adjust the speed of the modulating LFO. Lower settings result in warbling audio, while extremely high settings result in buzzing audio the timbre of which is dictated by the shape you've selected.
- **Frequency:** Frequency modulation (FM) of a secondary oscillator, shown as green in the animated graph.
 - **Level (%):** Controls the amount of Frequency Modulation that's applied, intensifying or easing off the effect.
 - **Phase:** Since each of the four primary effects within this plug-in can be applied together, along with the fact that modulation with level components (Tremelo/Rotation/Filter) have the ability to combine or cancel out one another, phase controls are available. Altering the phase of an individual effect allows control of such interaction (e.g., cancel out a high level change, or offset a cancellation).
- **Filter:** Sweep and gain filters.
 - **Level:** Lets you set the amount of filter sweep and gain to additionally use to modify the signal. The amount you've selected is previewed in a 1D graph to the side.
 - **Tone:** Adjusts the center frequency of sweep.
 - **Phase:** Since each of the four primary effects within this plug-in can be applied together, along with the fact that modulation with level components (Tremelo/Rotation/Filter) have the ability to combine or cancel out one another, phase controls are available. Altering the phase of an individual effect allows control of such interaction (e.g., cancel out a high level change, or offset a cancellation).
- **Amplitude:** Amplitude modulation (AM) of a secondary oscillator, shown as green in the animated graph.
 - **Level:** Amount of Amplitude modulation applied. (Disabled in Ring Modulation Mode.)
 - **Phase:** Since each of the four primary effects within this plug-in can be applied together, along with the fact that modulation with level components (Tremelo/Rotation/Filter) have the ability to combine or cancel out one another, phase controls are available. Altering the phase of an individual effect allows control of such interaction (e.g., cancel out a high level change, or offset a cancellation).
 - **Ring Modulation Mode:** Enables a Ring Modulation effect (where the signal is multiplied by the modulator, rather than modulated by it).
- **Rotation:** These controls are only available when applied to a multi-channel track.
 - **Depth:** Amount of Rotation applied.
 - **Phase:** Since each of the four primary effects within this plug-in can be applied together, along with the fact that modulation with level components (Tremelo/Rotation/Filter) have the ability to combine or cancel out one another, phase controls are available. Altering the phase of an individual effect allows control of such interaction (e.g., cancel out a high level change, or offset a cancellation).
 - **Offset:** Start offset of rotation in order to further place the signal in space.
- **Output:** Controls for adjusting the final output from this plug-in.
 - **Dry/Wet (%):** A percentage control of the output mix of "dry" or original signal to "wet" or processed signal. 0 is completely dry, 100% is completely wet.
 - **Output Level (dB):** Adjusts the overall output level of the affected sound.

Noise Reduction

A repair plug-in designed to reduce a wide variety of noise in all kinds of recordings. Based on spectral subtraction, it's able to automatically detect noise in sections of dialog, or it can be used manually by "learning" a section of noise that can be subsequently extracted from the signal. A graph shows a spectral analysis of the audio being targeted, along with a purple overlay that shows what noise is being targeted. Two audio meters let you evaluate the input level (to the left) versus the output level (to the right), to compare how much signal is being lost to noise reduction.



The Noise Reduction FairlightFX in action

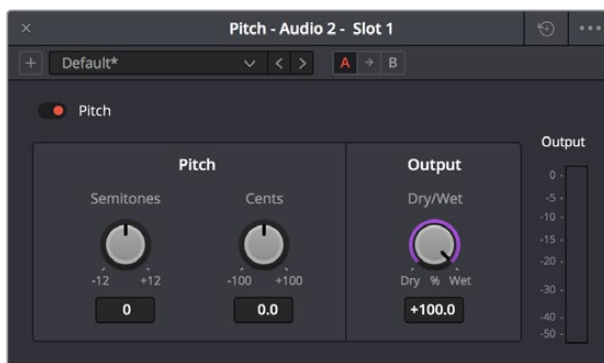
Noise Reduction has the following controls:

- **Bypass:** Toggles this plug-in on and off.
- **Auto Speech Mode/Manual radio buttons:** These buttons toggle the overall functionality of the Noise Reduction plug-in between two modes:
 - **Auto Speech Mode:** Specifically designed for human speech/dialog, applying dialog extraction to the incoming signal to dynamically detect the noise profile outside of the detected speech. As a result, Auto Speech Mode does not require an initial a "learn" pass, and adapts itself better to noise that changes over time.
 - **Manual Mode:** Enables the Learn button, as this mode requires the user to locate a section of the audio recording that is only noise that the plug-in can analyze. To initiate this analysis, position the playhead at the beginning of a section of the recording that is only noise, click the Learn button so it's highlighted, and play forward through the noise, stopping before any sound you want to preserve is reached, and clicking the Learn button to turn it back off. A noise profile is generated (shown in Purple on the graph), which is subsequently extracted from the remaining signal.
- **Threshold (in dB):** Relates to the signal-to-noise ratio (SNR) in the source recording. Recordings with a poor signal-to-noise ratio will require a higher threshold value, resulting in more noise reduction being applied.
- **Attack (in ms):** Primarily useful in Auto Speech mode, this controls the duration over which the noise profile is detected. Ideally, the attack time should match the variability of the unwanted noise. A low value corresponds to a faster update rate of the noise profile and is useful for quickly varying noise; a high value corresponds to a slower update rate and can be used for noise that's more consistent.

- **Sensitivity:** Higher sensitivity values exaggerate the detected noise profile; the result is that more noise will be removed, but more of the dialog you want to keep may be affected.
- **Ratio:** Controls the attack time of the signal profile relative to the attack time of the noise profile. A faster ratio detects and preserves transients in speech more easily, but the resulting speech profile is less accurate.
- **Frequency Smoothing:** Smooths the resulting signal in the frequency domain to compensate for harmonic ringing in the signal after the noise has been extracted.
- **Time Smoothing:** A toggle button enables smoothing of the resulting signal in the time domain as well.
- **Dry/Wet:** A percentage control of the output mix of “dry” or original signal to “wet” or processed signal. 0 is completely dry, 100% is completely wet.
- **Makeup Gain:** To let you compensate for level that may be lost due to the noise reduction operation you’re applying, this applies a pre-gain in, from -6dB to +18dB, just before the dry/processed mix.

Pitch

An effects plug-in. Shifts audio pitch without altering clip speed.



The Pitch FairlightFX

Pitch has the following controls:

- **Bypass:** Toggles this plug-in on and off.
- **Semitones:** A “coarse” adjustment that can shift audio pitch up to +/- 12 semitones.
- **Cents:** A “fine” adjustment that can tune audio pitch in +/- 100ths of a semitone.
- **Dry/Wet:** A percentage control of the output mix of “dry” or original signal to “wet” or processed signal. 0 is completely dry, 100% is completely wet.

Reverb

A spatial simulation plug-in, capable of recreating multichannel reverberation corresponding to rooms of different sizes, adjustable via a graphical 3D cube control. This plug-in lets you take a “dry” recording and make it sound as if it’s within a grand cathedral, an empty room, or a tiled bathroom.

To understand this plug-in’s controls, it helps to know that the signal follows three paths which are combined to create the final effect:

- A direct path.
- An early reflection path (ER) simulating early reflection rays obtained from the first multiple reflections on the walls, traveling from the virtual source to the virtual listener.
- A late reverberation path (Reverb) simulating the behavior of an acoustic model of the room.

A graph shows an approximate visualization of the reverb’s effect on the frequencies of the audio signal.



The Reverb FairlightFX

- **Reverb has the following controls:**
- **Bypass:** Toggles this plug-in on and off.
 - **Room Dimensions:** By controlling the size of the virtual room a sound is to inhabit, these parameters simultaneously control the configuration of Early Reflection and Late Reverberation processing. The acoustic modes from this simulated room are computed and fed to Late Reverberation processing. The shape, gain, and delay of the first reflections are computed and then fed to Early Reflection processing.
 - **Height, Length, Width:** Defines the dimensions of the reverberant space, in meters.
 - **Room Size:** The calculated Room Width x Length, in meters².
- **Reverb:** Additional controls that further customize the configuration of Early Reflection and Late Reverberation processing.
 - **Pre Delay:** Increase or negate the propagation time from the virtual source to the virtual listener. As a result, it modifies the initial delay time between the source signal and the first reflection.

- **Reverb Time:** Decay time of the Reverb tail. It controls the overall decay time of the acoustic modes from late reverberation processing.
- **Distance:** Modifies the distance between the virtual source and the virtual listener. It modifies only the configuration of early reflections processing.
- **Brightness:** Modulate the shape of the decay time over frequency. At maximum brightness, decay time is identical at any frequency. At minimum brightness, higher frequencies result in shorter decay time and therefore duller sound.
- **Modulation:** Adds random low-frequency phase modulation from the tapping point of ER processing. At 0%, modulation is not used.
- **Early Reflection Tone:** Four post equalization controls modify the tone of early reflections to suit a particular room’s characteristics.
 - **Low Gain**
 - **Low Frequency**
 - **High Gain**
 - **High Frequency**
- **Reverb Tone:** Four post equalization controls modify the tone of the reverb tail to suit a particular room’s characteristics.
 - **Reverb Tail Low Gain**
 - **Reverb Tail Low Frequency**
 - **Reverb Tail High Gain**
 - **Reverb Tail High Frequency**
- **Output:** These controls recombine the three audio processing paths into a single output signal.
 - **Dry/Wet:** A percentage control of the output mix of “dry” or original signal to “wet” or processed signal. 0 is completely dry, 100% is completely wet.
 - **Direct Level:** The amount of the direct level to mix into the final signal.
 - **Early Reflection Level:** The amount of early reflection to mix into the final signal.
 - **Reverb Level:** The amount of reverb to mix into the final signal.

Soft Clipper

The Soft Clipper is a limiting processor that reduces the output level above a defined threshold in a rounded manner so that peaks are more cleanly attenuated. The Soft Clipper plug-in will impart saturation effects when pushed hard above the threshold, allowing for the introduction of warmth and subtle distortion to the sound. A graph shows the shape of the curve adjustment this plug-in makes to the audio.

A soft clipper is often combined with a standard limiter in order to increase perceptual loudness of material without imparting harshness.



The Soft Clipper FairlightFX

- **Threshold:** Introduces input gain to the signal prior to hitting the clipper, forcing audio peaks over the threshold by that amount. As such, it will drive the saturation and distortion.
- **Shape:** The shape of the clipper can be varied to change the character of the soft clipper from full soft-clipping (all the way right, where the peaks are rounded) to full hard-clipping (all the way left, where the peaks are squared off).
- **Audio Level:** Lets you adjust the output gain to compensate for signal lost during soft clipping, if necessary.

Stereo Fixer

A simple plug-in designed to fix stereo source material in cases where only one side of a stereo signal was recorded, where one side of a stereo recording is a different level to the other, or where the stereo channels have been incorrectly Left/Right swapped.

This plug-in can also be used as a “Mid/Side” decoder, for recordings that were made using this microphone technique.

This plug-in is for stereo clips only.



The Stereo Fixer FairlightFX

- **Format:** The input processing mode you want to use to fix the stereo output.
 - **Stereo:** (Default) No format conversion is performed.
 - **Reverse Stereo:** Swaps the Left and Right side.
 - **Mono:** The output from the plug-in is a mono mix of the two inputs.
 - **Left Only:** The left input is sent to both left and right outputs.
 - **Right Only:** The right input is sent to both left and right outputs.
 - **M/S:** The left output is the left (Mid) input minus the right input (Side). The right output is the left (Mid) input plus right input (Side).
- **Left/Right Gain:** Lets you apply independent gain on the left or right outputs. This gain is applied after (post) the input processing mode.

TIP: For a comprehensive M/S decoder solution, simply chain two Stereo Fixer plug-ins together. Use the first unit to control the Side signal level, thus controlling the width of the second unit (set to M/S).

Stereo Width

An enhancement plug-in that increases or reduces the spread of a stereo signal in order to widen or reduce the separation between channels. If this plug-in is added to a Mono channel, it will be disabled, as there is no stereo width to either distribute or control.

A graph shows the currently selected width of stereo distribution as a purple arc, while inside of that graph a stereo meter shows the Left and Right distribution of the audio signal. Two audio meters measure levels, an Input meter to the left, and an Output meter to the right.



The Stereo Width FairlightFX in action

Stereo Width has the following controls:

- **Width:** Lets you control the spread of the stereo output. Settings range from 0 (Mono) to 1 (Stereo) to 2 (extra wide stereo).
- **Diffusion:** Adds more complexity to the output.
- **Sparkle:** Adds more high frequencies to the spread.

Vocal Channel

An enhancement plug-in for general purpose vocal processing consisting of High Pass filtering, EQ, and Compressor controls.

Side by side EQ and Dynamics graphs are presented above the controls. An output audio meter lets you monitor the final signal being produced by this plug-in.



The Vocal Channel FairlightFX

Vocal Channel has the following controls:

- **High Pass:** Enabled by a toggle, off by default. Has a single frequency knob that sets the threshold below which frequencies are attenuated to reduce boominess or rumble.
- **EQ:** A three-band EQ for fine tuning the various frequencies of speech, enabled by a toggle, including Low, Mid, and High Mode, Frequency, and Gain controls
 - **Low/Mid/Hi Mode:** Lets you choose from different filtering options to use for isolating a range of frequencies to adjust. Different bands present different options.
 - **Low/Mid/Hi Freq (Hz):** Lets you choose the center frequency to adjust.
 - **Low/Mid/Hi Gain (dB):** Lets you boost or attenuate the selected frequencies.
- **Compressor:**
 - **Thres (dB):** Sets the signal level below which compression occurs. Defaults to -25dB. The range is from -40 to 0dB.
 - **Reaction:** Adjusts how quickly compression is applied when a signal exceeds the threshold. The default is 0.10.
 - **Ratio:** Adjusts the compression ratio. This sets the gain reduction ratio (input to output) applied to signals which rise above the threshold level. The default is 1.5:1. The range is 1.1 to 7.0.
 - **Gain (dB):** Lets you adjust the output gain to compensate for signal lost during compression, if necessary.

Chapter 134

Audio Meters and Audio Monitoring

The Meters panel, which appears at the top of the Fairlight page when it's enabled, provides a visual reference of the levels of each track in your mix, along with specialized meters showing the buses, monitoring mix, loudness, and a Viewer for seeing the video of the current project as you work. This chapter describes the use of these meters, and provides information about the different options that are available.

Contents

The Monitoring Panel	2582
Track Meters and Monitoring Controls	2582
Using Post Fader or Track Source Meters	2583
Bus Meters	2584
Compound Meters and Output Bus Selection Menu	2584
Monitoring Menus	2584
Control Room Meters	2585
Loudness Meters	2585
Viewer	2587

The Monitoring Panel

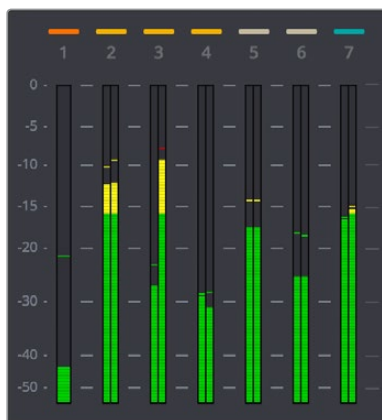
Turning on the meters in the UI toolbar displays the Monitoring panel that runs along the top of the Fairlight page, which shows all of the audio meters that correspond to the tracks in the Timeline, as well as the Bus meters that correspond to the Mains, Subs, and Aux buses of your mix, the Control Room meters, and a video viewer.



The Monitoring panel

Track Meters and Monitoring Controls

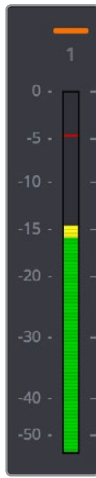
At left, a row of audio meters corresponds to the channel strips of the Mixer, one meter for every audio track in the timeline. Each track displays the number of meters that corresponds to that track's audio mapping, with mono tracks having a single audio meter, stereo tracks having two, 5.1 tracks having six, and so on.



Track audio meters with different numbers of meters depending on that track's audio mapping

Each track and bus meter (with the exception of the Loudness meters) display RMS (root mean square) levels against a dB scale. A single line indicating the maximum value at any given moment in time is held briefly just above the current RMS levels, which appear as a solid bar extending from the bottom of the meter. RMS meters display a weighted “average” representation of the audio level that's closer to the way audio is actually perceived, although not as accurate as the loudness meters discussed later in this section.

Each meter bar is color coded to indicate two different thresholds of sound level, from low (green) to high (yellow) to very high (red).



The peak meter at top

Each meter is identified by the track number it represents (track names are not shown over track meters) as well as the color of that track.

Using Post Fader or Track Source Meters

The Track Meters setting in the General Options of the Project Settings lets you choose how meters in the Fairlight page display their audio analysis. There are two options:

- **Post Fader:** Meters always display the level of each clip's signal after whatever fader adjustments have taken place. Fading a track's level down diminishes the visible level of that audio signal in the meter. This setting is good if you prefer a visual indication of the relative levels you've set your various audio tracks to, which is a very NLE-oriented behavior.
- **Track Source:** Meters always use the volume levels of the audio clips in that track, even if you've lowered the level using the sliders. If you've keyframed a clip's volume, that change will be reflected by the audio meters, even though fader changes are not. Viewing meters this way means you can always see how much level is available to clips in your mix regardless of what the current fader levels are set to, in the event you want to keep track of audio you want to bring back into the mix later on. This is a very DAW-oriented behavior.

Bus Meters

To the right of the track meters are the bus meters, in which all Mains, Subs, and Aux buses appear, separated by type, and each displaying the number of meters that corresponds to that track's audio mapping. This way you can see the sum of all tracks that have been routed to a particular bus.



Bus meters for the Mains, Subs, and Aux buses

Compound Meters and Output Bus Selection Menu

The compound meters, to the right of the bus meters, consist of Control Room meters and Loudness meters, shown side-by-side to provide a comprehensive analysis of your overall audio mix. Below, pop-up menus let you choose which bus you want to monitor, as well as which set of speakers you want to use to do the monitoring.

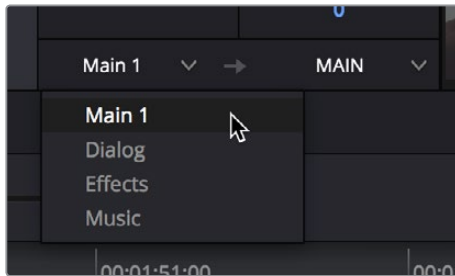


The Control Room meters (at left), and Loudness meters (at right)

Monitoring Menus

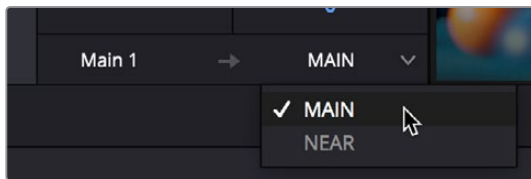
The monitoring menus determine which bus gets analyzed by the compound meters. When the compound meters are displayed, the Monitoring pop-up menu that otherwise appears to the left of the monitoring controls in the Transport toolbar instead moves to a position underneath the Loudness meters.

This pop-up menu lets you choose which bus you want to monitor as you work. You can choose one of your mains, or you can choose a Sub or an Aux that you want to focus on for more detailed work.



The monitoring menu lets you choose which bus you want to monitor while working

The next pop-up menu to the right lets you choose one of the available sets of speakers once you've configured them in the Video and Audio I/O panel of the System Preferences. This gives you the flexibility to quickly listen to your mix on a variety of speakers and configurations to see how it holds up in different situations. For more information on configuring different speaker setups, see Chapter 3, "System and User Preferences."



The monitoring menu lets you choose which bus you want to monitor while working

Control Room Meters

The mustard-colored Control Room audio meters show the sum of all audio channels that are routed to the currently selected bus being monitored (as selected in the pop-up menu below). These are peak meters measured in dBFS.

Loudness Meters

The set of meters all the way to the right are the Loudness meters, which consist of a set of two graphical meters and a numerical readout. These meters let you analyze the "integrated loudness" of the overall mix, which is the standard to which all contemporary mixing specifications refer when describing the deliverables you're expected to provide to the client. Unlike the RMS audio meters found in the Timeline or mixer which measure audio in dB, loudness meters do a different kind of analysis, measured in LU (loudness units).

What Is LU?

A value of 1 LU (loudness unit) represents the smallest difference in audio levels that humans can actually perceive. Human hearing naturally sums all channels that reach the ear, so the summed channel meter to the right in the compound meters is an analysis of the loudness you actually hear.

Loudness Meter Options

Two options in the General Options of the Project Settings let you customize the Loudness meters.

- **Target Loudness level:** Lets you set the LUFS value that's used as a reference level for loudness metering. Defaults to -23 LUFS, which conveniently makes the display of these meters scale similarly to traditional audio meters that you're already used to.
- **Loudness Scale:** Lets you choose which scale you want to use with which to measure the meters. Options currently include the default of EBU +9 Scale (-18 to $+9$), and EBU +18 Scale (-36 to $+18$).

Graphical Loudness Meters

Two separate meters give you a dynamic graphical measurement of the Loudness of the selected bus being monitored according to the ITU-R BS.1770-3 and EBU R128 standards, which describe how to analyze the subjective loudness of a given audio mix for purposes of compliance with required quality control (QC) standards.

- A steel-blue meter labeled M (for momentary) has as many channels as the selected bus you're monitoring, excluding the LFE channel(s) of surround formats, which aren't factored into loudness metering. This meter measures LEQ (equivalent sound level), within a 400ms window following the playhead as measured every 100ms. This lets you evaluate the LUFS (Loudness Units Full Scale) level of the mix at the current frame as you play. This discrete-channel analysis is used to calculate all other values of the loudness metering system.
- A second steel-blue mono meter to the right displays the sum of all channels in the M meter, displayed in LU (loudness units). The numeric value displayed at the top of this meter is the maximum LU value that's been analyzed during any stretch of timeline playback. This value is held until it's reset, either by stopping and initiating playback a second time while Link to Playhead is enabled, or when you click the Reset button at the bottom of the loudness meter area.

Numeric Loudness Meters

A set of values to the right of the meters give running reports on the audio level of your mix. While the graphical meters are useful for analyzing your mix as you work, these numeric readouts are particularly valuable for providing the strict information you need to adhere to written QC standards. Their meaning is as follows:

- **Short:** Measures the average LU level over a 30-second window following the playhead.
- **Short Max:** Shows the maximum level over the same 30-second window. This analysis is required by EBU R128.
- **Range:** Measures the dynamic range of the Loudness of your mix (in LU), which is the difference between the average soft and average loud parts of your mix. Analyzes the overall loudness over a played range of the mix, discounts the lowest 10% and highest 5%, and then gives a standardized expression of the difference between the remaining soft and loud levels that were analyzed. The window of analysis is as long as you've been playing. This analysis is required by most QC specifications.
- **Integrated:** Measures the LUFS value of the portion of the range of the mix you've played through. As you play, this integrated value accumulates. This analysis is required by most QC specifications.

Using the Loudness Meters

When using the Loudness meters to do a structured analysis of your mix to determine QC adherence, a group of controls let you determine when analysis begins and ends.

- **Lock Metering to Transport:** This setting is found in the compound meter option menu. When enabled, all loudness metering analysis is automatically reset whenever you move the playhead to another location in the Timeline. This is useful when you're spot-checking different parts of your mix, or working on a particular scene.
- **Pause and Reset buttons:** When you're doing a formal analysis of your mix, the Reset button lets you reset all currently accumulated analyses, and the Start button initiates loudness value accumulation. If you need to stop playback briefly to do something else, you can click Pause, and then click Resume when you're ready to continue the analysis.

Viewer

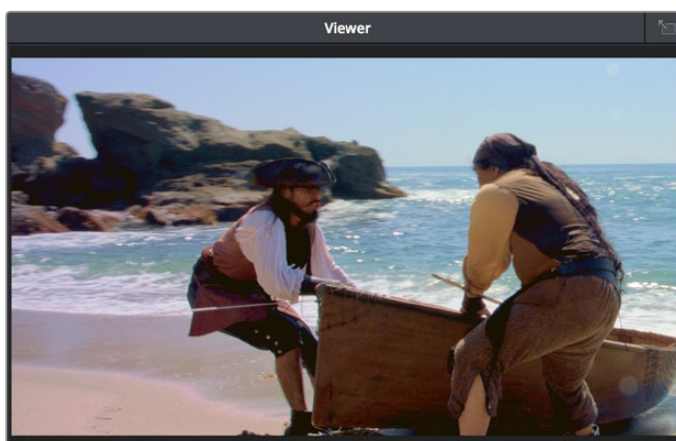
A small viewer to the left of the Monitoring panel shows the frame of video at the position of the playhead. This is the same image that's output to the external broadcast display of your workstation if you have one connected.



The Viewer lets you see the picture you're mixing to

Clicking the Expand Viewer button at the bottom right-hand corner lets you open the Viewer into a floating window, which you can then position anywhere you want.

To close the floating Viewer, click the Dock Viewer button at the upper right-hand corner of the floating viewer window.



Click the button at the upper right-hand corner to dock the Viewer again

Chapter 135

Signal Flow Diagrams

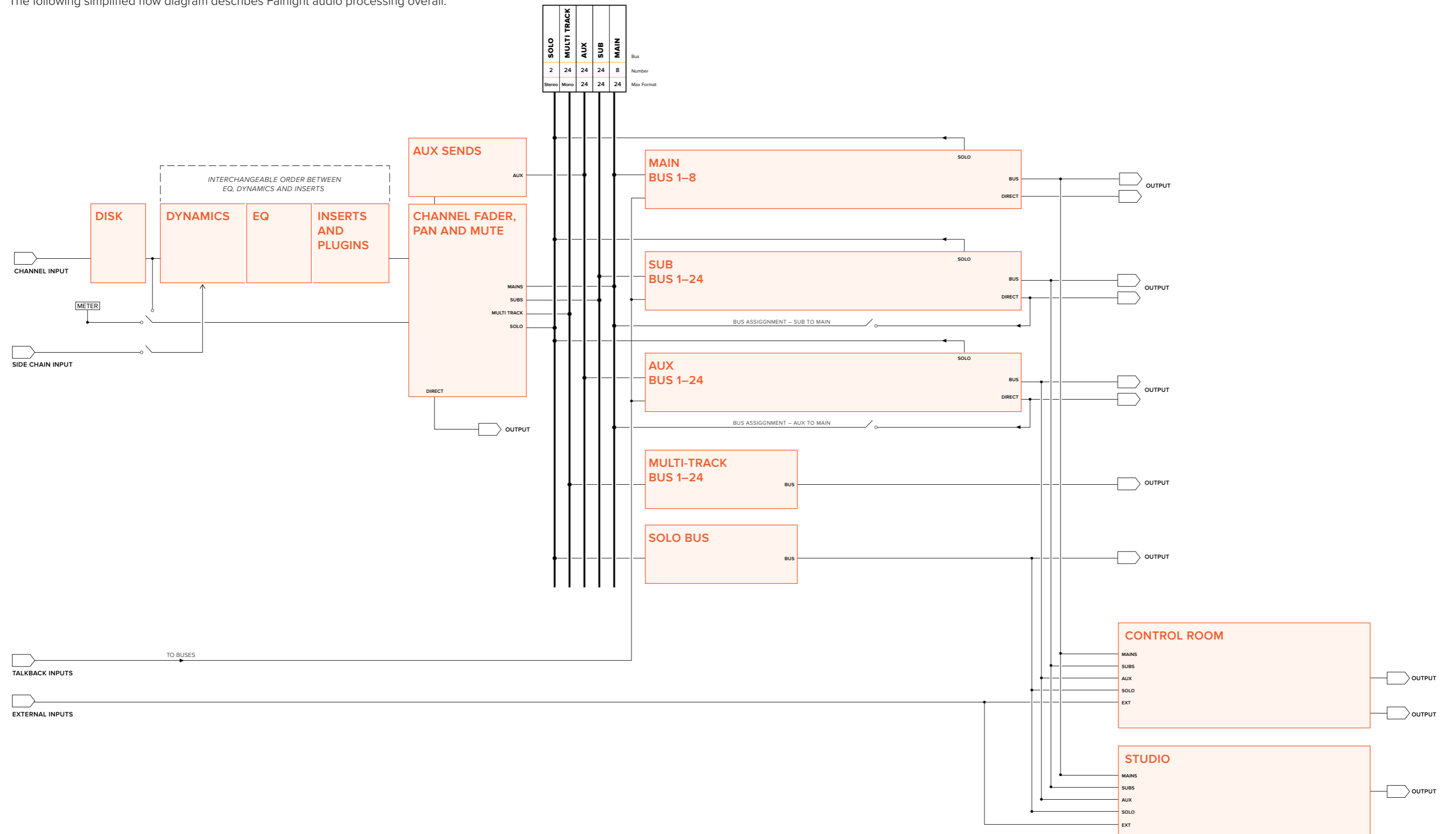
The diagrams in this chapter describe the audio signal flow that takes place within the Fairlight audio processing used by DaVinci Resolve. They're intended for people who want an in-depth understanding of how audio is processed.

Contents

Signal Flow Overview	2590
Audio Processing Path	2591

Signal Flow Overview

The following simplified flow diagram describes Fairlight audio processing overall.



Audio Processing Path

