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Manual

Nero WaveEditor

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1 Start Successfully

1.1 About the manual

This manual is intended for all users who want to learn how to use Nero WaveEditor. It is process-based and explains how to achieve a specific objective on a step-by-step basis.

In order to make best use of this documentation, please note the following conventions:

	Indicates warnings, preconditions or instructions that have to be precisely followed.
	Indicates additional information or advice.
1. Start …	A number at the beginning of a line indicates a request for action. Carry out these actions in the order specified.
→	Indicates an intermediate result.
→	Indicates a result.
OK	Indicates text passages or buttons that appear in the program interface. They are displayed in bold print.
(see...)	Indicates references to other chapters. They are executed as links and are shown in red and underlined.
[…]	Indicates key combinations for entering commands.

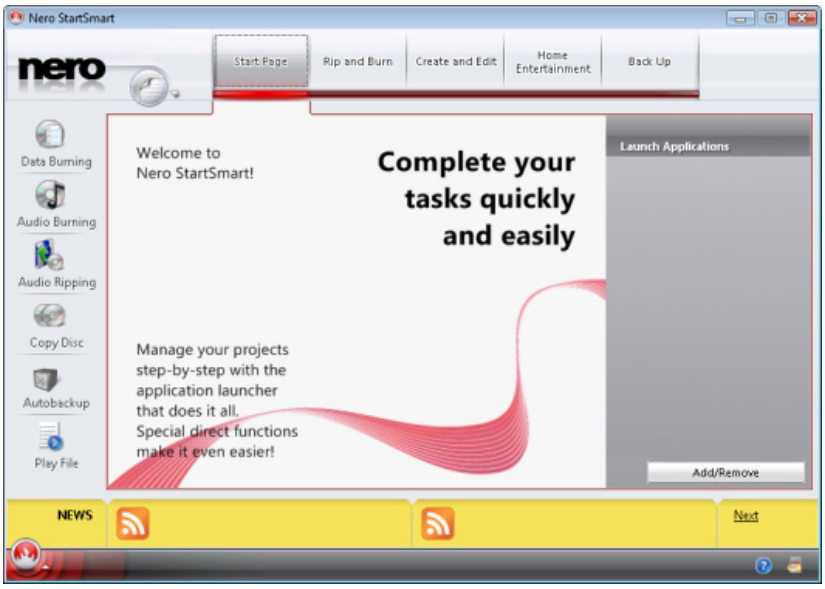
1.2 About Nero WaveEditor

Nero WaveEditor allows you to record pieces of music, edit the corresponding audio files using various filters and sound enhancement methods, for example, and then burn them using Nero Burning ROM or Nero Express.
With Nero WaveEditor, you edit the audio files non-destructively in real time. Thanks to an internal reference-based audio format, the editing history is also saved so that changes can also be undone. Various effects (e.g. chorus, delay, flanger, reverb), numerous tools (e.g. stereo processor, equalizer, noise gate), sophisticated improvement algorithms (band extrapolation, noise suppression, declicker) as well as various filters and tools within Nero - WaveEditor assist you in editing your files.

2 Launching the program

To start Nero WaveEditor via Nero StartSmart, proceed as follows:

1. Click the **StartSmart** icon.
   → The Nero StartSmart window opens.
2. Click the  button.
   → The list of Nero applications appears.



Nero StartSmart window

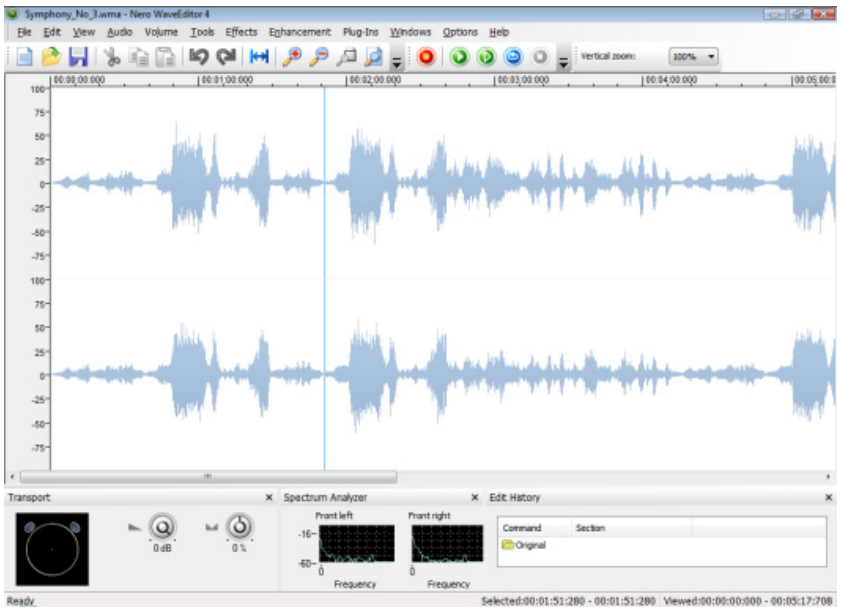
3. Select the **Nero WaveEditor** entry in the selection list.
4. The **Nero WaveEditor** window opens.
   → You have launched Nero WaveEditor via Nero StartSmart.

3 User interface

3.1 Main Screen

The main screen is displayed when Nero WaveEditor is started. The main screen is divided into the following areas:

- Menu bar and toolbar
- File display
- Displays



Nero WaveEditor Main Screen

See also:

- Menu Bar→ 8
- Toolbar→ 9
- File Display→ 9
- Display Area→ 9

3.2 Menu Bar

The menu bar offers the following setting options:

Menu **File**	Opens the **File** menu, containing file functions such as open, save and close that you are already familiar with from Windows.
Menu **Edit**	Opens the **Edit** menu, containing editing functions for the files in the selection screen such as cut, copy and delete that you are already familiar with from Windows. You can also change the audio file in different ways, insert files and track splits and activate automatic pause detection.
Menu **View**	Opens the **View** menu with the option to customize the menu bar and toolbar, and enlarge and reduce the project view. You can also change the view of the audio file, show and hide windows and display information about the loaded audio file.
Menu **Audio**	Opens the **Audio** menu with the option to record, play and stop audio files.
Menu **Volume**	Opens the **Volume** menu with the option of changing the volume of the opened audio file.
Menu **Tools**	Opens the **Tools** menu with the option to edit the opened audio file using a variety of tools.
Menu **Effects**	Opens the **Effects** menu with the option to edit the opened audio file using a variety of effects.
Menu **Enhancement**	Opens the **Enhancement** menu with the option to edit the sound of the opened audio file.
Menu **Plug-ins**	Opens the **Plug-ins** menu with the option to carry out settings for DirectX as well as for VST plug-ins.
Menu **Windows**	Opens the **Windows** menu, which allows all windows to be closed at once.
Menu **Settings**	Opens the **Settings** menu with the option to configure the program.
Menu **Help**	Opens the **Help** menu with the option to call up the help file or to view information about Nero WaveEditor.

See also:

Configuration→ 11

3.3 Toolbar

The toolbar offers the following configuration options:

	Creates an audio file.
	Opens an existing audio file.
	Saves the audio file.
	Cuts out the selected section and saves it to the clipboard.
	Copies the selected section and saves it to the clipboard.
	Pastes the contents of the clipboard at the selected point.
	Undoes the last action.
	Restores the last action that you have undone.
	Selects the entire audio file.
	Zooms into the audio file.
	Zooms out from the audio file.
	Zooms into the audio file so that the selected section is displayed in a manner that fills the screen.
	Zooms out from the audio file so that the whole file can be seen.

3.4 File Display

The opened file is displayed in the file display as a peak file with the wave display as standard. It is also possible to change the display to spectrogram display or wavelet display.

3.5 Display Area

In the **Display** area, various windows can be displayed with the **View** menu.

The following setting options are available:

Entry **Level Meters**	Opens the **Transport** window, the left half of which visualizes the room sound. You can also reproduce the audio file in the right half of the window, also changing the volume and the use of the speakers.
Entry **Spectrum Analyzer**	Opens the **Spectrum Analyzer** window in which the frequencies of the audio file are displayed graphically during playback.
Entry **Edit History**	Opens the **Edit History** window which lists all the editing steps of the audio file. You can also return to any edit phase here and restore the original state of the audio file.

Entry **Status Bar**	Displays the **Status Bar** which shows the duration of selected audio sections and the whole audio file at the bottom of the screen.

3.6 Showing a display window or toolbar

To show a display window or toolbar, proceed as follows:

1. Click **View** menu > required display window or toolbar.
   ➔ The display windows appear at the bottom of the main screen. You can move and change the size of the display window as desired.
   The toolbars are displayed below the menu bar. The mouse can be used to move the toolbars.

4 Configuration

You can configure Nero WaveEditor to suit your needs. The following adjustable areas are available for this
purpose:

- Device Settings
- Editor Options
- Audio Format Settings

See also:

Device Settings→ 11
Editor Options→ 12
Audio Format Settings → 15

4.1 Device Settings

In the device settings of Nero WaveEditor, it is possible to make determine specifications for the audio input and output.
You reach this window via **Options** > **Device Settings** in the menu bar.

The following settings can be made in the **Device Settings** window:

Drop-down menu **Input Device**	Specifies the audio device for the audio input (e.g. a microphone).
Drop-down menu **Output Device**	Specifies the audio device for the audio output (e.g. speakers).

4.2 Editor Options

The editor options are customized in the **Editor Options** window.
You reach this window via **Options** > **Editor Options** in the menu bar.

4.2.1 View tab

The **View** tab offers the following setting options:

Check box **Show axis to the left of the audio visualization**	Displays a percentage axis to the left of the peak file of the audio file. The percentage axis shows the alignment of the frequency in the positive as well as the negative percentage area.
Check box **Show time rules above the audio visualization**	Displays a time axis above the peak file of the audio file. The time axis shows the duration of the audio file in hours, minutes, seconds and milliseconds.
Check box **Trace playback position while playing**	Uses a red line to show the position of the playback in the audio file.
Check box **Use green on black color set**	Displays the peak file in green and the background in black. The default is for the peak file to be shown in blue and the background in white.

4.2.2 Folders tab

The **Folders** tab offers the following setting options:

Input field **Temporary folder**	Defines the folder in which temporary files are stored. The folder should be located on a drive with plenty of storage space.
Input field **Peak File Directory**	Specifies the folder where peak files are stored. Peak files are cache files that are used to open audio files more quickly. The folder should be located on a drive with plenty of storage space.
Check box **Always recreate peak files**	Always creates a new peak file when an audio file is opened. Otherwise, the peak files are stored temporarily in a directory and are called up again there.
Input field **My Music Directory**	Specifies the default folder where files are stored.
Check box **Always start file open dialog in My Music folder**	When calling the **Open** dialog box, the system will always first show the folder that is specified in the **My Music folder** input field.
	Opens a dialog box where the folder can be selected for the respective files.

4.2.3 Save/Output Settings Tab

The **Save/Output Settings** tab offers the following configuration options:

5	Overlays sound errors that arise when converting to a lower bit depth with a white noise that is hardly noticed by human hearing. If there is no dithering, clearly audible interference can be heard when converting to lower bit depths.
Drop-down menu **Noise shaping filter**	Specifies the type of noise shaping. **IIR filter (2nd order)**: Infinite Duration Impulse Response. Uses IIR filters. IIR filters can provide an infinitely long and continuous impulse response. IIR filters usually achieve a better subjective audio quality than do FIR filters, however they have higher levels of interference energy outside of the audible range. Second order means that sound is attenuated by 12 dB. **FIR filter (3 taps):** Finite Impulse Response filter. Uses FIR filters. FIR filters possess a pulse response with guaranteed finite length. This entry is selected by default.
Check box **Restore wave output volume when closing Nero WaveEditor**	Restores the volume of the audio file when Nero WaveEditor is closed.
Drop-down menu **Bit depth during playback**	Specifies the bit depth during the playback of the loaded audio file.
Drop-down menu **Play surround audio as**	Specifies how surround audio is played back. **Multichannel audio**: Plays back surround audio with all channels. **Stereo using Nero HeadPhone (virtual surround)**: Plays back surround audio converted as stereo, with a virtual surround effect generated for headphones. **Stereo with Nero VirtualSpeakers (virtual surround)**: Plays surround audio converted as stereo, whereby a virtual sound effect is generated for speakers.

4.2.4 VST Plug-Ins tab

The **VST Plug-Ins** tab offers the following setting possibilities:

Display area **Installed VST Plug-ins**	Shows the currently installed VST plug-ins.
Button **Delete**	Deletes the selected VST plug-in
Button **Add Plug-in**	Opens the **Open** dialog box. Installs a new VST plug-in
Button **Scan folder**	Opens the **Open** dialog box. Searches for new VST plug-ins in the specified folder.

4.2.5 DirectX Plug-ins tab

The **DirectX Plug-ins** tabThe following settings can be made:

Display area **Installed DirectX Plug-ins**	Shows the currently installed DirectX plug-ins
Button **Disable Plug-in**	Disables the marked DirectX Plug-in
Button **Scan DirectX Plug-ins**	Carries out an intensive search for DirectX Plug-ins.

4.3 Audio Format Settings

In the audio format settings from Nero WaveEditor it is possible to undertake various definitions for decoder, encoder and converters on different tabs.
You reach this window via the menu **Options** > **Audio Format Settings** in the menu bar.

4.3.1 Decoder tab

On the **Decoder** tabThe following settings can be made:

Button **Configure**	Opens a dialog box where additional settings can be made for the selected decoder. This button is not available for all decoders.
Button **Info**	Opens the **About** dialog box where information about the selected encoder is displayed. This button is not available for all decoders.
Button **Move Up**	Moves the decoder up one entry.
Button **Move Down**	Moves the decoder down one entry.
Button **Artist/Title Information Source**	Opens the **Fetch Artist / Title Information** dialog box where you can specify the source from which information relative to artist and title will be read.

4.3.2 Encoder tab

The **Encoder** tabThe following settings can be made:

Button **Configure**	Opens a dialog box where additional settings can be made for the selected encoder. This button is not available for all encoders.
Button **Info**	Opens the **About** dialog box where you can view information about the selected encoder. This button is not available for all encoders.
Button **Artist/Title Information Source**	Opens the **Get Artist / Title Information** dialog box where you can specify the source from which information about artist and title will be read.

4.3.3 Converter tab

The **Converter** tabThe following settings can be made:

Button **Configure**	Opens a dialog box where you can make additional settings for the selected converter. This button is not available for all converters.
Button **Info**	Opens the **About** dialog box where you can view information about the selected converter. This button is not available for all converters.
Button **Artist/Title Information Source**	Opens the **Get Artist / Title Information** dialog box where you can specify the source from which information about artist and title will be read.

5 Audio files

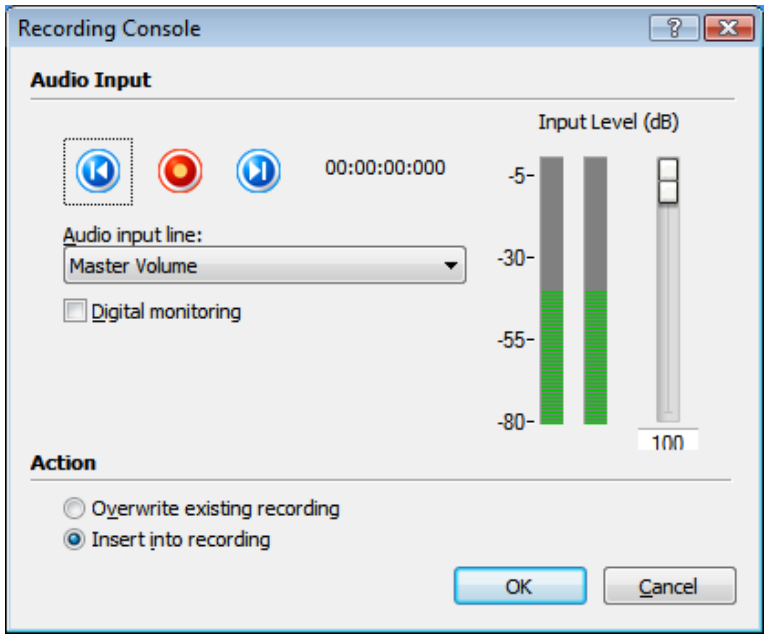
5.1 Play Audio File

To play an audio file, proceed as follows:

1. Select **File** > **Open** from the menu.
   → The **Open** window appears.
2. Select the audio file you want to open in the file system and click the **Open** button.
   → The two channels of the audio file are presented as peak file.
3. To play back the complete audio file, click the **Audio** > **Play All** menu.
4. If you have marked a section of the audio file and only want to play this section, click the **Audio** > **Play Section** menu.
5. If you want to play back the file without interruption, click the **Audio** > **Play Looped** menu.
6. To stop playback, click the **Audio** > **Stop** menu.
   → You have played back an audio file.

5.2 Recording Console Window

You can use Nero WaveEditor to connect many types of playback devices to the computer and to record the medium played there.



Recording Console

The following setting options are available in the **Audio Input** area of the **Recording Console** window:

	Returns to the start of the recording so that it can be overwritten.
	Record an audio file.
	Pauses recording. Only available while recording.
	Goes to the end of the recording so that recording can be resumed there.
Drop-down menu **Audio input line**	Specifies the audio input.
Check box **Digital monitoring**	Activates the **Input level** slider.
Slider **Input Level**	Specifies the volume of the recording. The volume of the recording should be in the yellow area.

The following setting options are available in the **Action** area:

Option button **Overwrite existing recording**	Overwrites the existing recording or audio file which is open in Nero WaveEditor.
Option button **Insert into recording**	Inserts the recording into the audio file at the point where the marker is located.

5.3 Record audio file

To record an audio file proceed as follows:

1. Click the **Audio** > **Record** menu.
   → The **Recording Console** window opens.
2. Make the desired recording settings.
3. Click the  button to make a recording.
4. Click the  button to interrupt the recording.
5. Click the **OK** button if you want to insert the recording into the file display.
   → You have recorded an audio file.

5.4 Edit Audio File

To edit an audio file, proceed as follows:

1. If you want to play back the highlighted part of the audio file in reverse, click the **Edit** > **Reverse** menu.
2. To insert a test signal into the audio file, click the **Edit** > **Insert Test Signal** menu (see Insert a Test Signal in an audio file→ 23).
3. To convert the sample format, click the **Edit** > **Convert Sample Format** menu (see Converting Sample Format→ 22).
4. If you want silences in a song to be detected automatically so as to be able to skip these when playing the audio file, click the **Edit** > **Pause Detection** menu (see Implement Pause Detection→ 22).
5. If you want to insert a track split in the audio file to be able to skip directly to this point, click the **Edit** > **Insert Track Split** menu.
6. If you want to save a single track produced by inserting track splits as a file:
   1. Click the **Edit** > **Save Tracks as Files** menu.
      → The **Save Tracks as Separate Files** window appears.
   2. Select the track you want to save, name it and select the required file format.
   3. Click the **OK** button.
7. If you want to hide the volume of the marked section of the audio file, click **Volume** > **Fade Out** > required hide method menu.
   → The change in volume in the marked section is displayed graphically in the file display.
8. If you want to fade in the volume of the marked section of the audio file, click **Volume** > **Fade In** > required show method menu.
   → The change in volume in the marked section is displayed graphically in the file display.
9. If you want to normalize the frequencies of the marked part of the audio file to a particular dB value:
   1. Click the **Volume** > **Normalize** menu.
      → The **Normalize** window appears.
   2. Move the **Normalize to** slider to the required position. The set dB value is displayed in the display panel.
   3. Click the **OK** button.
10. If you want to raise or lower the volume of the marked section of the audio file:
    1. Click the **Volume** > **Volume Change** menu.
       → The **Volume Change** window appears.
    2. Move the **Volume Change** slider to the required position. The set dB value is displayed in the display panel.

       Raising the volume raises all frequencies of the audio file by the specified dB value. Lowering the volume reduces all frequencies by the specified dB value.
    3. Click the **OK** button.

11. If you want to mute the marked section of the audio file, click the **Volume** > **Mute** menu.
    → The change in volume in the marked section is displayed graphically in the file display.
12. If you want to change the marked section of the audio file with a tool, click the **Tool** menu (see Tools).
13. If you want to change the marked section of the audio file with an effect, click the **Effect** menu (see Effects).
14. If you want to change the marked section of the audio file with an enhancement, click the **Enhancement** menu (see Enhancement).
    → You have edited the audio file.

See also:

- Convert Sample Format→ 22
- Sample Format Settings window→ 21
- Pause Detection Window→ 22
- Fade out and Fade in Methods→ 20
- Implement Pause Detection→ 22
- Insert a Test Signal in an Audio File→ 23

5.4.1 Fade out and Fade in Methods

The following setting options are available in the **Volume < Fade Out** menu.

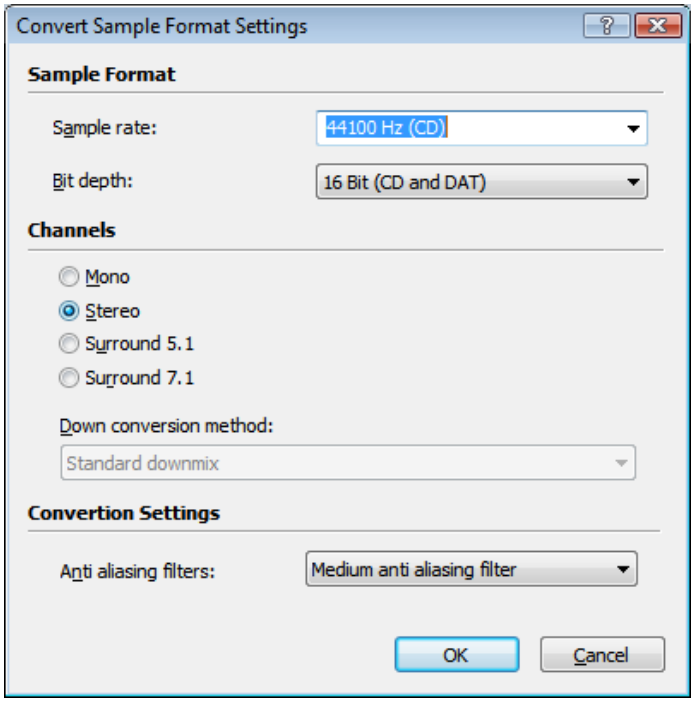
	Fade out **Sinusoidal**
	Fade out **Exponential**
	Fade out **Linear**
	Fade out **Logarithmic**

The following setting options are available in the **Volume < Fade In** menu.

	Fade in **Sinusoidal**
	Fade in **Exponential**
	Fade in **Linear**
	Fade in **Logarithmic**

5.4.2 Sample Format Settings window

The **Edit** menu allows you to convert the sample format.



Sample Format Settings

In the **Convert Sample Format Settings** window the **Sample Format** area offers the following setting options:

Drop-down menu **Sample rate**	Provides different sample rates for selection. The default rate is **44100**.
Drop-down menu **Bit depth**	Provides different bit depths for selection. The default setting is **16-bit (CD and DAT)**.

The following setting options are available in the **Channels** area:

Option buttons **Channels**	Provides different output types for selection. With the selection of Surround 5.1 and 7.1 you have the option of creating a surround audio file with five or seven channels
Drop-down menu **Down conversion method**	Converts a Surround audio file into a normal stereo audio file, a stereo audio file with artificial surround sound for headphones or a stereo audio file with artificial surround sound for speakers. Only available with surround audio files.

The following configuration options are available in the **Conversion Settings** area:

Drop-down menu **Anti-Aliasing Filter**	This provides different kinds of anti-aliasing filters.

5.4.3 Convert Sample Format

To convert the sample format, proceed as follows:

1. Click the **Edit** > **Convert Sample Format** menu.
   → The **Convert Sample Format Settings** window appears.
2. Define the required settings in the **Convert Sample Format Settings** window.
3. Click the **OK** button.
   → You have converted the sample format.

5.4.4 Pause Detection Window

The **Edit** menu allows you to implement automatic pause detection for the audio file.

The following setting options are available in the **Pause Detection** window:

Area **Action**	Provides different options for selection. You can insert track splits at the detected pauses, delete the detected pauses or delete the detected pauses and replace them with track splits.

The following setting options are available in the **Detection Settings** area:

Input field **Minimum pause length**	Defines the minimum length of a pause in the audio file if it is to be detected automatically. The number is specified in seconds.
Input field **Minimum song length**	Defines the minimum length of a song if it is to be recognized as a whole song. The number is specified in seconds.
Slider **Threshold**	Defines the threshold for the volume below which the tracks of the audio file are detected as pauses.

5.4.5 Implement Pause Detection

To implement automatic pause detection, proceed as follows:

1. Click the **Edit** > **Pause Detection** menu.
   → The **Pause Detection** menu appears.
2. Define the required settings in the **Pause Detection** window.
3. Click the **OK** button.
   → You have now implemented automatic silence detection.

5.4.6 Test Tone Generator Window

The **Test Tone Generator** window allows you to insert a test signal in the audio file.

The **General Settings** area of the **Test Tone Generator** window offers you the following setting options:

Input field **Duration**	Specifies the duration of the test signal in seconds.
Slider **Amplitude**	Specifies the amplitude of the test signal both for sound and noise.
Option button **Tones**	Defines that the test signal is reproduced as a tone. Also activates the area containing the setting options for the wave form, start frequency and end frequency of the test signal.
Drop-down menu **Wave form**	Specifies the wave form that the test signal should have.
Input field **Start frequency**	Specifies the start frequency of the test signal.
Input field **End frequency**	Specifies the end frequency of the test signal.
Option button **Noise**	Defines that the test signal is reproduced as a noise. Also activates the area that defines the type of noise.
Drop-down menu **Color**	Specifies the type of noise. **White** is a loud noise, **Pink** a medium noise and **Brown** a quiet noise.

5.4.7 Insert a Test Signal in an Audio File

To insert a test signal into an audio file, proceed as follows:

1. Click the **Edit** > **Insert Test Signal** menu.
   → The **Test Signal Generator** window appears.
2. Make the required settings for the test signal to be inserted.
3. Click the **OK** button.
4. Now define the range of the test signal by moving the arrows at the bottom of the file display.
5. To fade out an audio file before the test signal, move the blue-green arrows at the start of the test signal at the top of the file display from left to right.
6. To fade in an audio file after the test signal, move the blue-green arrows at the end of the test signal at the top of the file display from left to right.
   → You have inserted a test signal in the audio file.

6 Filters

You can change the sound of an audio file in a variety of ways. The following menus are available for this purpose:

- Tools
- Effects
- Enhancement

In all windows, the following configuration options are available:

	Plays the audio file changed by the filter.
	Stops playing.
Active Channels	Provides the active channels for selection. You can switch the channels on and off separately.
Bypass	Retains the change by the filter for the duration of the activation. This enables you to listen to the unedited file and the edited version alternately.
Process Offline	Processes the change to the audio file offline. This enables the changed file to be played back with a weaker processor without jerking.
	Provides both predefined and personally produced profiles for selection.
	Creates a new profile with the current settings.
	Removes the selected profile.

6.1 Toolbox

6.1.1 Deesser Tool

The **Deesser** tool is used to filter out unpleasant hissing sounds (sibilants) from recorded speech and song.

The following configuration options are available in the **Deesser** area:

Slider **Threshold**	Specifies the level after which hiss is to be suppressed as a dB value. If this value is very low, even very quiet hiss is suppressed.
Slider **Attenuation**	Specifies the extent to which hiss is to be damped if it is not filtered out completely.

The following setting options are available in the **Response Time** area:

Slider **Attack Time**	Specifies how long the hiss has to be in order to be detected.
Slider **Release Time**	Specifies for how long the hiss is to be filtered.

6.1.2 Dynamic Processor Tool

You can use the **Dynamic Processor** tool to adjust the ratio between the input and output volume. This makes it possible, for example, to emphasize quiet noises, thereby lending more dynamism to the audio file.

The following setting options are available:

Graph **Characteristics**	Shows the ratio of input volume to output volume. In this case, the y-axis is the output and the x-axis the input.
Slider **Attack Time**	Specifies the time it takes before the full effect is heard.
Slider **Release Time**	Specifies the time it takes before the effect is no longer heard.
Check box **Movie**	Processes all surround channels for the same parts. This can only be activated when a Surround audio file is being processed.

6.1.3 Equalizer Tool

The **Equalizer** tool allows you to emphasize certain frequencies, specifying the amplitude and bandwidth.

The following setting options are available:

Graph **Frequency Response Graph**	Shows the frequency response. The y-axis represents the amplitude and the x-axis the frequency.
Drop-down menu **Filters**	Selects the filters. The numbers in the **Filters** drop-down menu represent the squares in the **Frequency Response Graph** from left to right.
Slider **Center Frequencies**	Indicates the distribution of the handles on the x-axis. You can enter the values (in Hz) of the center frequencies in the fields.
Slider **Bandwidth**	Indicates whether the bandwidth of the center frequency rises and falls steeply or gently. You can set a value between 0.1 and 3 octaves with the jog dial.
Slider **Gain**	Specifies the amplification of the signal on the y-axis of the curve in the diagram.

Check box **Low Shelf**	Increases or decreases low frequencies.
Slider **Cut Off**	Allows the filter to start after a certain frequency.
Slider **Gain**	Specifies the degree of increase or decrease.
Check box **High Shelf**	Increases or decreases high frequencies.
Slider **Cut Off**	Allows the filter to start after a certain frequency.
Gain	Specifies the degree of increase or decrease.

6.1.4 Karaoke Filter Tool

The **Karaoke Filter** tool filters frequencies from the audio file that are the same on both channels of a stereo file. On older recordings, this is usually the voice. However, if the voice is not distributed evenly on both channels, you can perform some fine tuning.

The following setting options are available:

Slider **Vocal Pan**	Specifies the channel and intensity with which the voice is to be filtered.
Slider **Gain Compensation**	Increases the volume of the audio file, which had become quieter because the filter was applied.
Area **Vocal Frequency Band**	Specifies the frequency band of the voice.
Slider **Lower Frequency**	Specifies the lower frequency limit for the voice. This is typically a value of 100 Hz.
Slider **Upper Frequency**	Specifies the upper frequency limit for the voice. This is typically a value of 8000 Hz.

6.1.5 Noise Gate Tool

The **Noise Gate** tool suppresses quiet sections in the signal transmission. For example, it helps prevent noise. The noise gate belongs to the category of dynamic processors.

The following setting options are available:

Slider **Threshold**	Specifies the minimum dB value below which the audio file is to be muted. In other words, the gate is closed if the dB value is too low.
Slider **Attack Time**	Specifies the time required to reopen the gate in milliseconds after the threshold has been exceeded, i.e. to restore the sound of the audio file.
Slider **Release Time**	Specifies the time in milliseconds required to close the gate, i.e. to mute the audio file after the level has dropped below the threshold.
Area **Channel Mode**	If the **Linked** option button is enabled, the noise gate for both channels appears as soon as one or both of the two channels exceeds the threshold. If the **Independent** option button is enabled, the noise gate closes or opens both channels independently when the threshold is reached. Only relevant for audio files in stereo format.

6.1.6 Pitch Tuning Tool

The **Pitch Tuning** tool changes the pitch e.g. of the voice, for a short time, so that incorrectly sung tones can be corrected.

The following setting options are available:

Check box **Correction**	Corrects incorrect sounds.
Bar **Corrected**	Shows the level of correction on the basis of the movement of the green arrow in percent.
Slider **Reference**	Specifies the reference sound used for correction.
Slider **Binding**	Specifies for how long the sound is to be corrected. The lower the value, the shorter the correction period for an incorrect sound.
Drop-down menu **Scale**	Provides a variety of scales for selection. The most commonly used scale in Europe is Equally Tempered Chrome.
Check box **Vibrato**	Adds sound changes, both high and low. This causes the voice to "vibrate".

Slider **Frequency**	Indicates the frequency of the sound changes.
Slider **Depth**	Indicates the intensity of the sound change.

6.1.7 Stereo Processor Tool

The **Stereo Processor** tool allows you to manipulate the stereo sound.

The **Left Out** area specifies the output intensity of the left speaker:

Slider **Left In**	Specifies the intensity of the left input signal for the left speaker.
Slider **Right In**	Specifies the intensity of the right input signal for the left speaker.

The **Right Out** area specifies the output intensity of the right speaker:

Slider **Left In**	Specifies the intensity of the left input signal for the right speaker.
Slider **Right In**	Specifies the intensity of the right input signal for the left speaker.

Stereo Settings area:

Slider **Phase Offset**	Compensates for differences in run-time between the left and right channel.
Slider **Stereo Broadening**	Makes a mono recording sound like a stereo recording. This setting gives a stereo recording an even broader feeling.

6.1.8 Time Correction Tool

The **Time Correction** tool changes the playback speed, but not the pitch.

The following setting options are available in the **Timescale Modification Factor** area:

Check box **Percentage**	Changes the playback speed in percent. The change can either be set on the slider or entered in the input field.
Check box **Beats per Minute**	Changes the playback speed in beats per minute (BPM). The change can be entered in the input field.
Drop-down menu **Optimization**	Specifies the type of music of the audio file to be altered, so as to optimize speed changes for this file.

6.1.9 Transpose Tool

The **Transpose** tool changes the pitch. The length of the audio file can be changed or retained. It is possible to adjust the length of the audio file to the faster playback speed.

The following setting options are available:

Slider **Interval**	Changes the pitch in the audio file.
Slider **Fine-tune**	Permits fine tuning if retaining the original length causes distortion.
Check box **Maintain Original Length**	Retains the original length of the audio file.

6.2 Effects

6.2.1 Chorus Effect

The **Chorus** effect creates an echo effect, which when applied to a recorded voice, makes it sound like there is a choir singing in the background.

The following setting options are available in the **Modulation** area:

Slider **Depth**	Specifies the degree of the change in pitch.
Slider **Frequency**	Specifies the frequency of the change in pitch (oscillations).

The following setting options are available in the **Delay** area:

Slider **Delay**	Specifies the delay with which the copy is played in comparison with the original signal.

The following setting options are available in the **Filters** area:

Check box **Low Pass**	Activates a low pass filter.
Slider **Low Pass**	Reduces frequencies above the specified Hertz rate and allows low frequencies beneath the specified value to pass almost unfiltered.

The following setting options are available in the **Mix** area:

Slider **Effect**	Mixes the original signal with the copied signal, indicating the intensity of the copied signal.

Slider **Dry Signal**	Mixes the original signal with the copied signal, indicating the intensity of the original signal.

The following setting options are available in the **Chorus** area:

Button **Mono/Stereo**	Gives the processed part of the audio file a more "mono-like" or "stereo-like" sound respectively.

6.2.2 Convolution Reverb Effect

The **Convolution Reverb** effect transfers the convolution reverb conditions of a reference file and adjusts the audio file to the relevant reverb conditions.

The following setting options are available:

Button **Select Impulse Response**	Opens the source file for the impulse response from which the reverb effect for the audio file to be edited is generated.
Graph **Impulse Response Gain**	Displays the signal of the impulse response.
Graph **Gain**	Displays the frequency limit for the reverb. The y-axis of the curve specifies the gain of the reverb effect in the diagram, while the x-axis shows the frequency.
	Switches between a linear and logarithmic scale for the limiting frequency graphic.
Slider **Pre-Delay**	Specifies the length of time required by the sound to be deflected from an obstacle, thereby indicating the intensity of the echo.
Slider **Dry Signal**	Mixes the original signal with the copied signal, indicating the intensity of the original signal.
Slider **Effect**	Mixes the original signal with the copied signal, indicating the intensity of the copied signal.

6.2.3 Delay Effect

The **Delay** effect creates an echo using a copy of the original signal which is played back with a delay.

The following setting options are available in the **Delay** area:

Slider **Delay Time**	Specifies the delay in playing back the copied signal.
Slider **Feedback**	Specifies how many copies of the original signal are to be made.

The following setting options are available in the **Mix** area:

Slider **Dry Signal**	Mixes the original signal with the copied signal, indicating the intensity of the original signal.
Slider **Effect**	Mixes the original signal with the copied signal, indicating the intensity of the copied signal.

6.2.4 Distortion Effect

The **Distortion** effect is used for guitars. This means that a recording of acoustic guitar can be distorted to sound like an electric guitar.

The following setting options are available in the **Distortion** area:

Drop-down menu **Method**	Offers a variety of distortion options, e.g. an old megaphone.
Slider **Drive**	Indicates the intensity of the interference.
Slider **Hardness**	Specifies the hardness of the distortion. This can only be adjusted if the **Tube**, **Fuzz3** and **Variable clipping** entries have been selected in the **Method** drop-down menu.
Check box **Pre-Filtering**	Filters the original signal before it is distorted.
Slider **Lower Cutoff**	Specifies the lower limit of the frequency band for the original signal.
Slider **Upper Cutoff**	Specifies the upper limit of the frequency band for the original signal.
Post-Filtering	Filters the distorted signal.
Slider **Lower Cutoff**	Specifies the lower limit of the frequency band for the edited signal.
Slider **Upper Cutoff**	Specifies the upper limit of the frequency band for the edited signal.

The following setting options are available in the **Mix** area:

Slider **Dry Signal**	Mixes the original signal with the copied signal, indicating the intensity of the original signal.
Slider **Effect**	Mixes the original signal with the copied signal, indicating the intensity of the copied signal.

6.2.5 Doppler Effect

The **Doppler** effect simulates a noise source passing by and the resulting special auditory features.

The following setting options are available:

Graphic	Shows the target and end point of the movement of the noise source. The listener is at the center of the graphic. The pattern of the movement can be changed using the straight lines in the graphic.
Slider **Diameter**	Specifies the diameters of the movement radius.
Slider **Duration**	Specifies the duration of the movement.

6.2.6 Flanger Effect

The **Flanger** effect is a guitar effect that distorts the sound by playing back a copy of the original signal with a delay. The copy is changed by means of modulation, so that the sound is distorted in a characteristic way.

The following setting options are available in the **Modulation** area:

Slider **Depth**	Modifies the copied signal and specifies the degree of the change in pitch.
Slider **Frequency**	Modifies the copied signal and specifies the frequency of the change in pitch.

The following setting options are available in the **Mix** area:

Slider **Dry Signal**	Mixes the original signal with the copied signal, indicating the intensity of the original signal.
Slider **Effect**	Mixes the original signal with the copied signal, indicating the intensity of the copied signal.
Check box **Stereo Flanger**	Gives the processed part of the audio file a more "stereo-like" sound

6.2.7 Loudness Effect

The **Loudness** effect increases the volume of the audio file without increasing the maximum value of the amplitude (value 1) by raising the amplitude of other areas in the audio file. The file is thus louder overall without exceeding value 1 of the amplitude.

The following setting option is available:

Slider **Aimed Gain**	Specifies the degree of amplification.

6.2.8 Low fidelity Effect

The **Low Fidelity** effect creates interference effects, so-called quantification errors, by reducing the bit rate. Noise can be heard when the bit rate is dramatically reduced. If the sample rate is reduced, the audio file sounds duller and less detailed.

The following setting options are available:

Graph **Bit Depth/Sample Rate**	Shows the change in the two sliders under the graphic.
Slider **Bit depth**	Specifies the bit depth. Music CDs have a bit depth of 16, for example.
Slider **Sample Rate**	Specifies the sample rate. Music CDs have a sample rate of 44100 Hz.

6.2.9 Modulation Effect

The **Modulation** effect allows the amplitude and frequency to be changed separately.

The following setting options are available in the **Amplitude Modulation** area:

Check box **Amplitude Modulation**	Activates the settings options for amplitude modulation.
Graph **Amplitude Modulation**	Shows the amplitude of the audio signal.
Slider **Frequency**	Specifies the frequency of the signal.
Slider **Amplitude Range**	Specifies the signal volume.
Drop-down menu **Modulation Signal**	Selects the signal form, for instance, sine, that is displayed in the amplitudes modulation picture.
Button **Blend Edges**	Balances different end and start values. Only activated for self-produced signals.

The following setting options are available in the **Frequency Modulation** area:

Check box **Frequency Modulation**	Activates the settings options for frequency modulation.
Graph **Frequency Modulation**	Shows the frequency of the audio signal.
Slider **Frequency**	Specifies the frequency of the signal.
Slider **Depth**	Specifies the depth of the signal.

Drop-down menu **Modulation Signal**	Selects the signal form, for instance, sine, that is displayed in the frequency modulation picture.
Button **Blend Edges**	Balances different end and start values. Only activated for self-produced signals.

Mix mixes the original signal with the modulated amplitude signal and the modulated frequency signal.
The following setting options are available in the **Mix** area:

Slider **Dry Signal**	Indicates the intensity of the original signal.
Slider **Amplitude Modulated**	Specifies the intensity of the signal with the modulated amplitude.
Slider **Frequency Modulated**	Specifies the intensity of the signal with the modulated frequency.

6.2.10 Multi-Tap Delay Effect

The **Multi-Tap-Delay** effect allows several copies of the original signal to be created and played back with a delay. This creates the reverb effect.

The following setting options are available:

Buttons **Active tap**	Provides several copies for selection. Each tab represents one copy.
Graph **Gain**	Graphically represents the copies.
Slider **Delay**	Specifies the intervals at which copies are to be played back.
Slider **Gain**	Specifies the volume/intensity of the copies.
Slider **Pan**	In the case of stereo files, this indicates the speaker on which the copies are to be heard.

The following setting options are available in the **Feedback** area:

Drop-down menu **Type**	Provides different filters for the copied signals for selection.
Slider **Feedback Gain**	Specifies the volume of the copies that are played back after the time specified with the Delay slider.

The following setting options are available in the **Mix** area:

Slider **Dry Signal**	Mixes the original signal with the edited copies, indicating the intensity of the original signal.
Slider **Effect**	Mixes the original signal with the edited copies, indicating the intensity of the edited signal.

6.2.11 Phaser Effect

The **Phaser** effect is a guitar effect that distorts the sound by playing back a band-filtered copy of the original signal with a delay.

The following setting options are available in the **Modulation** area:

Drop-down menu **Modulation Function**	Provides different signal forms, e.g., sine.
Slider **Frequency**	Specifies the frequency of the copied signal.

The following setting options are available in the **Settings** area:

Slider **Lower Limit**	Specifies the lower limit of the frequency band.
Slider **Upper Limit**	Specifies the upper limit of the frequency band.
Slider **Bandwidth**	Indicates the bandwidth of the signal.
Check box **Stereo Flanger**	Gives the processed part of the audio file a more "stereo-like" sound

The following setting options are available in the **Mix** area:

Slider **Dry Signal**	Mixes the original signal with the edited copy, indicating the intensity of the original signal.
Slider **Effect**	Mixes the original signal with the edited copy, indicating the intensity of the edited signal.

6.2.12 Pitch Bend Effect

The **Pitch Bend** effect changes the pitch over the length of the audio file with the help of a "speed curve". The length of the audio file can be changed or retained.

The following setting options are available:

Graph **Pitch**	Shows the pitch over the length of the audio file.
Slider **Pitch Range**	Sets the Y axis in the **Pitch** graph. The greater the value, the more noticeably the pitch can be changed.
Check box **Keep Length**	Retains the length of the audio file. The X axis in the pitch (output length) graph is fixed.

6.2.13 Pseudo Reverse Effect

The **Pseudo Reverse** effect does not reverse the whole audio file but divides it into small sequences. These are played back in reverse direction in sequence in the "normal" direction. In this way the content of the audio file is still recognizable but gives the effect of reverse playback.

The following setting options are available:

Area **Reverse Duration**	Indicates how long the sequences should be to be played in reverse.

6.2.14 Re-Analogue Effect

The **Re-Analogue** effect adds effects to the audio file that make it sound artificially older.

The following setting options are available:

Check box **Noise**	Adds noise to the audio file.
Slider **Level**	Specifies the intensity of the noise.
Check box **Retro Radio**	Makes the audio file sound slightly distorted, similar to the effect of an old radio.
Slider **Level**	Specifies the intensity of the distortion effect.
Check box **Clicks**	Adds the effect of scratches and dust on an old record.
Slider **Clicks**	Specifies the frequency and intensity of scratchesas on a vinyl record.
Slider **Crackle**	Specifies the frequency and intensity of crackling as on a vinyl record. as on a vinyl record

Option button **Source**	Offers a choice of different record types.
Check box **Humming**	Adds a low frequency hum to the audio file.
Slider **Level**	Indicates the intensity of the hum.
Slider **Overtones**	Specifies the number of overtones the frequency has.
Slider **Slope**	Specifies the steepness of the transitions between high and low level. This setting make the hiss sound "scratchy".
Option button **Frequency**	Specifies the hum frequency.

6.2.15 Reverb Effect

The **Reverb** effect simulates the sound reflection in a space.

The following setting options are available:

Slider **Reverb Time**	Specifies the duration of the reverb.
Slider **Room Size**	Specifies the size of the imaginary room in which the reverb is to be generated.
Slider **Brightness**	Specifies the brightness of the reverb.

The following setting options are available in the **Mix** area:

Slider **Dry Signal**	Mixes the original signal with the edited copy, indicating the intensity of the original signal.
Slider **Effect**	Mixes the original signal with the edited copy, indicating the intensity of the edited signal.

6.2.16 Stutter Effect

The **Stutter** effect provides the option for modifying the rhythm of the audio file.

The following setting options are available:

Graph **Silence Duration**	Shows the length of the silence on the y axis and the signal length on the x axis.
Slider **Silence Duration**	Specifies the length of silences or repetitions.
Slider **Signal Duration**	Specifies the length of the signals to be repeated.

The following setting options are available in the **Mode** area:

Option button **Mute**	Plays back the audio file in stutter mode **Mute**. The file is played for the period set using the **Signal Duration** slider and muted for the period set with the **Silence Duration** slider. The file retains its file length.
Option button **Stretch**	Plays back the audio file in stutter mode **Stretch**. The file is played for the period set using the **Signal Duration** slider and muted for the period set with the **Silence Duration** slider. The length of the file changes because after muting at the appropriate place in the file, playback resumes where the last playback ended.
Option button **Repeat**	Plays back the audio file in stutter mode **Repeat**. The file is played back for the length of time set using the **Signal Length** slider. The same section of the audio file is then played again for the length of time set with the **Pause Length** slider. This is repeated until the selected area of the audio file is finished.

6.2.17 Surround Expansion Effect

The **Surround Expansion** effect is only available if you are editing a Surround audio file 5.1 or 7.1). This offers expanded Surround Sound settings.

The following setting options are available:

Slider **Expansion**	Indicates the degree of expansion.
Check box **Front Channels**	Extends the expansion to include the front channels.
Check box **Side Channels**	Extends the expansion to include the side channels.
Check box **Surround Channels**	Extends the expansion to include the Surround channels.

6.2.18 Surround Reverb Effect

The **Surround Reverb** effect allows reverb effects to be added to the audio file, making it sound as if it was recorded under different spatial conditions.

The following setting options are available in the **Room Dimensions** area:

Graph **Room Dimension**	Visualizes the changes to the room dimensions.
Slider **Width**	Changes the width of the room.
Slider **Depth**	Changes the depth of the room.
Slider **Height**	Changes the height of the room.

The following setting options are available in the **Room Dimensions** area:

Slider **Air Damping**	Specifies the level of air damping within the room.
Slider **Surface Material**	Specifies the characteristic surface material of the room (e.g. a carpet).

The following setting options are available in the **Output** area:

Slider **Early Reflections**	Indicates the distance between the audio source and the listener.
Slider **Late Reflections**	Indicates the reverb of the audio source in the room
Slider **Dry Gain**	Indicates the intensity of the original signal.

6.2.19 Voice Modification Effect

The **Voice Modification** effect allows the voice in an audio file to be manipulated.

The following configuration options are available in the **Envelope** area:

Graph **Envelope mapping**	Changes the input and output frequency of the audio file. You can change the straight lines using the handles. In the graphic, the y axis represents the output frequency and the x axis the input frequency.
Slider **Scaling**	Moves the elements that form the voice.

The following setting options are available in the **Pitch** area:

Slider **Interval**	Changes the pitch in the audio file.
Slider **Fine-tune**	Permits fine tuning if retaining the original audio file length causes distortion due to the interval and patch changes.

The following setting options are available in the **Time** area:

Slider **Stretch**	Specifies whether the length of the audio file is to vary or whether the original length is to be retained.

The following setting options are available in the **Mode** area:

Option button **Normal**	Leaves the voice in the audio files unchanged. Only the previously set effects are used.
Option button **Robot Voice**	Adds a robot-like quality to the already activated effects.
Option button **Whisper**	Adds a whisper-like quality to the already activated effects.

6.2.20 Wah-Wah Effect

The **Wah-Wah** effect allows you to distort the recording of a guitar.

The following setting options are available in the **Modulation** area:

Slider **Modulation Frequency**	Specifies the frequency of the modulation.
Drop-down menu **Modulation Function**	Selects the signal form, for instance, sine, of the modulation signal.

The following setting options are available in the **Mix** area:

Slider **Dry Signal**	Mixes the original signal with the edited copy, indicating the intensity of the original signal.
Slider **Effect**	Mixes the original signal with the edited copy, indicating the intensity of the edited signal.

The following setting options are available in the **Filters** area:

Slider **Lower Limit**	Defines the lower limit for the frequency.
Slider **Upper Limit**	Defines the upper limit for the frequency.

Slider **Bandwidth**	Defines the bandwidth of the frequency.
Slider **Feedback**	Specifies the number of copied signals.

6.3 Enhancement

6.3.1 Band Extrapolation Enhancement

The **Band Extrapolation** enhancement allows certain frequencies to be emphasized or suppressed.

The following setting options are available in the **Spectral Remixer** area:

Slider **High Frequency**	Indicates the intensity of the high frequency.
Slider **Dry Signal**	Indicates the intensity of the original signal.
Slider **Low Frequency**	Indicates the intensity of the low frequency.

The following setting options are available in the **Filters** area:

Slider **High Frequency**	Indicates the frequency above which high frequencies are to be amplified.
Slider **Low Frequency**	Indicates the frequency below which low frequencies are to be amplified.

6.3.2 Camera Denoiser Enhancement

The **Camera Denoiser** enhancement reduces buzz and other background noise from camera recordings in particular.

The following setting option is available:

Graph **Noise Reduction Level**	Displays the signal in graphical form.
Slider **Reduction Level**	Specifies the extent to which interfering noises are to be filtered out.

6.3.3 DC Offset Correction

DC offset correction improves recordings from poorly calibrated equipment (not centered around the zero point).

6.3.4 DeClicker Enhancement

The **DeClicker** enhancement allows audio files to have noises such as clicks or crackle removed.

The following setting options are available:

Check box **Declicker**	Removes interfering noises such as clicks, which can be caused by scratches on records for example, from audio files.
Slider **Detection Value**	Indicates how strong interfering noises must be to be recognized and filtered out.
Slider **Maximum Length**	Indicates the maximum length of time for which an interfering noise is to be filtered.
Check box **High Quality**	Offers higher filtering quality. However, this setting is very processor-intensive.
Check box **Decrackle**	Removes interfering noises such as crackle, which can be caused by dust or needle sounds from the audio file.
Slider **Detection Value**	Indicates how strong interfering noises must be to be recognized and filtered out.
Slider **Reduction Level**	Specifies the extent to which interfering noises are to be filtered out.
Check box **Automatic Restore**	Automatically sets the optimum values for both areas. Click the check boxes for the areas to be adjusted and activate the **Automatic restoration** option.

6.3.5 DeClipper Enhancement

The **Declipper** enhancement adds amplitude peaks that were higher than the value and were therefore cut off when being imported into Nero WaveEditor.

The following setting options are available:

Slider **Detection Threshold**	Specifies the volume at which removed amplitude peaks should be reattached.
Slider **Gain Modification**	Reattaches the removed amplitude peaks. This percentage value should not be set too high because the peaks would otherwise be removed again after the file has been saved.

6.3.6 Dehum Enhancement

The **DeHum** enhancement suppresses humming noises in the audio file

The following setting options are available:

Graph **Hum Reduction**	Displays the four notch filters.
Button **Automatic Hum Detection**	Automatically sets the optimum values for all filters.

The following setting options are available in the **Dehum Filter Settings** area:

Option buttons **Filter**	Offers four different notch filters. These can be defined with the sliders. The four notch filters can also be linked with the **Link Filter** option button. In this case, all slider changes apply to all filters.
Slider **Frequency**	Specifies the frequency of the hum that is to be filtered.
Slider **Gain**	Specifies the extent to which hum is to be suppressed.
Slider **Width**	Specifies whether the range of the notch filter rises and falls steeply or gently.

6.3.7 Filter Toolbox Enhancement

The **Filter Toolbox** enhancement allows you to define your own audio filters.

The following setting options are available:

Check box **User Drawn Filter Response**	Activates the option for changing the graphic using handles.
Graph **User Drawn Filter Response**	Allows you to define a filter yourself by means of adjustable curves.
	Switches between a linear and logarithmic scale for the limiting frequency graphic.
Check box **Band Pass Filter**	Adds a **Band Pass Filter** that allows a certain frequency range to be exceeded.
Slider **Upper Limit**	Specifies the upper frequency limit for the bandpass filter.
Slider **Lower Limit**	Specifies the lower frequency limit for the bandpass filter.

Area **Notch Filters**	Inserts up to three notch filters and bandpass stops that prevent a particular frequency range from being exceeded.
Slider **Center**	Specifies the frequency of the relevant notch filter.

6.3.8 Noise Reduction Enhancement

The **Noise Suppression** enhancement suppresses distracting noise in an audio file.

The following setting options are available:

Graph **Spectral Subtracti-on Profile**	Maps the interfering signal.
	Switches between a linear and logarithmic scale for the limiting frequency graphic.
Slider **Gain Floor**	Specifies the level of noise reduction when some noise is to be retained.
Slider **Reduction Level**	Specifies the level of noise reduction.

The following setting options are available in the **Mode** area:

Option button **Automatic Noise Analysis**	Automatically analyzes the audio file in relation to noise.
Button **Freeze**	Fixes the noise curve in the spectral subtraction profile and uses this as a reference signal.
Option button **Editable Noise Curve**	Inserts handles into the noise curve in the spectral sub-traction profile; these can be used to edit the curve.
Option button **Noise Print**	This is automatically activated after the implementation of the noise analysis and after the first time the noise sup-pression is called. The noise curve generated by the noise analysis can be edited.
Button **Residual Output**	Only plays back the noise signal.

6.3.9 Noise Analysis

The **Noise analysis** enhancement uses a marked area in the audio file as a noise reference sound. This reference sound is then used to suppress the noise.

6.4 Changing The Sound of an Audio File

To change the sound of an audio file with tools , effects and sound optimizing tools, proceed as follows:

1. Mark the area of the audio file where you want to change the sound.
   → The marked area is highlighted in a different color.
2. Select the desired entry in the **Tools**, **Effects** and **Enhancement** menus:
   → The relevant window appears.
3. Make the desired settings in the open window.
4. Click the **OK** button.
   → You have changed the sound of the highlighted part of the audio file.

7 Technical Information

7.1 System requirements

Nero WaveEditor is installed along with the Nero Suite. Its system requirements are the same. You can find more detailed information on the system requirements under www.nero.com.

7.2 Supported Formats and Codecs

7.2.1 Audio formats and codecs

- Advanced Audio Coding (ACC) - import only
- Audio Interchange File Format (AIFF, AIF)
- Dolby Digital (AC-3) – import only
- mp3PRO (MP3)
- Moving Picture Experts Group-1 Audio Layer 3 (MP3)
- Moving Picture Experts Group-4 (MP4)
- Nero Digital (MP4)
- OGG Vorbis (OGG, OGM)
- Recource Interchange File Format WAVE (WAV, WAVE)
- Windows Media Audio (WMA)
- Nero WaveEditor File (NWF)

8 Glossary

Bit Depth

Bit depth indicates the precision with which an oscillation vibration will be captured. The greater the value, the more accurate is the acquisition and the better is the audio quality.

FIR Filter

A filter is a system that links an input signal with a transmission function and makes this changed signal available at its output. With a filter with finite pulse response (FIR filter) the output signal is made up of several partially buffered values of the input signal.

Frequency

The frequency denotes the oscillations per second of an electrical or magnetic field. With audio files this means that the frequency increases with rising pitch. The unit is Hertz (Hz). The highest magnitude of oscillation is called the amplitude.

IIR Filter

A filter is a system that links an input signal with a transmission function and makes this changed signal available at its output. A filter with infinite pulse response (IIR filter) uses the input values as well as buffered values of the output signal.

Normalization

Normalizing in audio technology is the process whereby analog and/or digital audio data is raised to a uniform volume level.

Sample Rate

The sample rate indicates the frequency with which a signal is sampled per interval of time. It is measured in sampling values per second. The higher the sample rate the more precise the measurement, and the better the audio quality.

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10 Contact

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