

# **NCH Software**

# **DeskFX Audio Effect Processor**

This user guide has been created for use with  
DeskFX Audio Effect Processor Version 3.xx

## Technical Support

If you have difficulties using DeskFX Audio Effect Processor please read the applicable topic before requesting support. If your problem is not covered in this user guide please view the up-to-date DeskFX Audio Effect Processor Online Technical Support at

[www.nchsoftware.com/deskfx/support.html](http://www.nchsoftware.com/deskfx/support.html).

If that does not solve your problem, you can contact us using the technical support contacts listed on that page.

## Software Suggestions

If you have any suggestions for improvements to DeskFX Audio Effect Processor, or suggestions for other related software that you might need, please post it on our Suggestions page at [www.nch.com.au/suggestions/index.html](http://www.nch.com.au/suggestions/index.html).

Many of our software projects have been undertaken after suggestions from users like you. You get a free upgrade if we follow your suggestion.

# DeskFX Audio Effect Processor

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# NCH Software Suite

This is a useful way to browse all the software available from NCH Software

You can see a set of products by type like Audio, Video and so on and view the product. From there you can try out the product and it will download and install it for you to trial. If you already have the product installed then you can click "Run It Now" and the program will be launched for you.

There is also a list of features for products in the category. Click on a feature, such as "Edit a Video File", to install a product with that ability.

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## Options

Options dialog lets you choose the devices to use DeskFX with. Any chosen device will modify the audio output. If the current default device doesn't apply the effects, check in Options dialog if that device is marked for audio modification. If at any point, you don't want a device to modify audio with the effects, untick that device from Options dialog.

# Keyboard Shortcuts

The following list shows shortcuts used in DeskFX.

## **Main Window**

- Open Help **F1**
- Show Full Menu **Alt**
- Options **Ctrl+O**
- Exit **Alt+F4**

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Legal Department  
NCH Software, Inc.  
6120 Greenwood Plaza Blvd, Ste 120  
Greenwood Village CO, 80111  
USA

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# Overview

DeskFX audio enhancer software is designed for you to modify and enhance the music and audio played through your speakers and headphones, to provide you with the best possible sound experience.

## Features

- Audio effects include equalize, amplify, reverb, chorus, wahwah, vibrato, tremolo and more
- Boost the bass on your music
- Switch between visual, graphic or parametric equalizer modes
- Create a sophisticated, customized, audio experience
- Adjust your sound to suit your listening environment
- Optimize and improve the music played through the speakers
- Power and flexibility to manipulate the audio on speakers
- Suppress unwanted noise with live low and high pass filters
- Apply an unlimited number of audio effects
- Layer effects to create your own unique sound
- Equalize the audio in your room for the perfect sound
- System-wide equalizer with up to 20 bands
- Intuitive interface makes it easy to customize effects

# Presets Tool - Presets

## Presets

Presets tool can be found in the Home tab. This tool lets you choose one of the available presets that comes with DeskFX. Several presets available for the choice of users:

- Restaurant:
- Restaurant presets compresses the audio to create EQ that is suitable for use in restaurants
- Gym:
- Increased bass for gym like environments.
- Foyer:
- Changes the audio to sound like it is playing in foyer.
- Retail:
- Retail environment preset
- Waiting Room:
- Waiting room preset.

# Effects - Amplify

## Amplify

To 'amplify' is to increase the loudness or volume of the selected region. To make a part of the recording softer or louder, select it and then use the menu Effects -> Amplify. The volume is entered in percent (100 being no change, 50 being -6dB softer or 200 being +6dB louder).

# Effects - Equalizer

## Equalizer

An equalizer changes the frequency response of a signal so it has different tonal qualities.

Use the radio buttons at the left to select between Visual, Graphic, and Parametric Equalizer views.

### *Visual Equalizer*

Left click on any point to create a new band point. To remove a band point, right click on it. To assist you with shaping the Equalizer graph in the way you want, there is a preset list that displays the most common sorts of filters used in the Equalizer graph. You can choose any preset filter from the list and then manipulate the filter to achieve the effect you desire. The list of filters to choose from and how you can shape them are explained below. Note that all fields where a frequency value is entered can have a maximum value of 20000 (Hertz).

### *Graphic Equalizer*

The Graphic Equalizer uses discrete sliders to set the gain or attenuation of a signal at a particular frequency. You can select how many sliders you would like to manipulate by entering a value between 3 and 20 in the box at the top of the display. When you change the number of sliders you would like to utilize, the frequencies are automatically allocated to best span the audible frequency range from 20Hz to 20kHz. Selecting presets allows you to easily configure common filters such as low pass or high pass. Note that when you change the Graphic Equalizer, the Visual and Parametric Equalizer views are not changed, as the changes in the three views are not compatible.

### *Parametric Equalizer*

The Parametric Equalizer is similar to the Graphic Equalizer, but with more control. You can adjust the frequency and bandwidth of the individual sliders by left clicking on the frequency or Q values below each slider. Frequency must be set between 20Hz and 20,000 Hz. The Q parameter must be set between 0.05 and 20. A higher Q causes the gain or attenuation peak at the frequency to be much sharper, and therefore less likely to impact adjacent frequency content, while a lower Q applies the modification more smoothly across the frequency spectrum.

#### -Band Pass Filter

-Keeps only those frequencies in the audio between a certain range. -Start Frequency

-The lower cutoff frequency value, in Hertz.

-End Frequency

-The upper cutoff frequency value, in Hertz.

-Slope Length

-The width of the slope extending from the lower and upper cutoff points, in Hertz.

-Amplitude

-The degree that the frequencies outside the cutoff range are suppressed. 6dB means the volume is reduced to one-half, 12dB means the volume is reduced to one-quarter. Maximum value is 60dB.

#### -Band Stop/Cut Filter

-Keeps all frequencies in the audio except those between a certain range.

-Start Frequency

-The lower stop frequency, in Hertz.

-End Frequency

-The upper stop frequency, in Hertz.

-Slope Length

-The width of the slope extending from the lower and upper stop points, in Hertz.

- Rejection
- The degree that the frequencies inside the stop range are suppressed. 6dB means the volume is reduced to one-half, 12dB means the volume is reduced to one-quarter. Maximum value is 60dB.
- High Pass Filter
- Keeps only those frequencies in the audio above a certain value.
- Pass Frequency
- The point at which all frequencies above are to be kept, in Hertz.
- Slope Length
- The width of the slope extending from the pass frequency, in Hertz.
- Low Pass Filter
- Keeps only those frequencies in the audio below a certain value.
- Pass Frequency
- The point at which all frequencies below are to be kept, in Hertz.
- Slope Length
- The width of the slope extending from the pass frequency, in Hertz.
- Notch Filter
- Attenuates the frequencies in the specified range to very low levels and passes all other frequencies unaltered. There is no slope - frequencies are either attenuated or not.
- Start Frequency
- The lower cutoff frequency value, in Hertz.
- End Frequency
- The upper cutoff frequency value, in Hertz.
- Boost Filter
- Either attenuates or boosts frequencies in the specified range and passes all others unaltered.
- Start Frequency
- The lower boost/cut frequency value, in Hertz.
- End Frequency
- The upper boost/cut frequency value, in Hertz.
- Slope Length
- The width of the slope extending from the lower and upper boost/cut points, in Hertz.
- Amplitude
- The degree that the frequencies inside the boost/cut range are either boosted or cut. 6dB means the volume is boosted to twice the original amount, and 12dB means the volume is boosted to four times the original amount. 20dB.
- High Pass Shelf Filter
- Attenuates signals of frequencies below the cut frequency and passes all others unaltered.
- Start Frequency
- The lower cut frequency value, in Hertz.
- Slope Length
- The width of the slope extending from the lower and upper cut points, in Hertz.
- Rejection
- The degree that the frequencies inside the cut range are cut. 6dB means the volume is attenuated to about half the original level, and 12dB means the volume is attenuated to about a quarter of the original level.
- Low Pass Shelf Filter
- Attenuates signals of frequencies above the cut frequency and passes all others unaltered.
- Start Frequency
- The lower cut frequency value, in Hertz.

- Slope Length
- The width of the slope extending from the lower and upper cut points, in Hertz.
- Rejection
  - The degree that the frequencies inside the cut range are cut. 6dB means the volume is attenuated to about half the original level, and 12dB means the volume is attenuated to about a quarter of the original level.
- Bass Boost Filter
  - Amplifies sub-bass and bass frequencies, and reduces low mids onwards by -12 dB.
- Default
  - Adds +6 dB to sub-bass and bass frequencies.
- High
  - Adds +12 dB to sub-bass and bass frequencies.
- Very High
  - Adds +20 dB to sub-bass and bass frequencies.

If you are using the equalizer simply to drop lower frequencies, you should always try the High Pass filter first (Effects menu -> High Pass Filter), because it is better and faster for very low frequencies.

# Effects - Echo

## Echo

An echo is a repeat of the sound after a short time (usually 400 - 1000ms). It sounds a bit like the person is in a large stadium or is shouting between two mountains.

To add echo select the region and use the menu Effects -> Echo then specify the duration and amplitude of the echo. The duration is the length of time after which the sound repeats - usually this is between 400 and 1000ms. The amplitude can be between 1 - 99% (99 being a very loud echo).

# Effects - Reverb

## Reverb

Reverb is many small reflections of the sound that come after a set time. It usually occurs when someone is speaking in a room, hall, etc. More reverb is called wet, no reverb is called dry. When you select the reverb effect, you will see a dialog with two tabs.

### Simple

The first tab of the reverb effect allows you to adjust the reverb level and time. The reverb level is the amplitude - 99 is very wet, 0 is dry. The time can be between 100 and 800ms - 200ms sounds like a small room or 800ms a large hall. If you add too much reverb it can sound like the person is in a pipe or in the bathroom.

The Simple tab also includes preset options to choose from, depending on how large the space being simulated is. Click the play button at the bottom of the tab to preview the reverb effect on your audio.

### Room Design

The second tab of the reverb effect allows you to specify the dimensions of a room, the position of the source and listener, and the room absorption with preset options for the materials that make up the walls, floor and ceiling of the room. Click the play button at the bottom of the tab to preview the reverb settings on your audio.

# Effects - Flanger

## Flanger

A Flanger sound effect is similar to the phaser except that the delay is slowly modulated over time. You specify the starting delay time (default 5ms), the frequency of modulation in times per second (default 0.5Hz which is 2 seconds) the depth of modulation (default 70%) and the wet dry gain (100% for wet, 0% for dry, default 60%).

# Effects - Vibrato

## Vibrato

The vibrato sound effect is a pulsating of the pitch at a depth and frequency specified by the user. The higher the Frequency (Hz) set, the more often the pulses will be heard, and the higher the Depth (semitones), the wider the fluctuation in pitch will be.

## Effects - Tremolo

### Tremolo

The tremolo sound effect is similar to the vibrato effect, except that the amplitude pulsates rather than the pitch. The higher the Frequency (Hz) set, the more often the pulsation will be heard, and the higher the Depth (%), the deeper the fluctuation in volume.

# Effects - Wah-Wah

## Wah-Wah

As the name suggests, the effect modulates a specified frequency band within the sample, which results in the characteristic "Wah wah" sound. The effect is a bandpass filter with its center frequency (not to be confused with the center frequency parameter, below) alternating between a min frequency and max frequency (specified by the center frequency and depth parameters) and from max frequency to min frequency. The frequency of alternating direction is represented as a triangular wave with a frequency specified by the wah frequency parameter.

Resonance: also known as Q or emphasis, this parameter controls the resonant peak of the bandpass filter. This value determines the sharpness of the wah-wah effect. Higher values produce more resonant/peaky tones.

Depth: this parameter determines the frequency range swept by the bandpass filter. Its range is specified as a percentage of the range (0 to center frequency). If the value of the percentage of the range (0, center frequency) is specified as X, the min and max frequencies are (center frequency - X) and (center frequency + X).

Center Frequency: This parameter is the center frequency of the bandpass filter sweep, and is used to determine the min and max frequencies as mentioned above.

Wah Frequency: This is the frequency of alternating the direction of the sweep, or the frequency of the wah-wah sound. It is the frequency of the triangular wave described above.

# Effects - Chorus

## Chorus

The chorus sound effect is used to make one voice or one instrument sound like 3 voices or instruments by playing the original with variably delayed and slightly pitch changed copies of the original.

Note: Chorus is a very useful way to make a mono source sound more stereo. You should convert your file to stereo first before using Chorus.

# Effects - Distortion

## Distortion

While normally we do everything to reduce distortion, sometimes you want to add it. It is popular for use with guitars. The distortion is measured between 0.0 (off) and 1.0 (clipping). You also specify the level where it kicks in in dB.

For a more consistent sound, you should apply Dynamic Range Compression first before you add distortion.

# Effects - High-Pass

## High-Pass Filter

A high-pass filter (sometimes called a low cut filter) removes all low frequencies below a specified Hz. This is useful if you want to make your recording sound 'clearer' or less 'muddy'. It is very usual to use a high-pass filter of about 300Hz on all voice recordings to improve intelligibility.

# Effects - Low-Pass

## Low-Pass Filter

A low-pass filter removes all high frequencies above a specified Hz. This is useful if you want to make your recording sound 'clearer'. It is very usual to use a low-pass filter of about 1600Hz on all voice recordings to improve intelligibility.

# Effects - Compressor

## Compressor

A dynamic range compressor limits the volume levels of a sound recording so that it stays within a certain loudness range.

An example of where it is used is in TV broadcasting, where it ensures that the volume levels of ads are perceived as being louder than the television program itself (without any change in the actual broadcast volume).

It also has a use for recording audio from one medium to another, where the two mediums are not capable of handling the same range of volume levels (e.g. A CD can handle a much greater range than a cassette tape).

## Compressor Settings

- 
- Attack:
  - The time (between 0 and 1000 milliseconds) that it will take to apply the gain adjustment. The total gain adjustment required will be gradually introduced over this period.
- Release:
  - The time (between 0 and 5000 milliseconds) that it will take to remove the gain adjustment once gain adjustment is no longer needed. This is the opposite of attack.
- Limit:
  - Defines the maximum decibel level that the sound recording will be allowed to rise up to. So if, for example, the Limiter Threshold was set to -2dB, then you would never hear the volume level of the recording get louder than -2dB. Any signal over the limiter threshold would be clipped, which would probably cause distortion. Note that setting the Limiter Threshold to 0dB effectively turns the limiter off, because 0dB represents the loudest signal possible in a digital recording.
- Ratio:
  - Defines the ratio of the reduction in volume of sounds which exceed the compressor threshold. For example, if the ratio is 4:1 and the volume exceeds the threshold by 4dB, then the volume will be reduced to only exceed the threshold by 1dB. Note that a ratio of 1:1 means that there will be no change in volume; it effectively turns the compressor off.
- Threshold:
  - Reduces the volume of sound below its Threshold. This can be useful for reducing or removing softer background noise from a recording.

# Masking Effects - Audio Masking

## Audio Masking

Audio masking is a technique used to create additional privacy in public spaces. Enabling audio masking will add a mask to the audio playing through your speakers that includes pink noise and conversation snippets. This provides additional anonymity to your patrons since it becomes more difficult to overhear other conversations taking place in the room.

Use the volume sliders to increase or decrease the volume of the two masks. Increasing the volume will increase the level of the mask file relative to the streaming audio.

# Masking Effects - Noise Generator

## Noise Generator

Noise generator can generate different types of noises. Noise type drop down list can be used to select type of noise to add to playing audio. Currently it supports white and brown noise.

Noise level slider can be used to adjust the volume of the noise generated.

# Masking Effects - Background Loop

## Background Loop

Background loop can be used to loop over a chosen file in the background to playing audio. It loops the chosen audio until the playing audio stops.

You can choose the background file to play by using the Browse button.

Background (dB) slider can be used to adjust the volume of the background audio file before mixing with the actual audio being played.

# NCH Sound Library - NCH Sound Library

The **NCH Sound Library** is a collection of thousands of royalty-free sound effects that can be added to your project.

Once you have opened the library, you'll see the following:

## **Folder Tree**

On the left hand side, each folder represents a category of sounds. Expand a folder to either see its subfolders or a list of sounds it contains.

## **Sound List**

On the right hand side, all the sounds in the currently selected category are listed. This will be empty until a category is selected.

## **Preview Sound**

Select a sound in the list then click the **Play** button to hear it. When you have finished, click

## **Download**

Select a sound in the list then click the **Download** button to download the sound (if it hasn't already been downloaded).

## Screen References - Custom Resolution

This dialog allows you to set up the resolution for your video during saving. To set a custom resolution, click the Save button on the toolbar and select the Disc: Make Data Disc, Computer/Data, Portable Device, Image Sequence, or Stereoscopic 3D options. From the Resolution drop menu, select Custom.

In the Custom Resolution dialog that opens, input the width and height in pixels and click OK. If **Keep aspect ratio** checkbox is available, you can check it to retain the same aspect ratio when changing the width or height.

## Screen References - Custom Resolution

This dialog allows you to set up the resolution for your 360-degree video during saving. To set a custom resolution, click the Save button on the toolbar and select the 360 Video File option. From the Resolution drop menu, select Custom.

In the Custom Resolution dialog that opens, input the width and height in pixels and click OK. The width must be exactly double the height for 360-degree videos.

## Screen References - Custom Frame Rate

This dialog allows you to set up the frame rate (number of frames per second) for your video. To set a custom frame rate, click the Save button on the toolbar and select either of the Disc: Make Data Disc, Computer/Data, Portable Device, or Stereoscopic 3D options. From the Frame Rate drop menu, select Custom.

In the Custom Frame Rate dialog that opens, input the frame rate and click OK.

The default frame rate is **Variable Frame Rate (VFR)** but the dialog allows the user to select **Constant Frame Rate (CFR)** by selecting the **Constant frame rate** checkbox.

## Screen References - Detected Format

This dialog shows you the detected format of the video sequence during the saving process. To detect the format of your video, click the Export Video button on the Home tab bar and select either of the following options: Video File, 3D Video File, Portable Video, Lossless Video, DVD Movie Disc, DVD Data Disc, Image Sequence, YouTube, Flickr, Dropbox, Google Drive, OneDrive, or Vimeo.

Click the Detect button next to the Preset field. Detect will adjust the video output resolution format based on your monitor screen size.

If you want to use a different format you can select the format from the Preset drop-down list. Click OK to use the selected format as the output format.

## Screen References - DVD Bitrate Settings

This dialog allows you to specify bitrate for your DVD video. To open this dialog, click the Save icon in the toolbar and select the Disc save option and click the Make DVD Movie option. Click the Advanced button to open the DVD Bitrate Settings dialog.

The default option is to calculate the bitrate automatically. To set the bitrate manually, select the manual option and adjust the video and audio bitrates.