Waves

LoAir

User Guide

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Chapter 1 – Introduction

1.1 Welcome

Thank you for choosing Waves! In order to get the most out of your Waves processor, please take the time to read through this manual.

In conjunction, we also suggest that you become familiar with www.wavesupport.net. There you will find an extensive **Answer Base**, the latest **Tech Specs**, detailed **Installation** guides, new **Software Updates**, and current information on **Authorization** and **Registration**.

By signing up at www.wavesupport.net, you will receive personalized information on your registered products, reminders when updates are available, and information on your authorization status.

1.2 Product Overview

LoAir is a plug-in which can be used to create LFE content from mono, stereo, and 5.0 source material, as well as to enhance and enrich the existing LFE content of 5.1 sources. LoAir generates subharmonic content by lowering and filtering designated audio content by one octave.

1.3 Concepts and Terminology

LoAir uses the following unique terms:

- **RANGE** determines the frequency range used to create LFE content.
- **LoAIR** controls the level of the generated (lowered octave) signal.
- **LO** controls the level of the filtered signal.
- **DIRECT** controls the level of the direct unprocessed signal.
- **LFE OUTPUT** controls the LFE level output.
- **ALIGN** delays the direct signal to synchronize it with the generated (lowered octave) signal.

Channel Order Standards

The channels used in Surround sound can be displayed in several arrays. The following are the most common Surround standards:

- **5.0 Film** L, C, R, Ls, Rs
- **5.1 Film** L, C, R, Ls, Rs, LFE

- **5.0 SMPTE/AES/ITU** L, R, C, Ls, Rs
- **5.1 SMPTE/AES/ITU** L, R, C, LFE, Ls, Rs

- **5.0 DTS** L, R, Ls, Rs, C
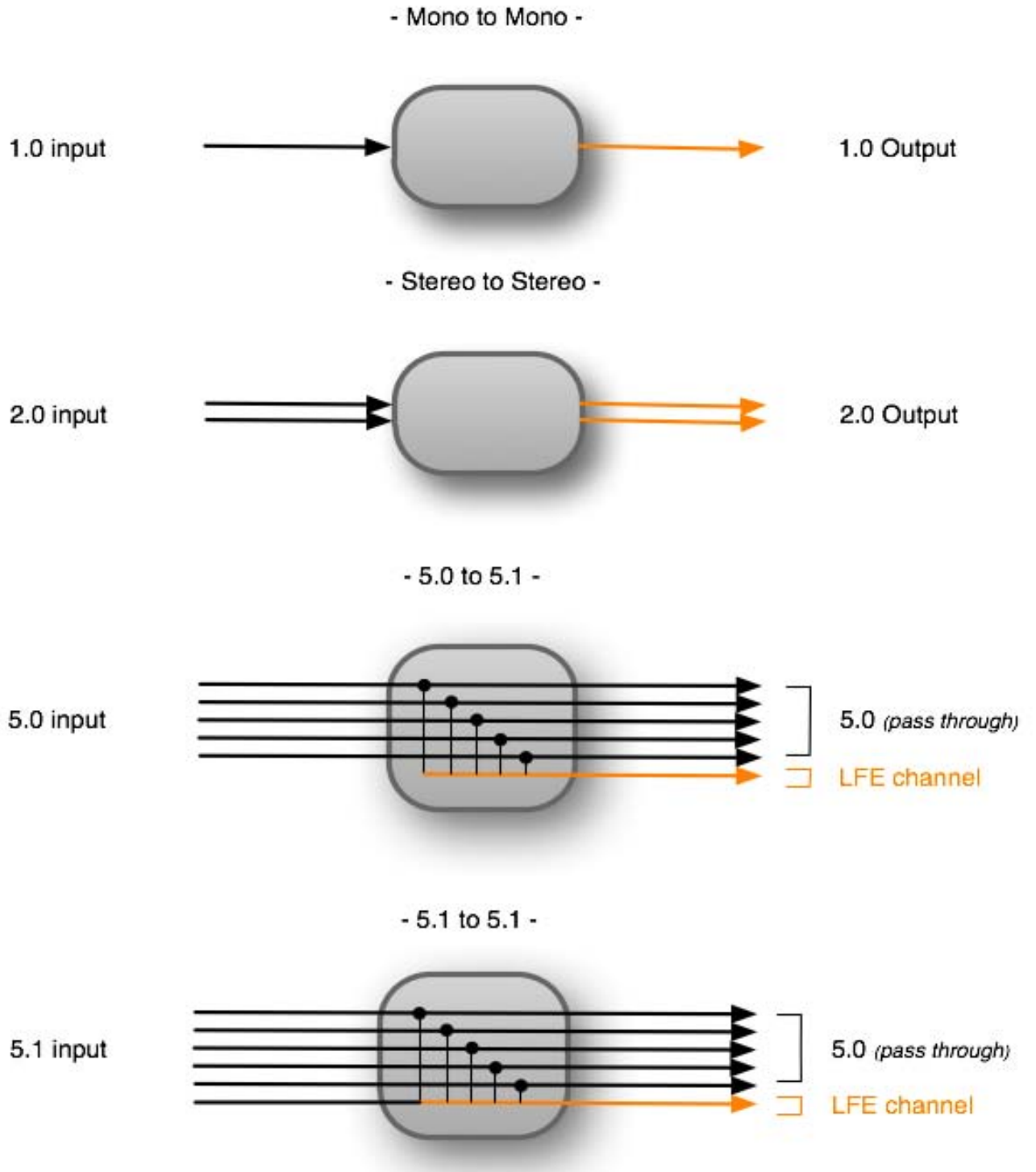- **5.1 DTS** L, R, Ls, Rs, C, LFE

1.4 Components

WaveShell technology enables us to split Waves processors into smaller plug-ins, which we call **components**. Having a choice of components for a particular processor gives you the flexibility to choose the configuration best suited to your material.

Waves LoAir includes four components:

- **LoAir 1.0 component** (Mono-to-Mono)
- **LoAir 2.0 component** (Stereo-to-Stereo)
- **LoAir 5.0>5.1 component** (5.0-to-5.1)
- **LoAir 5.1>5.1 component** (5.1-to-5.1)

1.5 Block Diagram

- Mono to Mono -

1.0 input → [ ] → 1.0 Output

- Stereo to Stereo -

2.0 input → [ ] → 2.0 Output

- 5.0 to 5.1 -

5.0 input → [ ] → 5.0 *(pass through)*
LFE channel

- 5.1 to 5.1 -

5.1 input → [ ] → 5.0 *(pass through)*
LFE channel

Chapter 2 – Quick Start Guide

Mono & Stereo Sources

- Choose your input source and desired output types; your input as well as your output can be LFE only or Full Range.
- For LFE only input sources, use LoAir to enhance its sound; for Full Range input sources, output may be either LFE only or Full Range.
- Set the Range control to determine the frequencies used to create or enhance the LFE output.
- Adjust Lo and LoAir controls to determine the amount and character of the LFE content.

5.0 > 5.1

To create an LFE track from 5.0 sources:

- Use the Feed section (L/R, C, and Ls/Rs faders) to set the amount of channel content fed to the pitch engine.

- Set the Range control to determine the frequencies used to create the LFE output.

- Adjust Lo and LoAir controls to determine the amount and character of the LFE content.

5.1

To enhance the existing LFE channel content of 5.1 sources:

- Use the Feed section (L/R, C, Ls/Rs, and LFE faders) to set the amount of channel content fed to the pitch engine.

- Set the Range control to determine the frequencies used to enhance the LFE output.

- Adjust Lo and LoAir controls to determine the amount and character of the LFE content.

Chapter 3 — Interface and Controls

3.1 Interface

(5.1 Component)

3.2 Controls

RANGE controls the cutoff frequency of the low pass filter, determining the frequency range used to create the LFE content.

Range: 20Hz to 120Hz, in 1Hz steps
Default: 80Hz

LoAIR controls the level of the generated (lowered octave) signal. Settings between 0 and 30dB cause signal saturation which may be used as a creative effect. This will not clip the digital output.

Range: -inf to 30, in 0.1 dB steps
Default: 3

LO controls the level of the filtered signal. Settings between 0 and 30dB cause signal saturation which may be used as a creative effect, and will not clip the digital output.

Range: -inf to 30, in 0.1 dB steps
Default: 3

DIRECT controls the level of the direct unprocessed signal. *(Mono and Stereo components only)*

Range: -inf to 0 dB, in 0.1 dB steps
Default: 0

OUTPUT controls the overall output level.
(Mono & Stereo Components only)

Range: -60 to 0 dB, in 0.1 dB steps
Default: 0

LFE OUTPUT controls the LFE level output.
(5.0 & 5.1 Components only)

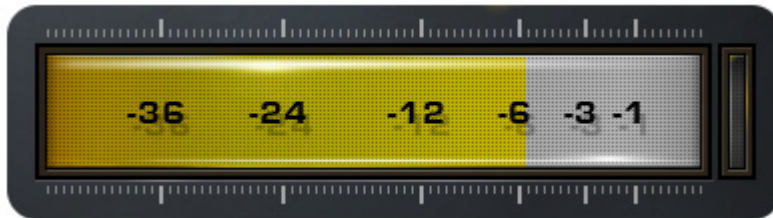Range: -60 to 0 dB, in 0.1 dB steps
Default: 0

TRIM allows fine-tune of the output level by up to ± 12 dB.

Alignment: -12dB to +12dB

CLIP LED indicates when clipping occurs.

Please note: On Surround components, the Clip LED indicate the LFE channel only.

OUTPUT METER displays the LFE output levels.

Range: -50 to 0 dB

ALIGN delays the direct signal to synchronize it with the generated signal. This control is inactive when the Direct Signal Filter is engaged, as there is no latency.

Range: On, Off
Default: Off

FEED SECTION (5.0 & 5.1 Components only)

L/R controls the amount of Left & Right channels content fed to the pitch engine.

Range: -inf to 0 dB (-inf = no feed, 0dB = unity feed)
Default: -6 dB

C controls the amount of Center channel content fed to the pitch engine.

Range: -inf to 0 dB (-inf = no feed, 0dB = unity feed)
Default: -3 dB

Ls/Rs controls the amount of Left Surround & Right Surround channels content fed to the pitch engine.

Range: -inf to 0 dB (-inf = no feed, 0 dB = unity feed)
Default: -9 dB

LFE (5.1 only)

LFE controls the amount of LFE channel content fed to the pitch engine.

Range: -inf to 0 dBFS, in 0.1 dB steps
Default: 0 dB

Chapter 4 – The WaveSystem

4.1 The WaveSystem Toolbar

All Waves processors feature the WaveSystem toolbar which takes care of most administrative functions you will encounter while working with your Waves software. The features of the WaveSystem toolbar are the same on practically all Waves processors, so familiarity with its features will be helpful whichever processor you are using.

Toolbar Functions

Undo	Undoes the last 32 actions.
Redo	Redoes the last 32 undone actions.
Setup A/B	Toggles between two presets. This is useful for close comparison of different parameter settings
Copy A->B	Copies the current settings to the second preset register
Load	Recalls presets from file
Save	Saves presets in the Waves file formats
?	Opens the manual for the processor you are using

4.2 Preset Handling

Preset Types

Factory Presets are permanent presets in the Load menu. Factory presets cannot be over-written or deleted. When applicable, different component plug-ins may have different factory presets.

User Presets are your favorite settings of the plug-in saved as a preset in the Load menu, under 'User Presets'. User Presets can be over-written and deleted.

Setup Files may contain more than one preset. For example, a single file can contain all the presets for a session. When you open a Setup File, all its setups become part of your Load pop-up menu for fast access. This can be particularly useful with multiple instances of a plug-in in a single session. By saving all the settings you create into a single Setup File, they can all be quickly available for every instance of that plug-in.

Loading Presets and Setups

Load

Click-and-hold on the Load button to see the Load pop-up menu. The menu is divided into four sections. If a section is not currently available it will not appear in the Load pop-up menu.

Open Preset File...   Select to open any setup or preset file, whether from the Library or your own creations.
'Filename.xps':   Displays any currently loaded Setup File and its presets.
Factory Presets: Displays the default Factory Presets.
User Presets: Displays any loaded User Presets.

Saving Presets and Setups

Save

Click-and-hold on the Save button to see the Save pop-up menu. Four options are available. If an option is not currently available it will be grayed out and inaccessible.

Save to New File...   Select this to start a new Setup file. There are two prompts - first for the setup filename, then for the preset name. You must provide a name for both the setup file and the preset. Click OK (ENTER) to complete the save. It is a good idea to create a folder in which to save several setup files for a project.
Save 'File Name' – "Preset Name" Overwrites the settings of the loaded preset (whether a User Preset or a preset from a Setup File) with the current settings. If a Setup File is currently loaded, the name of the Setup File is displayed followed by the name of the preset itself. If a User Preset is loaded, its name is displayed.
Save to 'File Name' As...   Saves the current settings as a new preset into the Setup file that is open (if one is not open, the option is grayed out). You will be prompted to give the preset a name.
Put into Preset Menu As...   Save the current settings into a User Preset that will always be in your Load menu (until deleted). You will be prompted to give this

preset a name. User Presets are stored in the plug-in's preference file.

Deleting Presets

You may delete User Presets and presets within a Setup File. Factory Presets and Setup Library files cannot be deleted or overwritten.

1. Hold the Command (Mac)/Control (PC) key down.
2. Click-and-hold the Load button to see the pop-up menu.
3. While still holding the Command/Control key, select the preset or setup to delete.
4. A confirmation box will appear, allowing you to cancel or 'OK' the deletion.

A/B Comparison and Copying

The Setup A/Setup B button may be clicked to compare two settings. If you load a preset in the Setup B position, this will not affect the preset loaded into the Setup A position, and vice-versa.

If you want to slightly modify the settings in Setup A, you can copy them to Setup B by clicking on the Copy to B button, then alter Setup A and compare with the original Setup B.

The name of the current setup will be shown in the title bar (on platforms which support it), and will switch as you change from Setup A to Setup B.

Note: an asterisk will be added to the preset name when a change is made to the preset -

4.3 Interface Controls

Controls can be in one of three states:

- **Not Selected** where the control is not the target of any user entry
- **Selected** where the control is the target of mouse control entry only
- **Selected and Active** where the control is the target for both mouse and keyboard entry

Toggle Buttons

Toggle buttons display the state of a control, and allow switching between two or more states. **Single-click** to change the control's state. Some toggle buttons have a text display which updates with the current setting, and

others (bypass, solo, or monitoring toggles) illuminate when the control is active.

Some processors have **link buttons** between a pair of toggle buttons, allowing click-and-drag adjustment while retaining the offset between the controls.

Value Window Buttons

Value windows display the value of a control and allow **click-and-drag** adjustment, or **direct control via the keyboard**.

- **Using the mouse**, click-and-drag on the value window to adjust. Some value windows support left/right, some up/down (as you hover over a button, arrows will appear to let you know which direction of movement that button supports).
- **Using the arrow keys**, click once with mouse to select the button, and then use up/down – left/right (depending on the direction supported by that button) to move in the smallest incremental steps across the button's range (holding down the arrow keys will move faster through the range).
- **Using key entry**, double click on the button to open the value window, and directly enter the value from your keyboard. If you enter an out of range number, the button stays selected but remains at the current setting (system beeps? If system sounds are on?)

Some processors have **link buttons** between a pair of value windows, allowing click-and-drag adjustment while retaining the offset between the controls.

Sliders

Click on the slider itself or anywhere within the sliders track. The numerical value of the slider settings is displayed in a hover window above the slider path.

Hover Box

Hovering boxes will appear and display the control value when hovering with the mouse over the control.

Multiple Selection of Controls

One of the most powerful features of the WaveSystem is the ability to select and adjust many controls at the same time. Using the mouse, simply drag-select the desired group of button or graphic controls by clicking and holding at a point outside the controls and forming a rectangle to include the controls you wish to adjust. Alternatively, you can hold down Shift while clicking the mouse on any control you wish to link. This second method is useful when you want to select two (or more) controls that are separated on the GUI by other controls you do not wish to select.

TAB Functions

TAB moves the 'selected' status to the next control, with shift-TAB moving in the reverse direction.

Additionally, the Mac has an option-TAB function for 'down' movement and shift-option-TAB for 'up' movement where applicable.

If you have several Value Window Buttons selected, TAB functions will take you through the selected controls only.