METRIC HALO



Production Bundle User's Guide

Production Bundle Users Guide

Metric Halo

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Part I. Installation

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1. System Requirements

- *Pro Tools™ (Macintosh)*: Pro Tools 10 or higher running on a Macintosh computer. This software supports Native and AAX DSP operation.
- *Pro Tools™ (Windows)*: Pro Tools 10 or higher running on a Windows computer. This software supports Native and AAX DSP operation.
- *Native*: Any Macintosh DAW that supports Audio Unit plug-ins.

- An iLok copy protection key and account. Please note that one Production Bundle license authorizes the software on any platform.

2. Installation

Macintosh

Please note – The following graphics show installation on an OS 10.7 system; the process may be slightly different in other versions of the OS, but the basic concepts are the same. Small details such as file sizes shown may vary with subsequent releases.

- Double-click the “MH Production Bundle.pkg” application



Figure 2.1: MH Production Bundle.pkg

- The installer dialog will appear:



Figure 2.2: Opening Dialog

Click “Continue”…

- Now you will see the Metric Halo License Agreement:



Figure 2.3: License Agreement

After you have read it, click “Continue”…

- Next click “Agree” to accept the License Agreement:

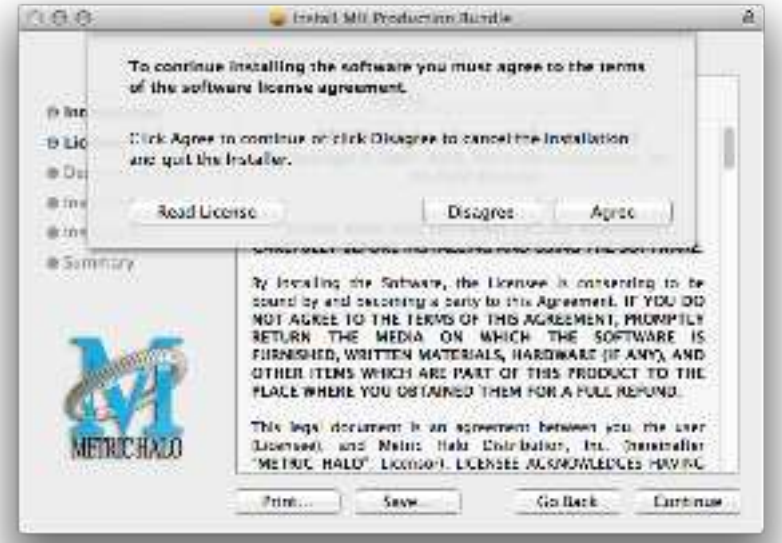


Figure 2.4: Accepting the License Agreement

- Now select the disk you would like the software to be installed to:



Figure 2.5: Selecting the Installation Disk

We recommend installing for all users unless you have a specific reason not to. Select the drive and click “Continue”…

- Next, you have the option to select the location on the disk you would like the software to be installed to:



Figure 2.6: Selecting the Installation Location

We recommend that you use the standard installation location unless you have a specific reason not to. The standard locations are:

- Plug-ins – (drivename)/Library/Application Support/Avid/Audio/Plug-Ins/MH Production Bundle
- Presets – (drivename)/Library/Application Support/Digidesign/Plug-In Settings

Click “Install”…

- You must now enter the name and password you use to log in to your computer, to give the Installer permission to write the software:



Figure 2.7: Giving the Installer Permission

Enter your credentials and click “Install Software”…

- Once the installer has finished, you'll see this dialog:

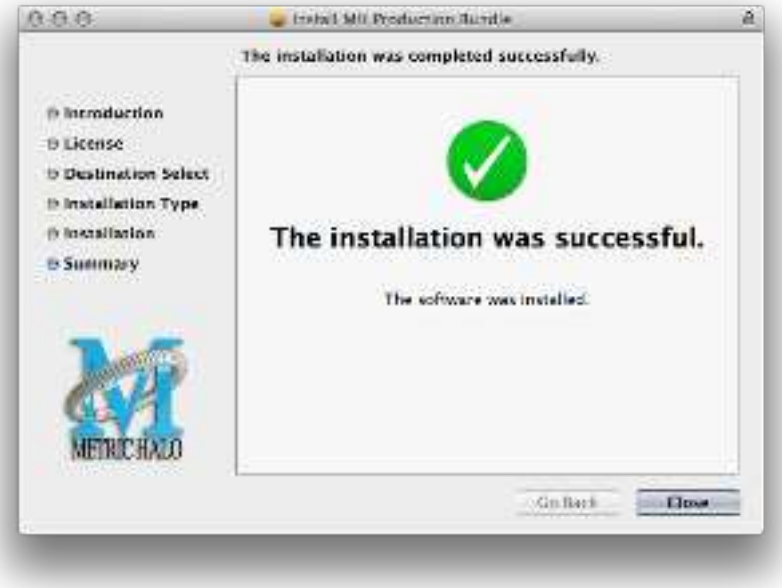


Figure 2.8: Installation Complete

If you do *not* see the “Installation Successful” message, contact MH Support.

- The final step is to go to http://www.ilok.com/ and install the software license to your iLok key.

That’s it! Enjoy using the Metric Halo Production Bundle!

Windows

There are two versions of each Windows installer:

- Installers that end in *.msi* are intended for 32 bit versions of Windows, and install the 32 bit version of the plug-in(s).
- Installers that end in *_x64.msi* are intended for 64 bit versions of Windows, and install the 32 bit *and* 64 bit versions of the plug-in(s). This allows you to run Pro Tools 10 or 11 on a 64 bit machine.

These installation instructions refer to the 32 bit installer, but the process is the same for 64 bit installations.

Please note – The following graphics show installation on an Windows 7 system; the process may be slightly different in other versions of the OS, but the basic concepts are the same. Small details such as file sizes shown may vary with subsequent releases.

- Double-click the "MHProductionBundleInstaller.msi" application



Figure 2.9: MH Production Bundle Installer msi

- The installer dialog will appear:



Figure 2.10: Opening Dialog

After you have read the Metric Halo License Agreement, click the "I accept the terms of the License Agreement" checkbox and click "Install"

- Windows will ask for permission to write the files:



Figure 2.11: Permission to Write Files

Click “Yes” to begin the installation.

- Once the files have been written you will see the completion dialog:



Figure 2.12: Installation Complete

Click “Finish” to close the installer.

If you do *not* see the “Installation Successful” message, contact MH Support.

- The final step is to go to http://www.ilok.com/ and install the software license to your iLok key.

That’s it! Enjoy using the Metric Halo Production Bundle!

Update Notification

Each plug-in will automatically check to see if there's a newer version available (if your computer is connected to the internet). If so, the version number in the plug-in's UI will turn into an update notice. Click on the notice and a browser window will open to our download page, where you may download the newest installer.

3. Introduction

The Metric Halo Production Bundle is a collection of seven great sounding plug-ins:

- Character
- ChannelStrip 3
- Haloverb
- Multiband Dynamics
- Multiband Expander
- Precision DeEsser
- TransientControl

This document will describe how the plug-ins work and describe how to use them with popular DAW hosts.

Part II. Character

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4. Introduction

Character is a modeling plug-in for digital audio workstations. We measured a number of our customers' favorite analog signal processors to determine what they did to the audio signal being run through them. By measuring the harmonic distortion fingerprint of each device, we have been able to recreate their unique properties in Character.



Figure 4.1: Character's User Interface

By combining circuit modeling with variable gain, Character is capable of shaping your sound with subtle or over-the-top results.

5. Operation

The Character user interface uses a few different control elements to control its processing. These elements are:

Character Model Menu



Figure 5.1: Character Model Menu

This pop-up menu selects Character's model. There are over 20 models available, which are detailed in the Processing chapter.

Tooltip Control



Figure 5.2: Tooltip Control

This button toggles the tooltip display. When enabled, tooltips wil be shown when the mouse hovers over a control. When the tooltip display is disabled, you may still see tooltips by holding down the ? key and hovering over a control.

Control Knob



Figure 5.3: Control Knob

Control Knobs are used to control the Drive and Output Gain parameters. You can change the value of each knob in a number of different ways. Click and drag the knob to change the value continuously. Dragging up or to the right will increase the value, while dragging down or to the left will decrease the value. If you hold down the Mac ⌘ (Command) key or Windows Control key when you click, you will be able to adjust the value with finer precision. If you hold the Mac ⌥ (Option) key or Windows Alt key when you click, the knob will reset to its default value. You may also double-click a knob to reset it.

Click on the number (readout) of the knob to display a text entry field that allows you to type in a number directly. The pop-up will remain active until you dismiss it by clicking somewhere else or hitting the return, enter, tab, Mac ⌘. (Command + .), Windows Alt key or ESC keys. Hit return or enter to confirm the value and dismiss the pop-up. Hit the tab key to confirm the value and display an entry field for the next control. ⇧–tab (Shift + tab) will display the entry field for the previous control). Hit the Mac ⌘. (Command + .), Windows Control. (Control + .) or ESC (Escape) to dismiss the pop-up and cancel the change.

Output Meter

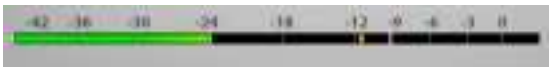


Figure 5.4: Output Meter

For the main output stage of Character we have provided meters driven with SpectraFoo metering technology. These meters show, in addition to the peak metering provided for the input stages, RMS level and VU level. The peak level is represented by the floating colored bar, the RMS level by the solid colored bar and the VU level by the overlaid gray bar. Both the Peak and RMS level are represented with fast PPM ballistics. The VU meter shows IEEE standard 300 ms RMS average level. When Character is on a mono insert there will be a single meter. When Character is running in stereo mode the top meter shows the left channel output level and the bottom meter shows the right channel output level. The output section clip lights activate if there is an over in the output stage or in any of the processing section input stages. It is reset by clicking on the meter; Mac ⌥ (Option)–click or Windows Alt-click to reset the clip lights on all the meters.

A Note About Clipping Indicators:
The clip lights do not mean that the plug-in is clipping; it means that the audio level in the DSP is currently over 0 dBFS. If you do not lower the signal level you run a chance of actually clipping the input of another processor or D/A convertor.

6. Processing

A Detailed Description

In this chapter we discuss what each parameter does and how the controls work. While Character has a fixed number of model types, there are an infinite number of combinations in conjunction with the Drive control.

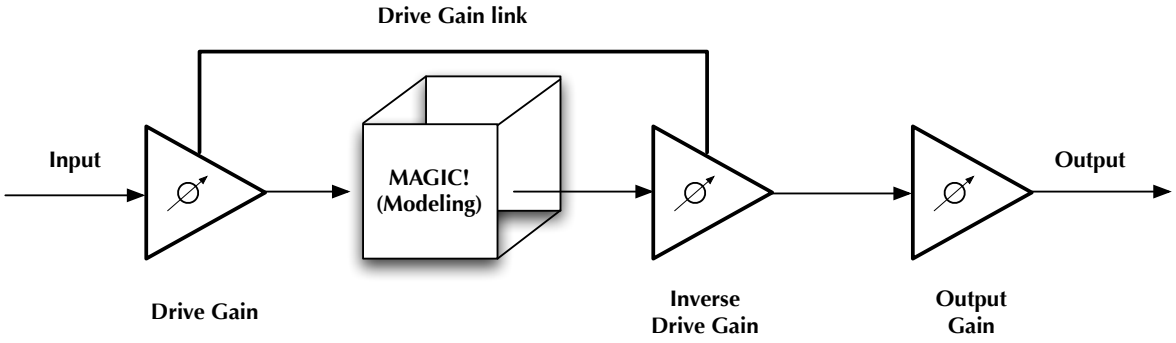


Figure 6.1: Character Block Diagram

The block diagram above illustrates the overall structure of the processing system provided by Character. This diagram does not indicate the metering blocks.

Now lets examine the various processing blocks indicated in the diagram.

Drive

The Drive control applies ±24 dB of gain to the signal before it goes to the modeling section. This allows you attenuate the signal for a subtle effect, or boost to get a more dramatic effect.

As gain is changed before the modeling stage, the inverse gain is applied after. For example, if you set the Drive control to +6 dB, the gain is boosted 6 dB before the model and cut by 6 dB after. This allows you to "push" the modeling section with no increase in output level. You may also hit the model with less signal by setting the Drive control to a negative value without loss of overall volume.

You may still experience in increase in signal level when using positive Drive gain with some models; you can use the Output Gain control to correct this.

Please note that the Drive parameter may have a greater range than you need for a given model.

Character Model

Each Model represents a digital "copy" of an analog device; some models are made from measuring a device with different combinations of settings. The most effective way to utilize Character is to listen to how each model affects your sound rather than relying on the name alone.

- None: No modeling is applied.
- Transformer: Applies the harmonic distortion signature of a transformer-coupled input.
- Valve: A tube-based EQ input stage.
- FET: Model of a solid state (transistor) front end.
- Soft Sat: Tube-based EQ with saturation.
- Boutique Tube: Hand-made tube mic pre.
- American Transformer 1: A variation of the "Transformer" model.
- American Transformer 2: Second variation of the "Transformer" model.
- California Tube Mic: American designed tube mic pre.

- California Tube Line: American designed tube line input.
- Modern Tube DI: Mastering quality tube DI.
- Modern Tube EQ: Mastering quality EQ.
- Modern Tube Soft Sat: Mastering quality EQ with saturation.
- Modern Tube LG: A tube mic pre with a low gain setting.
- Modern Tube MG: A tube mic pre with a medium gain setting.
- Modern Tube HG: A tube mic pre with a high gain setting.
- Modern Tube Sym: Mastering quality EQ
- Modern Tube Soft Sat: Mastering quality tube mic pre with saturation.
- Classic British Mic Pre: A favorite large console mic pre.
- American Solid State: FET mastering EQ.
- California Vocal Box: Transformer coupled tube vocal processor.
- California Vocal Box Drive: Transformer coupled tube vocal processor with increased gain.
- British Mic Pre Clone: A popular clone of a favorite British mic pre.

The “soft sat” variations are particularly good at providing the “analog glue” that many engineers want for their final mixes. The “sat” stands for “saturation”, such as you would get with analog tape. The “soft” part of the name indicates that the level is *lower* after processing. You may want to use the Output Gain to make up the lost gain.

While most of the models can be applied to every channel, overuse of the saturation models can lead to undesired effects.

Output Gain

The Output Gain applies ±24 dB of gain to the signal after it has been through the modeling stage. This can be used to increase the final output level after using a soft saturation model or otherwise gain-stage the signal for the next processor.

Using Character in Your Projects

There are several ways to use Character:

- Inserted on a single channel: This lets you add a little “flavor” to a channel by itself or as a pre-processor for another plug-in. By automating the Drive and Output Gain controls you can use Character as a creative effect.
- Inserted on all channels: Create a virtual mixing console, or use different models for different groups of inputs; mic pres for vocals, DIs for bass, tubes for drums…
- Inserted on the master bus: Put a Soft Sat model on the master 2 bus for the analog “glue” to finish off your mix.
- All of the above!

Part III. ChannelStrip 3

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7. Introduction

ChannelStrip is a plug-in for digital audio workstations which provides the essential basic channel processing found in the channel strip of a modern mixing console.

Processing functions include:

- Input level control
- Phase Invert
- Expander/Gate with filtered sidechain
- Compressor with filtered sidechain
- 6 band Parametric EQ
- Channel delay
- Limiter
- Advanced metering

ChannelStrip 3 has several notable new features not present in ChannelStrip 2:

- Updated and resizable user interface
- Sidechain listen
- Scalable gain reduction meters
- New “MIO” compressor character
- SpectraFoo™ spectrum analysis
- Limiter
- Fully interpolated EQ section with scalable display
- Processes are automatically enabled when adjusted



Figure 7.1: ChannelStrip's User Interface

8. Operation

As with most channel strips, ChannelStrip provides many copies of controls that are all operated in a similar manner. The ChannelStrip user interface uses a few different control elements to control all of the processing. These elements are:

Control Knob

Control Knobs are used to control the value of various continuous parameters of a process. Examples of these types of parameters include: Attack time, Release Time, Threshold, etc. There are four styles of encoders:



Figure 8.1: Swept Knob

The rings around these encoders sweep from a minimum to maximum value, normally from left to right. One exception is the compressor threshold, which sweeps from right to left.



Figure 8.2: Plus/Minus Knob

The rings around these encoders start at 12 o'clock and sweep to either side. These knobs are used for gain control, where straight up is no gain change, turning to the left cuts the signal and turning to the right boosts it.



Figure 8.3: Spread Knob

The rings around these encoders start at 12 o'clock and spread to both sides equally as the control is increased. These knobs are used for bandwidth controls.



Figure 8.4: Limiter Knob

The ring around this encoder displays the amount of gain reduction from the limiter. The display sweeps around the encoder from right to left, with a fully left display indicating 12dB of gain reduction.

You can change the value of each knob in a number of different ways. Click and drag the knob to change the value continuously. Dragging up or to the right will increase the value, while dragging down or to the left will decrease the value. If you hold down the Mac ⌘ (Command) key or Windows Control key when you click, you will be able to adjust the value with finer precision. If you hold the Mac ⌥ (Option) key or Windows Alt key when you click, the knob will reset to its default value. You may also double-click a knob to reset it.

Click on the number (readout) of the knob to display a text entry field that allows you to type in a number directly. The pop-up will remain active until you dismiss it by clicking somewhere else or hitting the return, enter, tab, Mac ⌘. (Command + .), Windows Alt key or ESC keys. Hit return or enter to confirm the value and dismiss the pop-up. Hit the tab key to confirm the value and display an entry field for the next control. ⇧–tab (Shift + tab) will display the entry field for the previous control). Hit the Mac ⌘. (Command + .), Windows Control. (Control + .) or ESC (Escape) to dismiss the pop-up and cancel the change.

When you enter a number into the pop-up entry, you can use a couple of abbreviations: “k” multiplies the number by 1000 and “m” divides the number by 1000. So if you want to enter 16,500 Hz you can just type 16.5k.

Toggle Button



Figure 8.5: Toggle Button (Off)



Figure 8.6: Toggle Button (On)

Toggle buttons are simple on/off switches. They light up when they are on and are dark when they are off. You toggle the state of the button by clicking on it. These buttons are used to enable processor sections, select keying sources and to switch the order of processing within ChannelStrip.

Fader

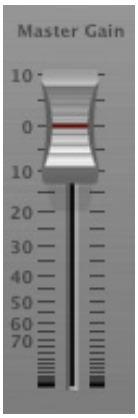


Figure 8.7: Master Fader

The fader is unique in that only one fader is used in the interface for ChannelStrip. It works in much the same fashion as the control knobs. Instead of dragging up/right or down/left to change the value, you directly drag the fader knob. The other “tricks” described for the knobs also work with the fader. The fader is used to control the master output gain of the plug-in before the limiter stage.

Filter Type

Each filter band in the strip (6 EQ bands and 2 Side-chain bands) has a filter type control that allows you to choose the shape of the filter applied by that band. Each band provides 6 different types of filter shapes:



Figure 8.8: Peaking/Parametric

Peaking/Parametric – a second order bell-shaped parametric boost/cut filter. Boost/cut has a range of ± 24 dB. When the boost is greater than +15 dB the filter gains a resonant quality. The center frequency of the filter can be any frequency between 20 Hz and 20 kHz. The bandwidth of the filter is continuously variable between 0.1 octaves and 2.5 octaves.



Figure 8.9: Low Cut

Low Cut – a 12 dB/octave low cut filter with a -3dB point that is continuously adjustable between 20 Hz and 20 kHz.



Figure 8.10: High Cut

High Cut – a 12 dB/octave high cut filter with a -3dB point that is continuously adjustable between 20 Hz and 20 kHz.



Figure 8.11: Low Shelf

Low Shelf – a shelving filter that applies boost/cut to low frequencies. Boost/cut is limited to +12 dB/– 24dB. The bandwidth controls the dip/peak that is added at the end of the transition band.



Figure 8.12: High Shelf

High Shelf – a shelving filter that applies boost/cut to high frequencies. Boost/cut is limited to +12 dB/– 24dB. The bandwidth controls the dip/peak that is added at the end of the transition band.



Figure 8.13: Bandpass

Bandpass – a bandpass filter with 6dB per octave skirt on the high and low ends of the pass band. The width of the pass band can be adjusted between 0.1 octaves and 2.5 octaves and the center of the pass band is continuously adjustable between 20 Hz and 20 kHz.

You can select from these types via three different methods. Each time you click on the Filter Type control, the band will switch to the next type in the list (and wrap to the beginning when you hit the end of the list). If you click and hold the mouse button, a pop-up menu listing all of the types will appear after about 1/4 of a second. You can select the type directly from this pop-up menu. If you want to access the menu without having to wait, hold down the Mac ^ (Control) key when you click or right-click (Mac/Win).

Sidechain Routing Switch



Figure 8.14: Sidechain Routing Switch

Each sidechain routing switch allows you to control the signal sent to the sidechain input of its associated gate or compressor. By default, the level detectors in the dynamics processors key off of the signal that they are processing. Under some circumstances, you may want to use a different signal to open the gate or compress the signal. Most DAWs allow you to specify an input or bus as the source for ChannelStrip's sidechain input. The Sidechain routing switches allow you to choose the input to the level detector from the sidechain (key) input or the signal being processed. To toggle the state, click the Sidechain routing switch.

Sidechain Listen Button



Figure 8.15: Sidechain Listen Button (Disabled)



Figure 8.16: Sidechain Listen Button (Enabled)

The sidechain listen button allows you to listen to the signal being sent to the gate or compressor sidechain input. This allows you to monitor the audio being routed from the key input, and hear the effect of sidechain filtering.

Compressor Character



Figure 8.17: Compressor Character Switch

The compressor character controls the time constants of the compressor section. It functions identically to the Filter Type control, except there are only four choices: Smooth, Warm, Fast and MIO. See the section on the compressor for more information.

User Interface Control



Figure 8.18: UI Size Control

This button switches the overall ChannelStrip user interface between small, medium and large sizes to accomodate different display resolutions.

Tooltip Control



Figure 8.19: Tooltip Control

This button toggles the tooltip display. When enabled, tooltips wil be shown when the mouse hovers over a control. When the tooltip display is disabled, you may still see tooltips by holding down the **?** key and hovering over a control.

Graphs Disclosure Control



Figure 8.20: Graph Disclosure Button

The Graphs disclosure control allows you to show and hide ChannelStrip's display graphs. This allows you to maximize screen real-estate while still providing details on the processing when they are needed. Click on this control to toggle the visibility of the graphs. ChannelStrip will automatically make the plug-in window smaller when you hide the graphs.

ChannelStrip also uses a number of standard visual representations to give you feedback about what is happening within the processor. These elements are:

Peak Meter

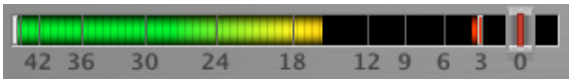


Figure 8.21: Peak Meter

ChannelStrip provides a peak-reading meter at the input stage of each processing block. The meter uses the fast PPM standard for decay time (0.9 seconds per 20 dB) and the digital PPM standard legend for calibration. On the dynamics sections (gate and compressor) a white bar is visible on top of the meter and indicates the current detector level. For the dynamics sections the processor threshold is indicated by the red slider over the input peak meter. This slider can be manipulated directly with the mouse. The top segment of the meter (above 0dB) is used as a clip indicator and is illuminated red if the input section of the processor detects an over. The clip light remains illuminated until you click on the meter. Mac ⌥ (Option)–click or Windows Alt-click any meter to reset the clip lights on all of the meters in ChannelStrip. When ChannelStrip is running in stereo mode, this meter shows the higher of the two input levels and will detect an over on either input channel.

Gain Reduction Meter

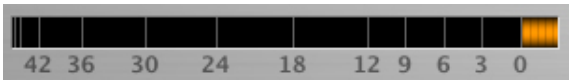


Figure 8.22: Gain Reduction Meter

The gain reduction meter, which has an orange bar and grows down from 0 dB, shows the amount of attenuation being applied by its associated dynamics processor at any given time. If you right-click (Mac/Win) or Mac ^ (Control) click on the meter, you may set the scale of the gain reduction meter to any of the following values:

- 54 dB
- 24 db
- 12 db
- 6 db
- 3 db

Peak, RMS, VU Output Meter

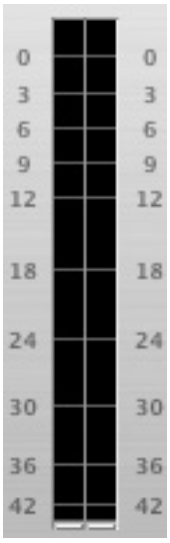


Figure 8.23: Output Meter

For the main output stage of ChannelStrip we have provided meters driven with SpectraFoo™ metering technology. These meters show, in addition to the peak metering provided for the input stages, RMS level and VU level. The peak level is represented by the floating colored bar, the RMS level by the solid colored bar and the VU level by the overlaid gray bar. Both the Peak and RMS level are represented with fast PPM ballistics. The VU meter shows IEEE standard 300 ms RMS average level. When ChannelStrip is on a mono insert there will be a single meter. When ChannelStrip is running in stereo mode the left meter shows the left channel output level and the right meter shows the right channel output level. The output section clip lights activate if there is an over in the output stage or in any of the processing section input stages. It is reset by clicking on the meter; Mac ⌥ (Option)–click or Windows Alt-click to reset the clip lights on all the meters.

A Note About Clipping Indicators:
The clip lights do not mean that the plug-in is clipping; it means that the audio level in the DSP is currently over 0 dBFS. If you do not lower the signal level you run a chance of actually clipping the input of another processor or D/A convertor.

EQ Transfer Function

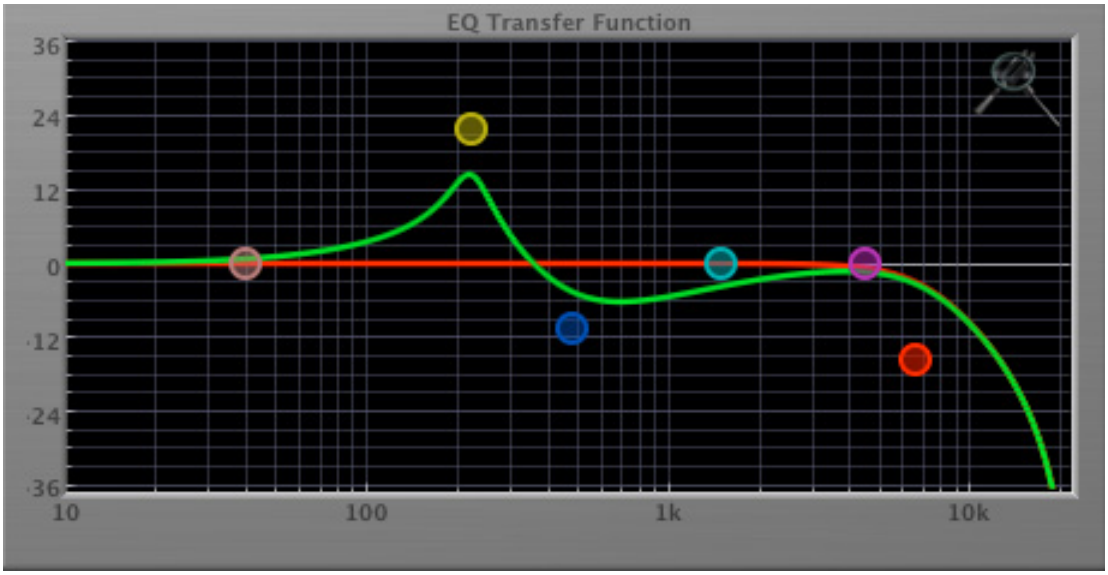


Figure 8.24: EQ Transfer Function

The following information applies to the EQ processing block as well as the sidechain filters of the gate and compressor.

The EQ transfer function is a combination of a visual representation of how the EQ is processing the signal and an intuitive controller for the associated filter bands. This display is sometimes called a "Cartesian Graph" by other EQ manufacturers.

The horizontal axis provides frequency calibration in Hertz (Hz). The vertical axis provides level calibration in decibels (dBr). The heavy green line indicates the relative change in level at each frequency that is created by the combined effects of all of the active bands in the equalizer. Each EQ band is represented by a colored dot in the transfer function. The color of the dot matches the color of the rings around the knobs for the corresponding EQ band.

The band that is currently being edited will be displayed along with the overall response curve. If the associated band is a parametric filter there will also be two smaller colored dots that can be used to control the bandwidth of the filter. Clicking on a large colored dot and dragging will allow you to adjust the frequency and gain of the

associated band. Mac ⌘ (Command)–click, Windows Control-click or double-click the dot to toggle the band enable. Mac ⌥ (Option)–click or Windows Alt the dot to adjust the bandwidth (dragging right increases the bandwidth, left decreases the bandwidth). Mac ⌘⌥ (Command + Option)–click or Windows Control+Alt-click the dot to switch the band filter type. Click and drag the smaller dots associated with a larger dot to adjust the filter bandwidth.

To dismiss the filter curve, click anywhere in the black area of the transfer function. This will deselect the filter point, and the only trace displayed will be the green master curve.

If you right-click (Mac/Win) or Mac ^ (Control) click on the transfer function, you will see a menu to set the vertical dB scale for the display. The values are:

- ±3 dB
- ±6 dB
- ±12 dB
- ±24 dB
- ±36 dB

This menu also allows you to specify whether adjusting a filter causes it to automatically be enabled. This preference is for all instances of ChannelStrip 3.

Spectragraph Analyzer

Clicking the SpectraFoo™ logo in the upper right hand corner of the transfer function will activate the spectragraph, showing the realtime frequency analysis of your signal:

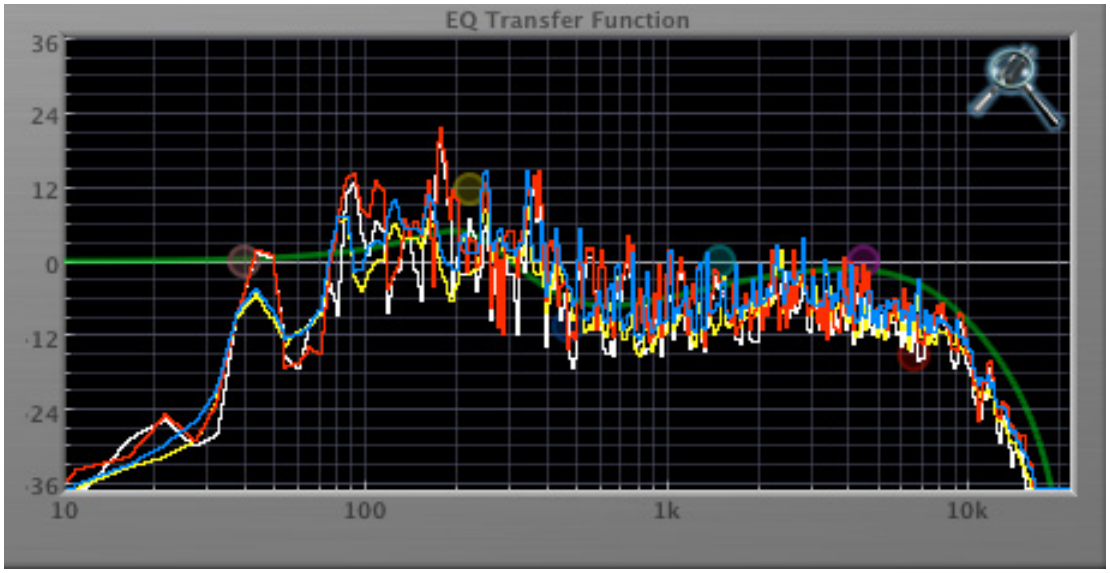


Figure 8.25: Spectragraph Display

The traces are:

- White: Left channel instantaneous display
- Red: Right channel instantaneous display
- Yellow: Left channel average display
- Blue: Right channel average display

The *instantaneous* trace updates in real-time, allowing you to see the immediate peak level of your audio. The *average* trace displays the level as averaged over a short period, giving you a more general view.

The spectragraph analyses the signal post-filter, allowing you to see the effect of your EQ filter(s); the EQ's spectragraph is also after the Master Gain and Limiter. The spectragraph may only be used in one window at a time and will toggle between sections. For example, if your are viewing the spectragraph in the EQ window and then click the the SpectraFoo™ icon in the compressor's sidechain window, the spectragraph will switch to that window. To disable the spectragraph entirely, click the active 'Foo icon.

If you right-click (Mac/Win) or Mac ^ (Control) click on the transfer function, you will see a menu to set options for the spectragraph:

- Show Instantaneous Trace: Toggles whether the spectragraph shows the instant response of your audio.
- Show Average Trace: Toggles whether the spectragraph shows the averaged response of your audio.
- Show Left Channel: Toggles the left channel spectragraph display.
- Show Right Channel: Toggles the right channel spectragraph display.

These settings are stored for each transfer function window separately, and for each instance of ChannelStrip.

Dynamics Knee

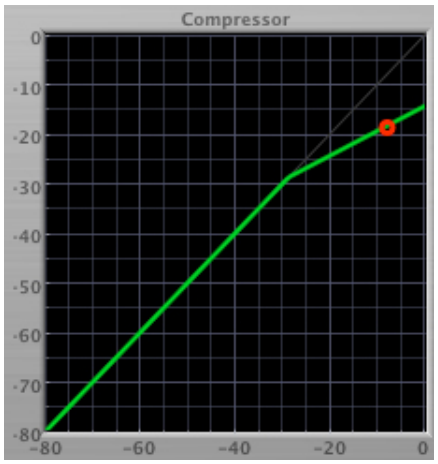


Figure 8.26: Dynamics Knee

ChannelStrip contains a Dynamics Knee diagram for the gate and compressor processing sections. The diagram provides feedback on the response of the associated dynamics processor. Both the horizontal and vertical axes are calibrated in dBFS. The horizontal axis corresponds to the input level and the vertical axis represents the output level. The heavy line shows the dynamic of the associated processing block. This means that if you sent in a sine wave at a given input level, the output level would be equal to the level shown on the graph. When the processor is working with real dynamic signals, the graph is a good approximation of the response when the attack is fast and the release is slow.

In most cases, however, the dynamic response of the processor will not match its static response. In order to represent this, we have included a “bouncing ball” meter for both the gate and the compressor. This metering is shown as a red circle that is overlaid on the knee diagram. The red circle is placed so its horizontal position is equal to the instantaneous input level and its vertical level is equal to the instantaneous output level. Examining this meter while you are adjusting the dynamics controls will provide you with a great deal of information about how the processor is operating and how the controls interact.

Auto Enables

The processing sections of ChannelStrip will automatically enable when one of its parameters are adjusted. For example if the EQ master enable is off, adjusting any EQ parameter will turn it on. This way you will never make “phantom” adjustments where you make adjustments and hear no change. The same is true for the sidechain filters.

9. Processing

A Detailed Description

In this chapter we'll discuss what each processing block does and how the controls work.

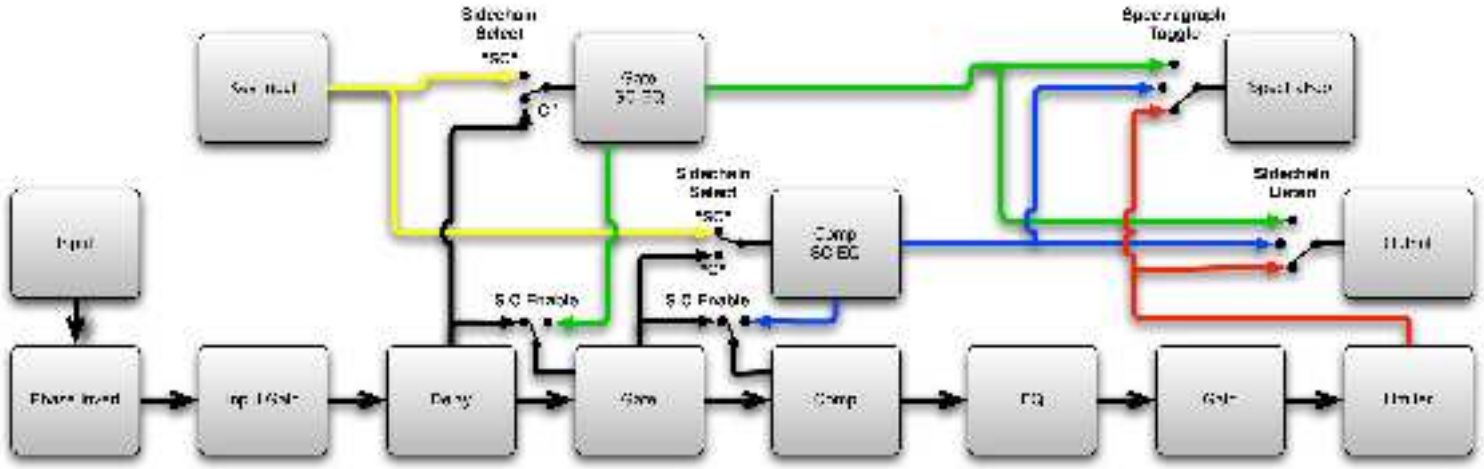


Figure 9.1: Signal Flow: Compressor is Pre-EQ

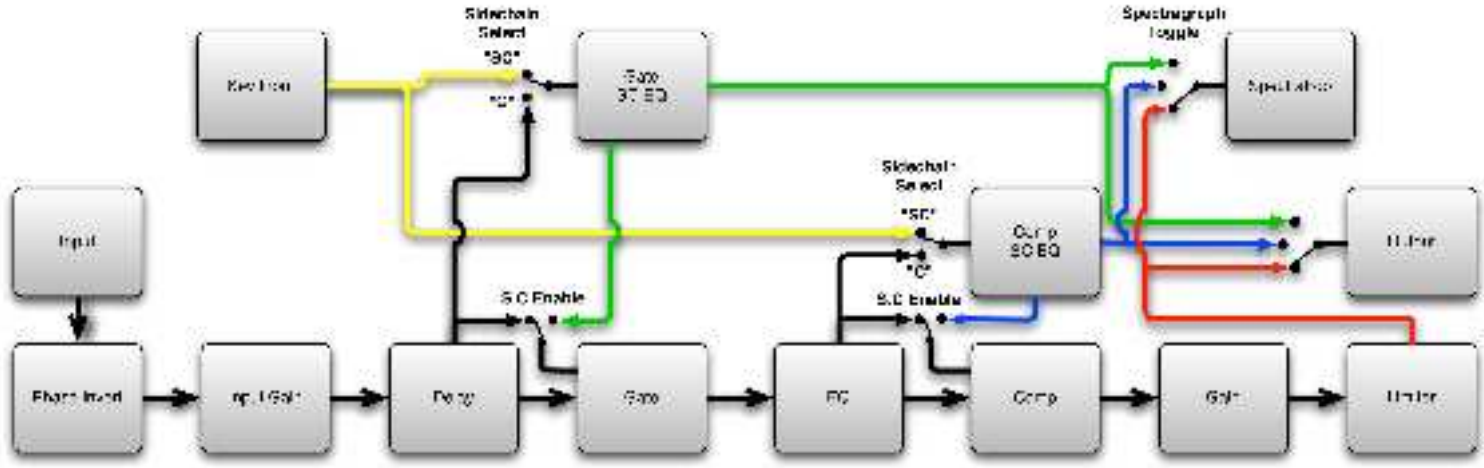


Figure 9.2: Signal Flow: Compressor is Post-EQ

The block diagrams above illustrate the overall structure of the processing system provided by ChannelStrip. The diagrams do not indicate the various metering blocks. The configuration is controlled by the “Post EQ” button in the compressor and it changes the path of the signal through the processor. The internal signal switching provided by ChannelStrip allows you to explore the various effects of re-ordering processing blocks without having to waste time stopping the transport, removing and reinserting plug-ins and then finally restarting the transport.

Now lets examine the various processing blocks indicated in the diagram.

Input Conditioning

After the signal is routed to ChannelStrip it runs through the phase invert block. This block is controlled by the “ø Inv” switch. When the phase invert is enabled the polarity of the signal will be flipped. The signal is cross-

faded between the uninverted and inverted states so the signal level will drop briefly when you flip the state of the phase invert switch, but it will not introduce a glitch or click into your audio.

After the the phase invert block the audio is routed through an input gain block that provides input gain of up to +24 dB. You can use this gain to condition signals that are low in level.

This input gain may also be used to pad out signals by up to –24 dB. While you may find this attenuation useful to just bring down the level through the strip simply and quickly, you must realize that this gain is applied after the signal reaches ChannelStrip and will not pad out any clipping that occurs in the A/D converters or in a plug-in that is inserted before ChannelStrip.

The input gain is controlled by the “In Gain” knob.

Gate/Expander

The next processing block is the Gate. The gate is used to adjust the low level dynamics of the signal being processed. Through the use of the external side-chain the gate can be used to do acoustic triggers. In addition, the side chain filter may be used to make the control of the dynamics frequency sensitive. This can be useful when you are trying to gate out a noisy signal that has a specific, very strong signal in a limited frequency range when you want the gate to open.



Figure 9.3: Gate/Expander

Theory Of Operation

Based upon your setting for the sidechain routing switch, either the Pro Tools sidechain input signal or the channel signal is fed to the sidechain filter. The sidechain filter provides one band of equalization that may be used to accentuate or cut certain frequencies (parametric or shelf filters) or limit the key to a certain range of frequencies (cut or bandpass filters). You control the filter type and the filter parameters with the filter type button and the “dB”, “Hz” and “BW” knobs.

You can enable the side chain filter with the green “SC Ena” button.

After the sidechain signal has been processed by the sidechain filter it is measured by a level detector that determines the instantaneous level of the signal (in the case that ChannelStrip is running in stereo mode the detector is linked with the other channel in the stereo pair and the higher level of the two channels is used).

When the gate is enabled the signal will be attenuated based on how much the detected level is below the threshold you set with the “Thresh” knob.

The dynamic behavior of the opening and closing of the gate is controlled with the “Attack” and “Release” knobs.

Gate Enable

This button is in the Master Enables section. When this button is off, the gate will not change the signal.

Threshold Control

The “Thresh” knob controls the level at which the gate opens and closes. When the detector level is above the threshold level the gain through the gate is 0 dB. When the detector level is below the threshold level, the gain is reduced at a ratio of 1:2. This means that if the detector is 3dB below the threshold the signal output will be 6dB below the threshold or 3dB below the input level.

The gate threshold level is also indicated by the red bar above the gate input meter. You can adjust the threshold level using this indicator as well as by using the “Thresh” knob.

Attack Control

The “Attack” knob allows you to adjust how quickly the gain reduction is decreased to 0 dB when the detector level goes above the threshold level. When this control is set to Auto, the attack rate is controlled by how much the detector level is above the threshold. When you set the attack to another value other than “Auto” that value, measured in milliseconds, will control how quickly the gate opens. The maximum value is 100 milliseconds. Attack times other than auto are especially useful when using the gate as a trigger. If the key signal is a little early you can use the attack to delay the trigger slightly. It is also useful to remove the initial transients of impulsive sounds.

Release Control

The “Release” knob controls the release time of the gate. This parameter is measured in milliseconds and can range from 5 ms to 5 sec. The release time controls how quickly the gate closes after the detector drops below the threshold value. For settings below 90 ms or so the gate closes pretty abruptly and may introduce unwanted artifacts into your audio, depending on the signal.

Using The Sidechain Key Input w/Selectable Filter

The gate provides a sidechain that processes audio before the detector determines the current level. The sidechain can process either the channel signal or some external side chain input signal.

Sidechain Listen Button

This button (the speaker icon next to the Sidechain Enable) allows you to monitor the audio being sent to the gate's detector. This will allow you to listen to external audio that is being routed to the sidechain, and also hear the effect of the sidechain filter. When you are done listening to the sidechain, click this button again to hear ChannelStrip's normal output.

Sidechain Routing Button

This button (labeled “C” in the illustration) is used to control the routing of the input signal to the gate sidechain. When the button is in the “C” state, the signal used by the sidechain is the signal being processed by ChannelStrip. When the button is in the “SC” state, the signal used by the sidechain is the input or bus selected in the “side chain input” pop-up in your DAW's plug-in window header. If nothing is selected in that pop-up, the input to the sidechain will be silence and the gate will never open.

Sidechain Filter Enable

This button (labeled “SC Ena”) allows you to toggle the sidechain filter in and out of the audio path to the detector.

Filter Type Button

This button (indicating a peaking/parametric filter in the illustration) is used to select the filter type of the single band of side chain EQ. You may choose from the 6 different types of filters detailed in the filter type section in “Operating the Strip”.

Filter Band Boost/Cut Control

Use this knob (labeled “dB” in the illustration) to adjust the gain of the filter band for the peaking, high and low shelf filter types. This parameter is ignored for the other filter types. In the shelving filters the maximum boost is +12 dB and the maximum cut is -24 dB. In the peaking filters the maximum boost/cut is ± 24 dB. When you increase the boost for a filter band above 15 dB, the filter gets nicely aggressive and resonant.

Filter Band Frequency

Use this knob (labeled “Hz” in the illustration) to adjust the characteristic frequency of the filter. For the peaking and bandpass filter types this controls the center frequency of the filter. For the high and low cut filter types this control adjusts the 3 dB point of the filter. For the shelving filters this control adjusts the shelf transition point.

Filter Bandwidth

Use this knob (labeled “BW” in the illustration) to adjust the characteristic width of the filter. This control only has effect for peaking, shelving and bandpass filter types. Please note that this parameter controls the bandwidth (measured in octaves), not the quality factor (or “Q”). If you have been using Q controls, the numbers will be backwards from what you are used to. Small numbers mean narrow filters and large numbers mean wide filters. For peaking and bandpass filter types, this parameter controls the bandwidth of the filter in octaves. For the high and low shelving filter types this parameter adjusts the amount of dip/peak and the slope of the shelf. When this parameter is set to 0.1 you will get the largest dip/slope available and when the parameter is 2.5, you will get a classic first order shelf (which has a transition band that is about 1 decade wide; e.g. if it is a high shelf with a frequency of 10 kHz and a gain of 10 dB, the gain will be at 0 dB near 1kHz).

Compressor

Depending on the state of the “Post EQ” button (the default state is for the compressor to come first in the signal chain), the next block in the signal processing chain is the compressor. The compressor is used to adjust the high–level dynamics of a signal. As with the gate, the sidechain can be used to make the compressor frequency sensitive (so it can be used like a de-esser) or to reduce the gain of the signal in response to some external event (this allows the compressor to be used like a ducker or for other creative effects).



Figure 9.4: Compressor

Often, you will want to compress the signal before you equalize it. Sometimes you will need to equalize the signal before you compress it. ChannelStrip provides that flexibility with the “Post EQ” button. This is a very

important part of ChannelStrip because it allows you to test different processing scenarios quickly and easily. It also allows you to compare the two different approaches without having to stop the transport so you can get a much more visceral comparison.

Theory Of Operation

The operation of the compressor is very similar to the gate. Based upon your setting for the sidechain routing switch, either the sidechain input signal or the channel signal is fed to the sidechain filter. The sidechain filter provides one band of equalization that may be used to accentuate or cut certain frequencies (parametric or shelf filters) or limit the key to a certain range of frequencies (cut or bandpass filters). You control the filter type and the filter parameters with the filter type button and the "dB", "Hz" and "BW" knobs.

You can enable the sidechain filter with the enable button. After the sidechain signal has been processed by the sidechain filter it is measured by a level detector that determines the instantaneous level of the signal (in the case that ChannelStrip is running in stereo mode the detector is linked with the other channel in the stereo pair and the higher level of the two channels is used).

When the compressor is enabled the signal will be attenuated based on how much the detected level is above the threshold you set with the "Thresh" knob and what compression ratio is set with the "Ratio" knob.

The dynamic behavior of the opening and closing of the gate is controlled with the "Attack" and "Release" knobs and the compressor character switch.

Audio Dynamics

Compressors are important in controlling the dynamic range of the source material you are working with. While the instruments, your ears, the microphones and your digital audio workstation all have dynamic ranges that are greater than 100 dB, most reproduction and delivery media have significantly reduced dynamic ranges. Compression is used, in its simplest form, to help reduce the dynamic range of your project or elements of the project to a range that is reproducible. It does this by making the soft material louder and the loud material softer. This type of processing can also be used to change the character of the sound instead of just adjusting the dynamic range. The compressor in ChannelStrip excels at both types of processing.

Compressor Enable

This button is in the Master Enables section. When this button is off, the compressor section will not change the signal. The order of this button will change depending on whether the compressor is set to "Post EQ".

Post EQ

The "Post EQ" button places the compressor section after the equalizer in the signal chain. By providing the capability to switch the routing on the fly, ChannelStrip allows you to determine the most effective routing for your particular signal quickly and easily.

Auto Gain

When the "Auto Gain" button is enabled the compressor automatically adjusts the makeup gain in the compressor output stage so that if the manual "O Gain" knob is set to 0 dB the static gain reduction for a 0 dB input level will be about 7 dB. This number was chosen because it works well with the default settings of the "Attack" and "Release" knobs to provide enough pad to not clip fast transients. The "O Gain" knob will apply additional trim to the internal automatic gain. If the threshold is set very low (e.g. –60 dB) and auto gain is enabled, you will not be able to add very much manual gain (only about 1 – 2 dB) even though the readout on the knob will go up to + 30 dB. This is an internal limitation of the compressor.

Compressor Knee Control

The "Knee" knob allows you to adjust shape of the compressor transfer function when the Compressor Character is set to MIO (the Knee control has no effect for the other compressor character algorithms and will not be visible in those modes).

When the Knee control is set to 0, the transfer function of the compressor is a classic “hard-knee” in which the compressor applies no gain reduction when the detector is below the threshold, and the gain is reduced by the ratio when the detector level is above the threshold.

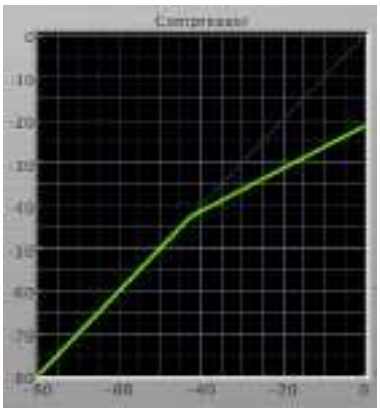


Figure 9.5: Knee Control at 0

When you increase the Knee parameter from 0 to 1 the knee of the transfer function gradually softens until the compressor functions as a soft-knee compressor when the Knee parameter is 1.

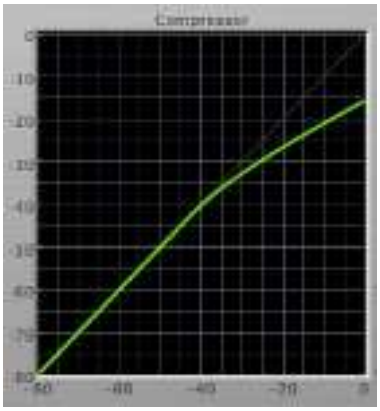


Figure 9.6: Knee Control at 1

You can also adjust the Knee parameter to negative values, which has the effect introducing a “kink” in the compressor transfer function at the threshold. This can yield useful results on percussive material.

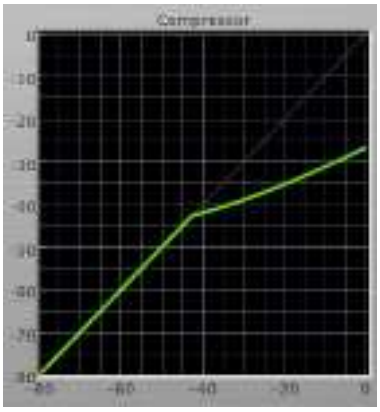


Figure 9.7: Knee Control at -0.5

Manual Make-Up Gain

The “O Gain” knob allows you to manually adjust the makeup gain applied to the signal after the gain reduction applied by the compressor. If the Auto Gain switch is off, this is the amount of makeup gain applied. If the Auto Gain switch is on, then this parameter is a trim added to the internally computed makeup gain. The makeup gain is enabled and disabled along with the rest of the compressor.

Compressor Character

Use the compressor character button to determine the overall dynamic characteristics of the compressor. There are three “classic” ChannelStrip 2 settings to choose from:

- Smooth – appropriate for full mixes or single instruments that do not have big transients. Provides very smooth compression with few artifacts, no distortion and limited transient control.
- Warm – the most versatile setting for the compressor. Balances transient control with audibility of the compression. Appropriate for a wide range of signals including harmonic instruments with large transients (e.g. Plucked bass).
- Fast – provides significant transient control at the expense of transparency and added distortion. Appropriate for impulsive signals with significant transients. Supports very fast (e.g. 1 sample) gain reduction attacks.

as well as a new algorithm for ChannelStrip 3:

- MIO – provides the compressor characteristics from the MIOStrip compressor that runs on our interfaces. This compressor algorithm is very different from the other three. The MIO compressor generates its gain reduction directly from the detector level. The Attack and Release parameters directly control the measurement of the detector level. This allows the MIO compressor to function as a limiter as well as a compressor and a leveling amplifier. The MIO compressor algorithm also supports an adjustable Knee. In general, the MIO algorithm is more flexible and controllable than the other algorithms, and as a result, we have made it the factory default for ChannelStrip 3.

Threshold Control

The “Thresh” knob controls the level at which the compressor begins to reduce the gain applied to the signal. When the detector level is below the threshold level, no gain reduction is applied. As the detector level increases above the threshold level, the gain is reduced as indicated by the knee diagram associated with the compressor. The compressor knee is soft. The ratio increases as the difference between the detector level and the threshold increases.

The compressor threshold level is also indicated by the red bar above the gate input meter. You can adjust the threshold level using this indicator as well as by using the “Thresh” knob.

Ratio Control

The “Ratio” knob controls the ‘terminal’ ratio used to compute the gain reduction of the compressor. When the ratio associated with the soft knee hits the ratio specified by the ratio knob, the knee ‘hardens’ and remains at the same constant ratio. If you set the ratio to 1000:1 the compressor will have a soft knee for all input levels and thresholds. This makes the compressor work like a classic all tube limiter/compressor.

Attack Control

The “Attack” knob allows you to adjust how quickly the gain reduction is increases when the detector level goes above the threshold level. This control is calibrated in milliseconds and values range from 0 to 500 ms. The compressor has an 8 sample look-ahead buffer that allows it to have an “instant attack” when you set the attack time to 0. Fast attack times will control the transients of impulsive sounds. Use longer attack times to let the transients through but control the sustains.

Release Control

The “Release” knob controls the release time of the compressor. This knob is calibrated in milliseconds and can range from 5 ms to 5 sec. The release time controls how quickly the gain reduction returns to zero after the detector drops below the threshold value. For settings below 40 ms or so the compressor releases pretty abruptly and may introduce unwanted artifacts into your audio, depending on the signal. In addition, be careful making the release time faster than the attack time.

Using The Sidechain Key Input w/Selectable Filter

The compressor provides a sidechain that processes audio before the detector determines the current level. The sidechain can process either the channel signal or some external side chain input signal.

Sidechain Listen Button

This button (the speaker icon next to the Sidechain Enable) allows you to monitor the audio being sent to the compressor's detector. This will allow you to listen to external audio that is being routed to the sidechain, and also hear the effect of the sidechain filter. When you are done listening to the sidechain, click this button again to hear ChannelStrip's normal output.

Sidechain Routing Button

This button (labeled “C” in the illustration) is used to control the routing of the input signal to the compressor sidechain. When the button is in the “C” state, the signal used by the sidechain is the signal being processed by ChannelStrip. When the compressor is in the “SC” state, the signal used by the sidechain is the input or bus selected in the “side chain input” pop-up in your DAW's plug-in window header. If nothing is selected in that pop-up, the input to the sidechain will be silence and the compressor will never compress.

You can use the filter to achieve a de-essing effect by using the bandpass filter to only compress when the “ess” is present. You can also achieve a combined compression/de-essing effect by using a peaking filter to accentuate the “ess” frequencies and adjusting the threshold and ratio to perform compression when the “ess” is not present and limiting when the “ess” is present. Take a look a the presets for examples.

Sidechain Filter Enable

This button (labeled “SC Ena”) allows you to toggle the sidechain filter in and out of the audio path to the detector.

Filter Type Button

This button (indicating a peaking/parametric filter in the illustration) is used to select the filter type of the single band of side chain EQ. You may choose from 6 different types of filters detailed in the filter type section in “Operating the Strip”.

Filter Band Boost/Cut Control

Use this knob (labeled “dB” in the illustration) to adjust the gain of the filter band for the peaking, high and low shelf filter types. This parameter is ignored for the other filter types. In the shelving filters the maximum boost is +12 dB and the maximum cut is -24 dB. In the peaking filters the maximum boost/cut is ± 24 dB. When you increase the boost for a filter band above 15 dB, the filter gets very aggressive and resonant.

Filter Band Frequency

Use this knob (labeled “Hz” in the illustration) to adjust the characteristic frequency of the filter. For the peaking and bandpass filter types this controls the center frequency of the filter. For the high and low cut filter types this control adjusts the 3 dB point of the filter. For the shelving filters this control adjusts the shelf transition point.

Filter Bandwidth

Use this knob (labeled “BW” in the illustration) to adjust the characteristic width of the filter. This control only has effect for peaking, shelving and bandpass filter types. Please note that this parameter controls the bandwidth

(measured in octaves), not the quality factor (or "Q"). If you have been using Q controls, the numbers will be backwards from what you are used to. Small numbers mean narrow filters and large numbers mean wide filters. For peaking and bandpass filter types, this parameter controls the bandwidth of the filter in octaves. For the high and low shelving filter types this parameter adjusts the amount of dip/peak and the slope of the shelf. When this parameter is set to 0.1 you will get the largest dip/slope available and when the parameter is 2.5, you will get a classic first order shelf (which has a transition band that is about 1 decade wide; e.g. if it is a high shelf with a frequency of 10 kHz and a gain of 10 dB, the gain will be at 0 dB near 1kHz).

Equalizer

The next processing section is the Equalizer. The equalizer may appear in the signal chain before the compressor section depending on the state of the "Post EQ' button in the compressor. The equalizer in ChannelStrip is a very flexible, fully parametric 6 band equalizer. Each band in the equalizer can be configured as any of the six available filter types. Each parameter in the equalizer is continuously adjustable throughout its entire range, so you can set the exact EQ that you need.



Figure 9.8: EQ Section

Theory Of Operation

The equalizer in ChannelStrip work just like every other EQ under the sun with the exceptions that is more flexible, more efficient and sounds better. By adjusting the various parameters associated with each band in the EQ you can control the tonal and timbral balance of the signal. The resonance effect of the peaking filters provides a facility to recreate acoustic resonances that are lacking in the source material with which you are working. One of the nicest aspects of the filters in ChannelStrip is their time domain performance. These filters ring significantly less than comparable filters in other signal processors. This allows you equalize signals without the normal time smearing that you encounter with other equalizers.

Master Enable Button

This button is in the Master Enables section. When this button is off, the EQ section will not change the signal. The order of this button will change depending on whether the compressor is set to "Post EQ".

Filter Type Button

This button (indicating a peaking/parametric filter in the illustration) is used to select the filter type of the single band of side chain EQ. You may choose from 6 different types of filters:



Figure 9.9: Peaking/Parametric

Peaking/Parametric – a second order bell-shaped parametric boost/cut filter. Boost/cut has a range of ± 24 dB. When the boost is greater than +15 dB the filter gains a resonant quality. The center frequency of the filter can be any frequency between 20 Hz and 20 kHz. The bandwidth of the filter is continuously variable between 0.1 octaves and 2.5 octaves.



Figure 9.10: Low Cut

Low Cut – a 12 dB/octave low cut filter with a -3dB point that is continuously adjustable between 20 Hz and 20 kHz.



Figure 9.11: High Cut

High Cut – a 12 dB/octave high cut filter with a -3dB point that is continuously adjustable between 20 Hz and 20 kHz.



Figure 9.12: Low Shelf

Low Shelf – a shelving filter that applies boost/cut to low frequencies. Boost/cut is limited to +12 dB/– 24dB. The bandwidth controls the dip/peak that is added at the end of the transition band.



Figure 9.13: High Shelf

High Shelf – a shelving filter that applies boost/cut to high frequencies. Boost/cut is limited to +12 dB/– 24dB. The bandwidth controls the dip/peak that is added at the end of the transition band.



Figure 9.14: Bandpass

Bandpass – a bandpass filter with 6dB per octave skirt on the high and low ends of the pass band. The width of the pass band can be adjusted between 0.1 octaves and 2.5 octaves and the center of the pass band is continuously adjustable between 20 Hz and 20 kHz.

Filter Enable Button

Use this toggle button to enable each filter band. When the filter band is turned off the signal will pass through the filter unchanged.

Filter Band Boost/Cut Control

Use this knob (labeled "dB" in the illustration) to adjust the gain of the filter band for the peaking, high and low shelf filter types. This parameter is ignored for the other filter types. In the shelving filters the maximum boost is +12 dB and the maximum cut is -24 dB. In the peaking filters the maximum boost/cut is ± 24 dB. When you increase the boost for a filter band above 15 dB, the filter gets very aggressive and resonant. You can use this feature to good effect when you need to reconstruct a resonance for a recorded instrument that lacks one. For example, you could place a narrow +24 dB peaking filter between 60 and 80 Hz on a kick drum track that lacked a "belly" for the drum.

Filter Band Frequency

Use this knob (labeled "Hz" in the illustration) to adjust the characteristic frequency of the filter. For the peaking and bandpass filter types this controls the center frequency of the filter. For the high and low cut filter types this control adjusts the 3 dB point of the filter. For the shelving filters this control adjusts the shelf transition point.

Filter Bandwidth

Use this knob (labeled "BW" in the illustration) to adjust the characteristic width of the filter. This control only has effect for peaking, shelving and bandpass filter types. Please note that this parameter controls the bandwidth (measured in octaves), not the quality factor (or "Q"). If you have been using Q controls, the numbers will be backwards from what you are used to. Small numbers mean narrow filters and large numbers mean wide filters. For peaking and bandpass filter types, this parameter controls the bandwidth of the filter in octaves. For the high and low shelving filter types this parameter adjusts the amount of dip/peak and the slope of the shelf. When this parameter is set to 0.1 you will get the largest dip/slope available and when the parameter is 2.5, you will get a classic first order shelf (which has a transition band that is about 1 decade wide; e.g. if it is a high shelf with a frequency of 10 kHz and a gain of 10 dB, the gain will be at 0 dB near 1kHz).

Controlling The EQ With The Transfer Function

As described in the operation guide earlier in this manual, you can control each band of the EQ directly from the EQ transfer function display associated with the 6 band equalizer.

Master Gain

The one fader in ChannelStrip's user interface controls the master gain of the plug-in. This fader is not shown in the illustration of the EQ section, but it is shown in the overall processor illustration at the beginning of this manual. The "Master Gain" fader allows you to add up to +10 dB of gain or up to -160 dB of attenuation to the output signal from the EQ processor or compressor block (depending on the processor order) before going to the limiter.

Delay Section

You can add up to 255 samples of delay to the output of ChannelStrip. This is useful for dynamically slipping tracks, doing acoustical time alignment or compensating for the delay of other plug-ins in your mix.

You can use automation on the delay to create interesting dynamic flanging effects. Simply duplicate a track and enable automation on the delay control for one of the copies. As you change the delay through one of the copies you will create a nice, controllable phasey flanging sound.

Limiter



Figure 9.15: Limiter

The final processing block in ChannelStrip 3 is a limiter. The limiter can be used to ensure that the final output of ChannelStrip doesn't distort due to extreme EQ boosts. This also makes it very easy to use ChannelStrip as a mastering plug-in on your final mix bus.

The limiter threshold may be set between 0 and -12 dB using the Limiter Threshold knob. The gain reduction is displayed via the ring around the encoder, sweeping from right to left.

The limiter applies autogain to the audio when engaged; as the threshold is lowered, the output gain is increased a complementary amount.

Part IV. HaloVerb

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10. Introduction

HaloVerb is a plug-in for digital audio workstations which provides a flexible algorithm-based reverb to add depth and ambience to your recordings.

Features include:

- Comprehensive controls
- Graphic display of the Low and High Frequency Pre-Filters
- Graphic display of the Reverb Impulse



Figure 10.1: HaloVerb's User Interface

11. Operation

The HaloVerb user interface uses a few different control elements to control all of the processing. These elements are:

Control Knob

Control Knobs are used to control the value of various continuous parameters of a process. There are three styles of encoders:



Figure 11.1: Swept Knob

The rings around these encoders sweep from a minimum to maximum value, from left to right. The exception is the Cutoff controls, which sweep from right to left.



Figure 11.2: Spread Knob

The ring around this encoder starts at 12 o'clock and spreads to both sides equally as the Stereo Width is increased.



Figure 11.3: Plus/Minus Knob

The rings around these encoders start at 12 o'clock and sweep to either side. These knobs are used for Wet/Dry and Gain controls.

You can change the value of each knob in a number of different ways. Click and drag the knob to change the value continuously. Dragging up or to the right will increase the value, while dragging down or to the left will decrease the value. If you hold down the Mac ⌘ (Command) key or Windows Control key when you click, you will be able to adjust the value with finer precision. If you hold the Mac ⌥ (Option) key or Windows Alt key when you click, the knob will reset to its default value. You may also double-click a knob to reset it.

Click on the number (readout) of the knob to display a text entry field that allows you to type in a number directly. The pop-up will remain active until you dismiss it by clicking somewhere else or hitting the return, enter, tab, Mac ⌘. (Command + .), Windows Alt key or ESC keys. Hit return or enter to confirm the value

and dismiss the pop-up. Hit the tab key to confirm the value and display an entry field for the next control. ⇧–tab (Shift + tab) will display the entry field for the previous control). Hit the Mac ⌘. (Command + .), Windows Control. (Control + .) or ESC (Escape) to dismiss the pop-up and cancel the change.

When you enter a number into the pop-up entry, you can use a couple of abbreviations: “k” multiplies the number by 1000 and “m” divides the number by 1000. So if you want to enter 16,500 Hz you can just type 16.5k.

Tooltip Control



Figure 11.4: Tooltip Control

This button toggles the tooltip display. When enabled, tooltips wil be shown when the mouse hovers over a control. When the tooltip display is disabled, you may still see tooltips by holding down the ? key and hovering over a control.

Graph Disclosure



Figure 11.5: Graphs Closed



Figure 11.6: Graphs Open

This button toggles the display of the high frequency pre-filter and reverb impulse displays.

Output Level Meter

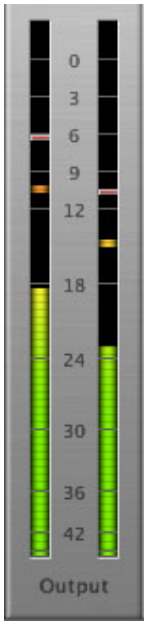


Figure 11.7: HaloVerb Output Level Meter

The HaloVerb provides a meter displaying the output level of the plug-in. The top segment of the meter (above 0dB) is used as a clip indicator and is illuminated red if the output section of the processor detects an over. The clip light remains illuminated until you click on the meter. Mac ⌥ (Option)–click or Windows Alt-click the meter to reset the clip light.

A Note About Clipping Indicators:
The clip lights do not mean that the plug-in is clipping; it means that the audio level in the DSP is currently over 0 dBFS. If you do not lower the signal level you run a chance of actually clipping the input of another processor or D/A convertor.

Low and High Frequency Pre-filter

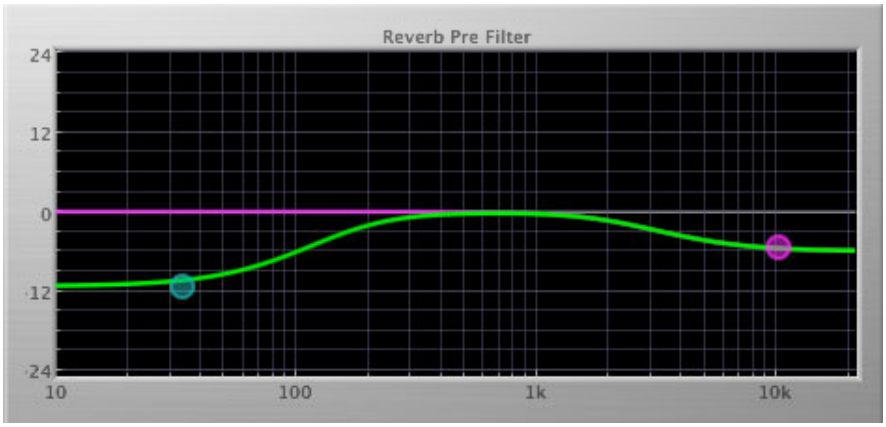


Figure 11.8: Low and High Frequency Pre-filter

The pre-filter graph is a visual representation of the filter shape as set by the Cutoff Hz and Cutoff dB controls for the Low and High filters. As these controls are changed, the dots shows the knee freqencies and levels. You may also click and drag the dots to change the filter placements.

Reverb Impulse Display

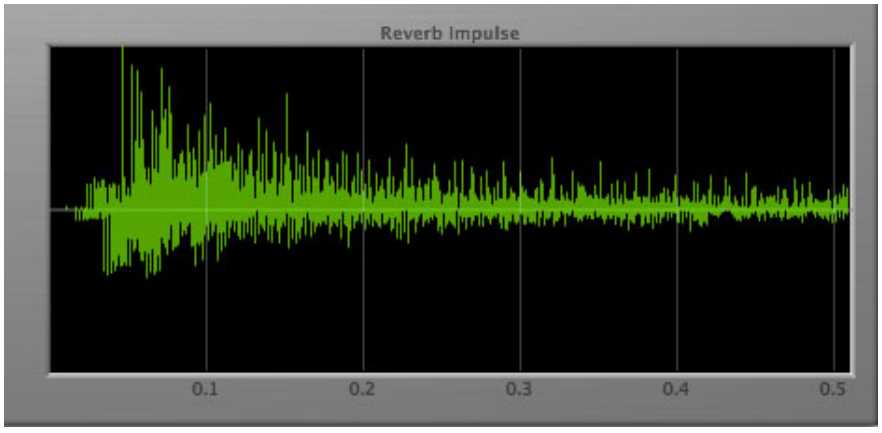


Figure 11.9: Reverb Impulse Display

The reverb impulse display gives you a visual indication of what the reverb parameters are doing. The horizontal axis represents time (up to .5 seconds) and the vertical axis represents unscaled level. Clicking on the display will toggle between the Reverb Impulse Display and Energy Time Curve.

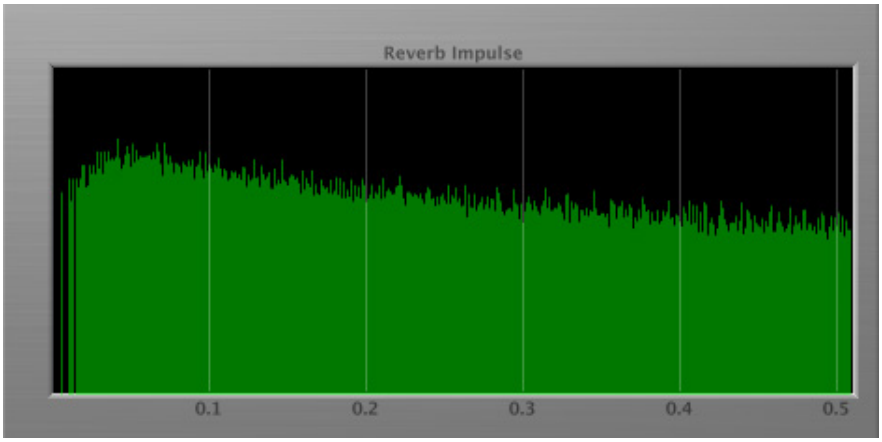


Figure 11.10: Energy Time Curve

12. Processing

A Detailed Description

In this chapter we'll discuss how the controls work.

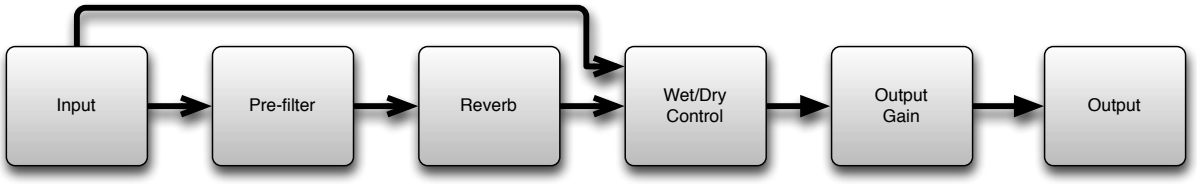


Figure 12.1: Signal Flow

The block diagram above illustrates the overall structure of the processing system provided by HaloVerb. The diagram does not indicate the metering blocks.

Now lets examine the various processing blocks indicated in the diagram.

Prefilter

These controls set the frequency and level of the shelving pre-filters. Using these controls allows you to tailor how much low and high frequency material is removed before the signal enters the reverb process.

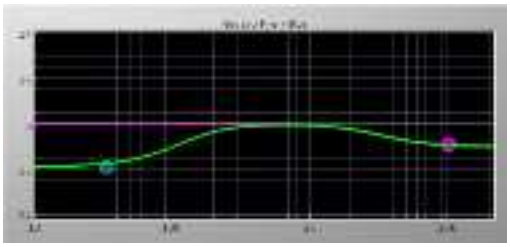


Figure 12.2: Pre-filters at 34 Hz and 9kHz

Reverb

Let's take a look at what HaloVerb's parameters do, using the Reverb Impulse display. All controls will be at the factory default except the control being discussed, so that you can see how that control changes the reverb characteristics.

Please note that some combinations of settings will look similar in the impulse display, but will sound very different.

Predelay

The Predelay control sets the time in milliseconds before the first reflection of the reverb is heard, up to a maximum of 170 ms. When looking at the Reverb impulse, the predelay is seen as the time between the left side of the window and the beginning of the impulse:

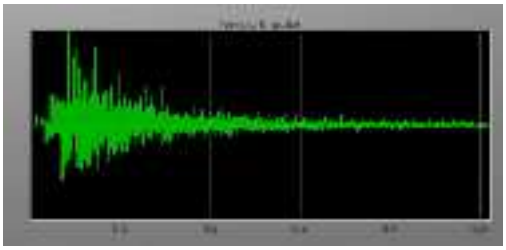


Figure 12.3: Predelay of 0 ms

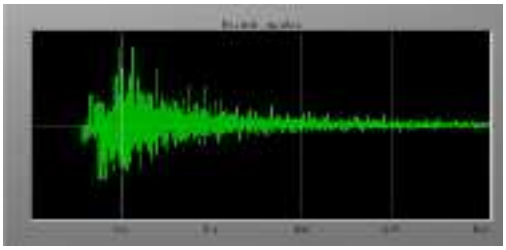


Figure 12.4: Predelay of 45 ms

RT60

The RT60 control sets the overall reverb time in seconds; RT60 is a standard measurement of how long it takes the acoustic energy in a room to fall below 60 dB. When looking at the Reverb impulse, changes in the RT60 will be seen as a “thickening” of the reverb tail:

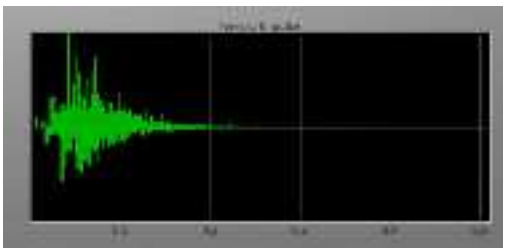


Figure 12.5: RT60 of .1 Seconds

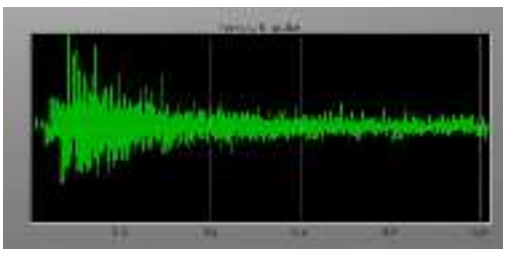


Figure 12.6: RT60 of 7 Seconds

Damping

The Damping control sets how much of the reverb signal is removed before being fed back into itself as a percentage. Low damping settings can lead to a ringing, metallic sound.

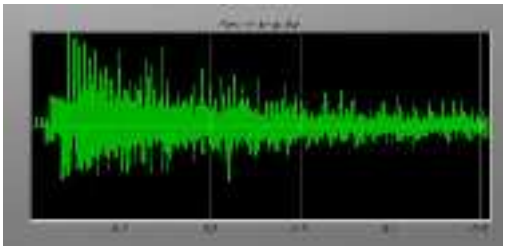


Figure 12.7: Damping of 0%

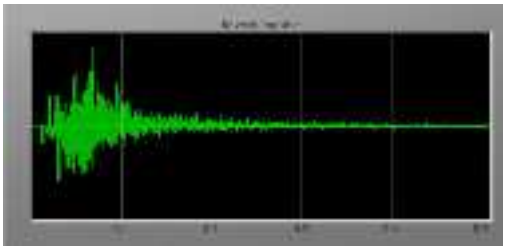


Figure 12.8: Damping of 100%

Diffusion

The Diffusion control determines how dense the reverb is. A low diffusion setting emphasizes individual echos, while a higher diffusion "pushes" the echos together and thickens the reverb. Some higher settings will cause the reflections to *decrease*due to phase cancellation.

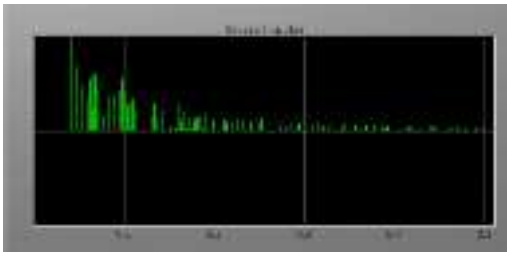


Figure 12.9: Diffusion of 0%

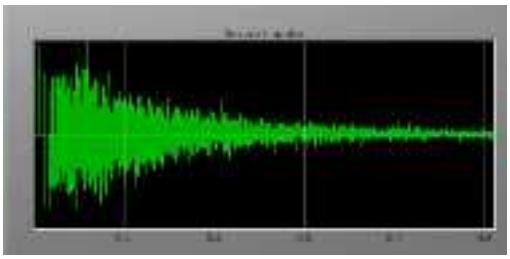


Figure 12.10: Diffusion of 75%

Width

The Width control is only available when using HaloVerb as a stereo plug-in. Width allows you to vary the "spread" of the reverb from mono (panned to the center of the image) to full stereo.

Wet/Dry Control

The Wet/Dry control sets the mix between the reverb (wet) and original (dry) signals as a percentage. Setting this control to 0 (full dry) lets no reverberated sound through. Setting this control to 100 (full wet) lets only reverb pass; you would want to use this setting when inserting HaloVerb on an aux bus. If you are inserting HaloVerb directly on an input or bus, use this control to balance the original audio and reverb.

Output Gain

The Gain control allows you to vary the final output level of HaloVerb by ±20dB

Part V. Multiband Dynamics

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13. Introduction

Multiband Dynamics is a plug-in for digital audio workstations which provides frequency based dynamic processing.

Features include:

- Three-way crossover
- Three independent channels of compression
- Limiter
- Disclosable graphic displays
- Dynamic transfer function display
- SpectraFoo™ spectrum analysis



Figure 13.1: Multiband Dynamics's User Interface

14. Operation

As with most plug-ins, Multiband Dynamics provides many copies of controls that are all operated in a similar manner. The Multiband Dynamics user interface uses a few different control elements to control all of the processing. These elements are:

Control Knob

Control Knobs are used to control the value of various continuous parameters of a process. Examples of these types of parameters include: Attack Time, Release Time, Threshold, etc. There are two styles of encoders:



Figure 14.1: Swept Knob

The rings around these encoders sweep from a minimum to maximum value, normally from left to right. The one exception is the threshold controls, which sweep from right to left.



Figure 14.2: Plus/Minus Knob

The rings around these encoders start at 12 o'clock and sweep to either side. These knobs are used for gain control, where straight up is no gain change, turning to the left cuts the signal and turning to the right boosts it.

You can change the value of each knob in a number of different ways. Click and drag the knob to change the value continuously. Dragging up or to the right will increase the value, while dragging down or to the left will decrease the value. If you hold down the Mac ⌘ (Command) key or Windows Control key when you click, you will be able to adjust the value with finer precision. If you hold the Mac ⌥ (Option) key or Windows Alt key when you click, the knob will reset to its default value. You may also double-click a knob to reset it.

Click on the number (readout) of the knob to display a text entry field that allows you to type in a number directly. The pop-up will remain active until you dismiss it by clicking somewhere else or hitting the return, enter, tab, Mac ⌘. (Command + .), Windows Alt key or ESC keys. Hit return or enter to confirm the value and dismiss the pop-up. Hit the tab key to confirm the value and display an entry field for the next control. ⇧–tab (Shift + tab) will display the entry field for the previous control). Hit the Mac ⌘. (Command + .), Windows Control. (Control + .) or ESC (Escape) to dismiss the pop-up and cancel the change.

When you enter a number into the pop-up entry, you can use a couple of abbreviations: “k” multiplies the number by 1000 and “m” divides the number by 1000. So if you want to enter 16,500 Hz you can just type 16.5k.

Toggle Button



Figure 14.3: Toggle Button (Off)



Figure 14.4: Toggle Button (On)

Toggle buttons are simple on/off switches. They light up when they are on and are dark when they are off. You toggle the state of the button by clicking on it. These buttons are used to enable compressor sections and the limiter, and to select auto gain.

Fader

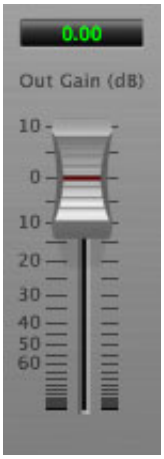


Figure 14.5: Output Gain

The fader is unique in that only one fader is used in the interface for Multiband Dynamics. It works in much the same fashion as the control knobs. Instead of dragging up/right or down/left to change the value, you directly drag the fader knob. The other “tricks” described for the knobs also work with the fader. The fader is used to control the master output gain of the plug-in.

Band Solo Button



Figure 14.6: Band Solo Button (Disabled)



Figure 14.7: Band Solo Button (Enabled)

The band solo button allows you to listen to an individual crossover band or combination of them. This allows you to hear the effect of each compressor section independantly.

Tooltip Control



Figure 14.8: Tooltip Control

This button toggles the tooltip display. When enabled, tooltips wil be shown when the mouse hovers over a control. When the tooltip display is disabled, you may still see tooltips by holding down the **?** key and hovering over a control.

Graphs Disclosure Control



Figure 14.9: Graph Disclosure Button

The Graphs disclosure control allows you to show and hide Multiband Dynamics' display graphs. This allows you to maximize screen real-estate while still providing details on the processing when they are needed. Click on this control to toggle the visibility of the graphs. Multiband Dynamics will automatically make the plug-in window smaller when you hide the graphs.

Multiband Dynamics also uses a number of standard visual representations to give you feedback about what is happening within the processor. These elements are:

Gain Reduction Meter

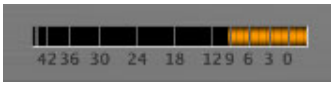


Figure 14.10: Gain Reduction Meter

The gain reduction meter, which has an orange bar and grows down from 0 dB, shows the amount of attenuation being applied by its associated dynamics processor at any given time. If you right-click (Mac/Win) or Mac ^ (Control) click on the meter, you may set the scale of the gain reduction meter to any of the following values:

- 54 dB
- 24 db
- 12 db
- 6 db
- 3 db

Output Meter

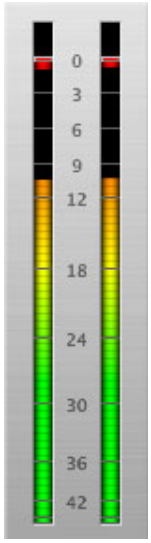


Figure 14.11: Output Meter

For the main output stage of Multiband Dynamics we have provided meters driven with SpectraFoo™ metering technology. These meters show, in addition to the peak metering provided for the input stages, RMS level and VU level. The peak level is represented by the floating colored bar, the RMS level by the solid colored bar and the VU level by the overlaid gray bar. Both the Peak and RMS level are represented with fast PPM ballistics. The VU meter shows IEEE standard 300 ms RMS average level. When Multiband Dynamics is on a mono insert there will be a single meter. When Multiband Dynamics is running in stereo mode the left meter shows the left channel output level and the right meter shows the right channel output level. The output section clip lights activate if there is an over in the output stage or in any of the processing section input stages. It is reset by clicking on the meter; Mac ⌥ (Option)–click or Windows Alt-click to reset the clip lights on all the meters.

Dynamic Transfer Function

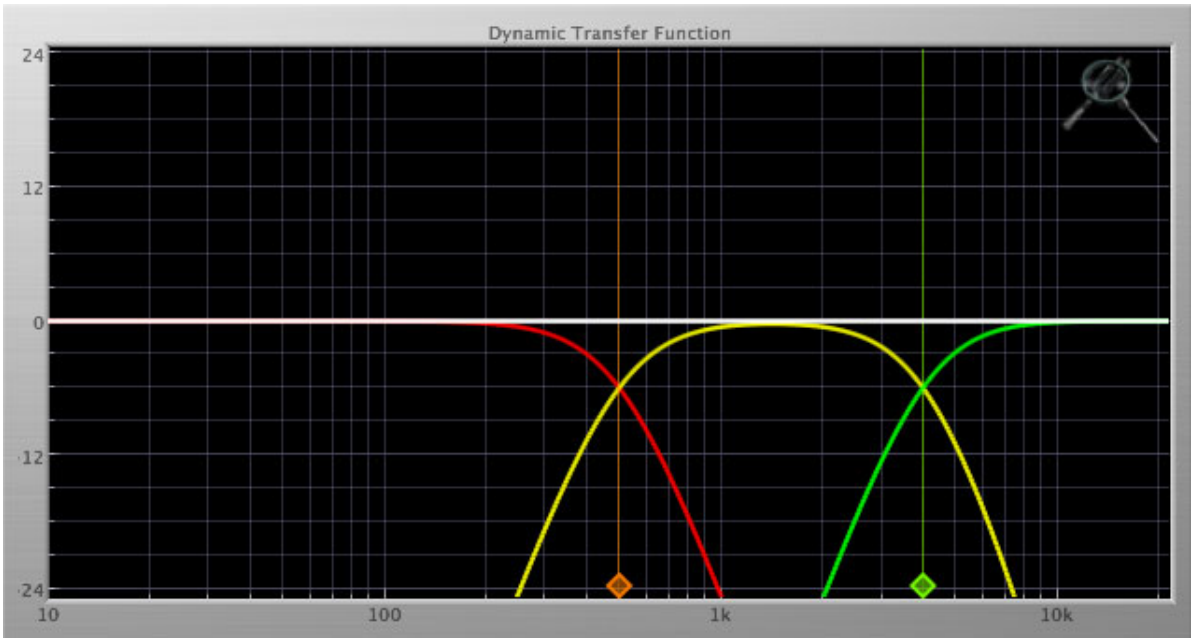


Figure 14.12: Dynamic Transfer Function

The dynamic transfer function is a combination of a visual representation of how the plug-in is processing the signal and an intuitive controller for the crossover filter bands.

The horizontal axis provides frequency calibration in Hertz (Hz), while the vertical axis provides level calibration in decibels (dBr). The heavy white line indicates the relative change in level at each frequency that is created by the combined effects of all of the active bands in the plug-in. Each crossover point (low to mid and mid to high) is represented by a colored dot in the transfer function. You may drag the dots to adjust the crossover points.

If you right-click (Mac/Win) or Mac ^ (Control) click on the transfer function, you will see a menu to set the vertical dB scale for the display. The values are:

- ±3 dB
- ±6 dB
- ±12 dB
- ±24 dB
- ±36 dB

Spectragraph Analyzer

Clicking the SpectraFoo™ logo in the upper right hand corner of the transfer function will activate the spectragraph, showing the realtime frequency analysis of your signal:

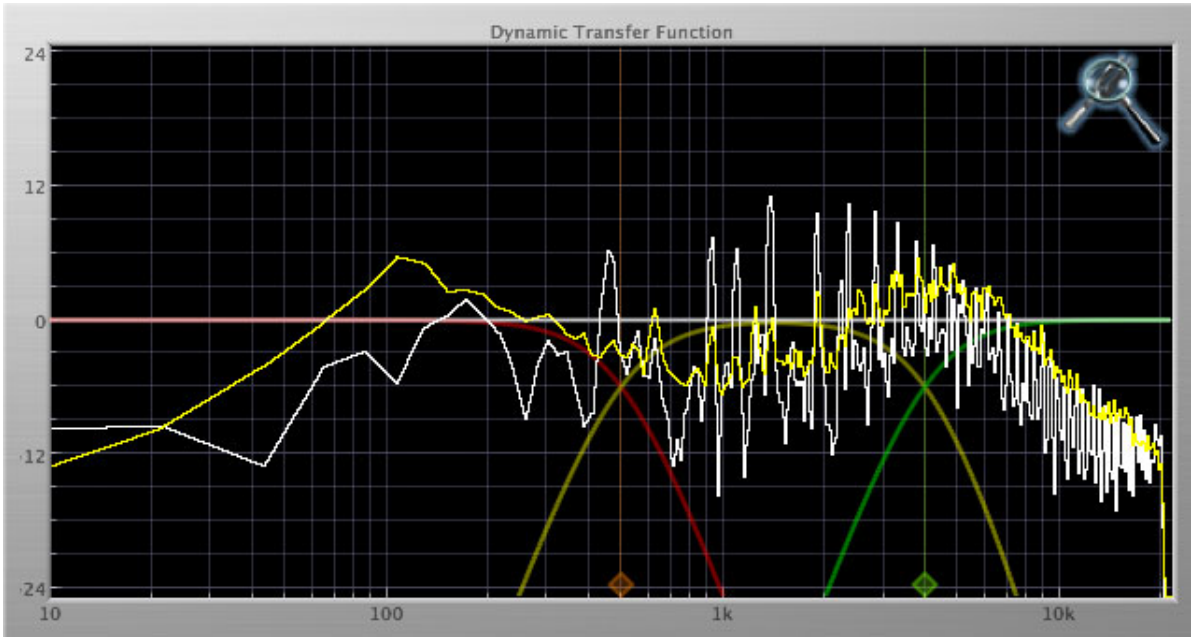


Figure 14.13: Spectragraph Display

The traces are:

- White: Left channel instantaneous display
- Red: Right channel instantaneous display
- Yellow: Left channel average display
- Blue: Right channel average display

The *instantaneous* trace updates in real-time, allowing you to see the immediate peak level of your audio. The *average* trace displays the level as averaged over a short period, giving you a more general view.

The spectragraph analyses the signal post-output gain, allowing you to see the effects of the processors. To disable the spectragraph entirely, click the active 'Foo icon.

If you right-click (Mac/Win) or Mac ^ (Control) click on the transfer function, you will see a menu to set options for the spectragraph:

- Show Instantaneous Trace: Toggles whether the spectragraph shows the instant response of your audio.
- Show Average Trace: Toggles whether the spectragraph shows the averaged response of your audio.
- Show Left Channel: Toggles the left channel spectragraph display.
- Show Right Channel: Toggles the right channel spectragraph display.

These settings are stored for each transfer function window separately, and for each instance of Multiband Dynamics.

Dynamics Knee

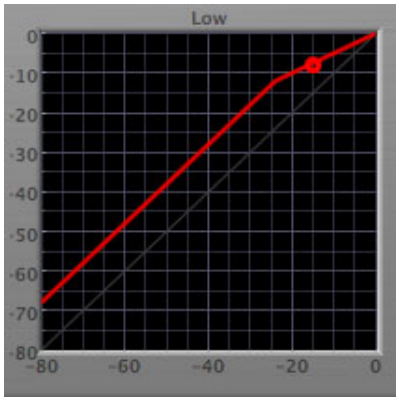


Figure 14.14: Dynamics Knee

Multiband Dynamics contains a Dynamics Knee diagram for each compressor processing section. The diagram provides feedback on the response of the associated dynamics processor. Both the horizontal and vertical axes are calibrated in dBFS. The horizontal axis corresponds to the input level and the vertical axis represents the output level. The heavy line shows the dynamic of the associated processing block. This means that if you sent in a sine wave at a given input level, the output level would be equal to the level shown on the graph. When the processor is working with real dynamic signals, the graph is a good approximation of the response when the attack is fast and the release is slow.

In most cases, however, the dynamic response of the processor will not match its static response. In order to represent this, we have included a “bouncing ball” meter for both the gate and the compressor. This metering is shown as a red circle that is overlaid on the knee diagram. The red circle is placed so its horizontal position is equal to the instantaneous input level and its vertical level is equal to the instantaneous output level. Examining this meter while you are adjusting the dynamics controls will provide you with a great deal of information about how the processor is operating and how the controls interact.

15. Processing

A Detailed Description

In this chapter we'll discuss what each processing block does and how the controls work.

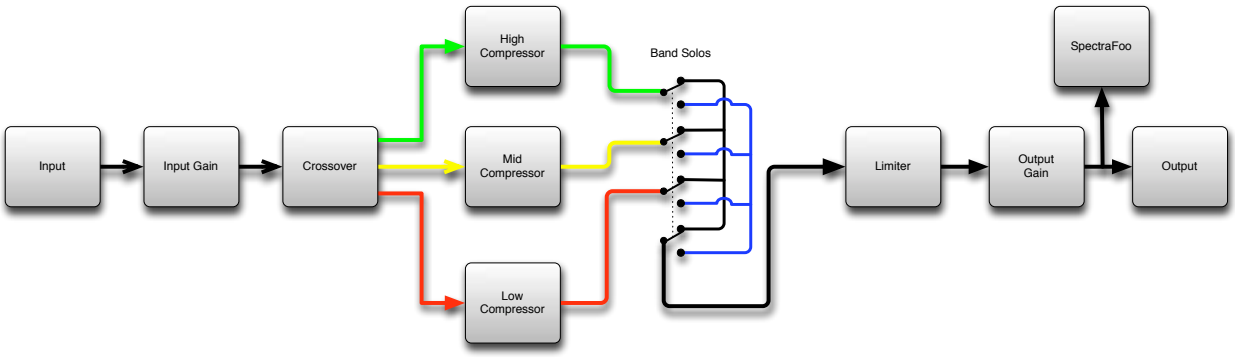


Figure 15.1: Multiband Dynamics Signal Flow

The block diagram above illustrates the overall structure of the processing system provided by Multiband Dynamics. The diagram does not indicate the various metering blocks.

Now lets examine the various processing blocks indicated in the diagram.

Input Conditioning

After the signal is routed to Multiband Dynamics it runs through an input gain block that provides input gain of up to +30 dB. You can use this gain to condition signals that are low in level.

This input gain may also be used to pad out signals by up to –30 dB. While you may find this attenuation useful to just bring down the level through the strip simply and quickly, you must realize that this gain is applied after the signal reaches Multiband Dynamics and will not pad out any clipping that occurs in the A/D converters or in a plug-in that is inserted before Multiband Dynamics.

The input gain is controlled by the “In Gain” knob.

Crossover

The crossover seperates the audio input into low, mid and high bands; each of these bands is then fed through a compressor section. There are two controls to set the crossover points:



Figure 15.2: Crossover Controls

The control marked “LXover” sets the frequency of the low to mid crossover, and the control marked “HXover” sets the frequency of the mid to high crossover.

You may also adjust the crossover points in the dynamic transfer function:

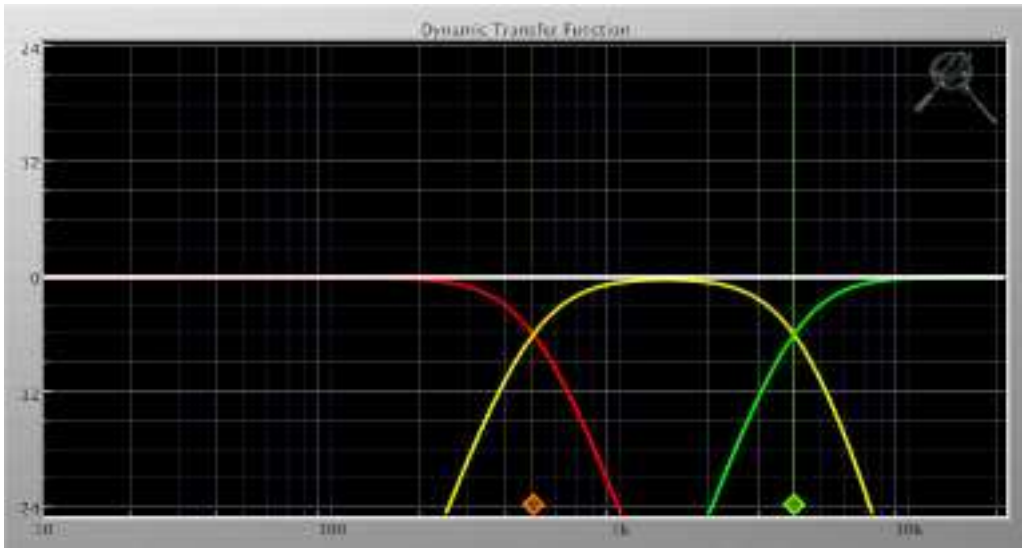


Figure 15.3: Dynamic Transfer Function

Simply grab one of the handles at the bottom of the display and drag to desired frequency. The orange handle adjusts the low/mid crossover point and the green handle adjusts the mid/high crossover point.

Compressor



Figure 15.4: Compressor (Low Frequency Shown)

Introduction

Multiband Dynamics contains three separate compressors, one for each crossover band. They are identical, so we will only describe their operation once.

Compressor Enable

When this button is off, the compressor section will not change the signal.

Band Solo Button

This button (the speaker icon next to the Enable button) allows you to monitor the selected compressor's output. This will allow you to listen one or more bands of compression in isolation. When you are done listening to the soloed band(s), click this button again to hear Multiband Dynamics' normal output.

Auto Gain

When the “Auto Gain” button is enabled the compressor automatically adjusts the makeup gain in the compressor output stage so that if the manual “O Gain” knob is set to 0 dB the static gain reduction for a 0 dB input level will be about 7 dB. This number was chosen because it works well with the default settings of the “Attack” and “Release” knobs to provide enough pad to not clip fast transients. The “O Gain” knob will apply additional trim to the internal automatic gain. If the threshold is set very low (e.g. –60 dB) and auto gain is enabled, you will not be able to add very much manual gain (only about 1 – 2 dB) even though the readout on the knob will go up to + 30 dB. This is an internal limitation of the compressor.

Threshold Control

The “Thresh” knob controls the level at which the compressor begins to reduce the gain applied to the signal. When the detector level is below the threshold level, no gain reduction is applied. As the detector level increases above the threshold level, the gain is reduced as indicated by the knee diagram associated with the compressor. The compressor knee is soft. The ratio increases as the difference between the detector level and the threshold increases.

The compressor threshold level is also indicated by the red bar above the gate input meter. You can adjust the threshold level using this indicator as well as by using the “Thresh” knob.

Manual Make-Up Gain

The “Gain” knob allows you to manually adjust the makeup gain applied to the signal after the gain reduction applied by the compressor by ±30 db. If the Auto Gain switch is off, this is the amount of makeup gain applied. If the Auto Gain switch is on, then this parameter is a trim added to the internally computed makeup gain. The makeup gain is enabled and disabled along with the rest of the compressor.

Ratio Control

The “Ratio” knob controls the ‘terminal’ ratio used to compute the gain reduction of the compressor. When the ratio associated with the soft knee hits the ratio specified by the ratio knob, the knee ‘hardens’ and remains at the same constant ratio. If you set the ratio to 1000:1 the compressor will have a soft knee for all input levels and thresholds. This makes the compressor work like a classic all tube limiter/compressor.

Compressor Knee Control

The “Knee” knob allows you to adjust shape of the compressor transfer function. When the Knee control is set to 0, the transfer function of the compressor is a classic “hard-knee” in which the compressor applies no gain reduction when the detector is below the threshold, and the gain is reduced by the ratio when the detector level is above the threshold.

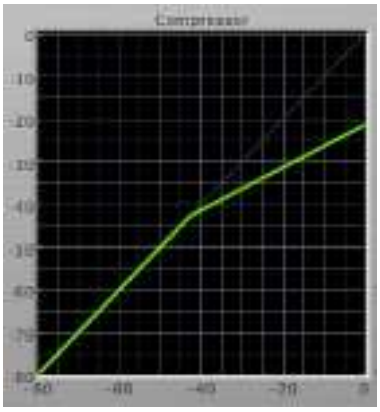


Figure 15.5: Knee Control at 0

When you increase the Knee parameter from 0 to 1 the knee of the transfer function gradually softens until the compressor functions as a soft-knee compressor when the Knee parameter is 1.

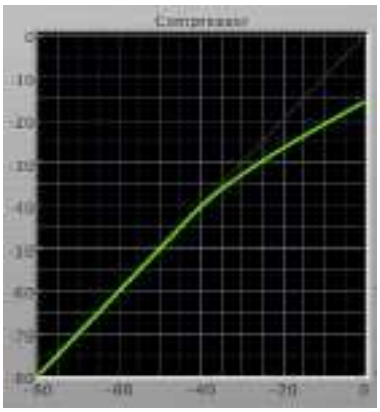


Figure 15.6: Knee Control at 1

You can also adjust the Knee parameter to negative values, which has the effect introducing a “kink” in the compressor transfer function at the threshold. This can yield useful results on percussive material.

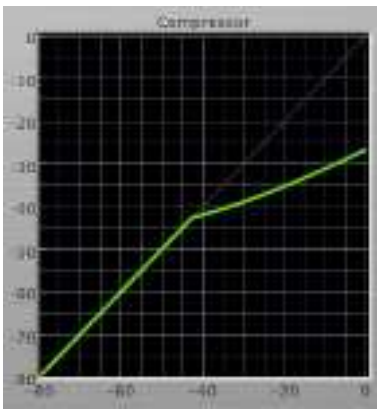


Figure 15.7: Knee Control at -0.5

Attack Control

The “Attack” knob allows you to adjust how quickly the gain reduction is increases when the detector level goes above the threshold level. This control is calibrated in milliseconds and values range from 0 to 500 ms. The compressor has an 8 sample look-ahead buffer that allows it to have an “instant attack” when you set the

attack time to 0. Fast attack times will control the transients of impulsive sounds. Use longer attack times to let the transients through but control the sustains.

Release Control

The “Release” knob controls the release time of the compressor. This knob is calibrated in milliseconds and can range from 5 ms to 5 sec. The release time controls how quickly the gain reduction returns to zero after the detector drops below the threshold value. For settings below 40 ms or so the compressor releases pretty abruptly and may introduce unwanted artifacts into your audio, depending on the signal. In addition, be careful making the release time faster than the attack time.

Limiter



Figure 15.8: Limiter

The final processing block in the Multiband Dynamics is a limiter. The limiter can be used to ensure that the final output of ChannelStrip doesn't distort due to extreme EQ boosts. This also makes it very easy to use Multiband Dynamics as a mastering plug-in on your final mix bus.

Limiter Enable

When this button is off, the limiter section will not change the signal.

Input Gain

This control allows you to attenuate or boost the signal level going in to the limiter's input by ±30 dB.

Threshold

The “Thresh” knob controls the level at which the limiter begins to reduce the gain applied to the signal. When the detector level is below the threshold level, no gain reduction is applied. As the detector level increases

toward the threshold level, the gain is reduced as determined by the knee control. The limiter knee is soft. The ratio increases as the difference between the detector level and the threshold increases.

Limiter Knee Control

The “Knee” knob allows you to adjust shape of the limiter gain reduction. When the Knee control is set to 0, the transfer function of the limiter is a classic “hard-knee” in which the compressor applies no gain reduction when the detector is below the threshold, and the gain is reduced by the ratio when the detector level is at the threshold.

Part VI. Multiband Expander

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16. Introduction

Multiband Expander's features include:

- Input level control
- Three-way crossover
- Three independent channels of expansion
- Disclosable graphic displays
- Dynamic transfer function display
- SpectraFoo™ spectrum analysis



Figure 16.1: Multiband Expander's User Interface

17. Operation

As with most plug-ins, Multiband Expander provides many copies of controls that are all operated in a similar manner. The Multiband Expander user interface uses a few different control elements to control all of the processing. These elements are:

Control Knob

Control Knobs are used to control the value of various continuous parameters of a process. Examples of these types of parameters include: Attack Time, Release Time, Threshold, etc. There are two styles of encoders:



Figure 17.1: Swept Knob

The rings around these encoders sweep from a minimum to maximum value, normally from left to right. The exceptions are the crossover and threshold controls, which sweep from right to left.



Figure 17.2: Plus/Minus Knob

The rings around these encoders start at 12 o'clock and sweep to either side. These knobs are used for gain control, where straight up is no gain change, turning to the left cuts the signal and turning to the right boosts it.

You can change the value of each knob in a number of different ways. Click and drag the knob to change the value continuously. Dragging up or to the right will increase the value, while dragging down or to the left will decrease the value. If you hold down the Mac ⌘ (Command) key or Windows Control key when you click, you will be able to adjust the value with finer precision. If you hold the Mac ⌥ (Option) key or Windows Alt key when you click, the knob will reset to its default value. You may also double-click a knob to reset it.

Click on the number (readout) of the knob to display a text entry field that allows you to type in a number directly. The pop-up will remain active until you dismiss it by clicking somewhere else or hitting the return, enter, tab, Mac ⌘. (Command + .), Windows Alt key or ESC keys. Hit return or enter to confirm the value and dismiss the pop-up. Hit the tab key to confirm the value and display an entry field for the next control. ⇧–tab (Shift + tab) will display the entry field for the previous control). Hit the Mac ⌘. (Command + .), Windows Control. (Control + .) or ESC (Escape) to dismiss the pop-up and cancel the change.

When you enter a number into the pop-up entry, you can use a couple of abbreviations: “k” multiplies the number by 1000 and “m” divides the number by 1000. So if you want to enter 16,500 Hz you can just type 16.5k.

Toggle Button



Figure 17.3: Toggle Button (Off)



Figure 17.4: Toggle Button (On)

Toggle buttons are simple on/off switches. They light up when they are on and are dark when they are off. You toggle the state of the button by clicking on it. These buttons are used to enable compressor sections and the limiter, and to select auto gain.

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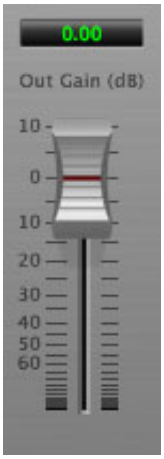


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Band Solo Button



Figure 17.6: Band Solo Button (Disabled)



Figure 17.7: Band Solo Button (Enabled)

The band solo button allows you to listen to an individual crossover band or combination of them. This allows you to hear the effect of each compressor section independantly.

Tooltip Control



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This button toggles the tooltip display. When enabled, tooltips wil be shown when the mouse hovers over a control. When the tooltip display is disabled, you may still see tooltips by holding down the **?** key and hovering over a control.

Graphs Disclosure Control



Figure 17.9: Graph Disclosure Button

The Graphs disclosure control allows you to show and hide Multiband Expander' display graphs. This allows you to maximize screen real-estate while still providing details on the processing when they are needed. Click on this control to toggle the visibility of the graphs. Multiband Expander will automatically make the plug-in window smaller when you hide the graphs.

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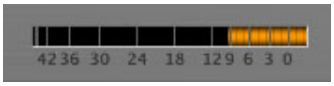


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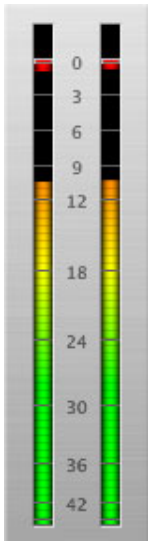


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A Note About Clipping Indicators:
The clip lights do not mean that the plug-in is clipping; it means that the audio level in the DSP is currently over 0 dBFS. If you do not lower the signal level you run a chance of actually clipping the input of another processor or D/A convertor.

Dynamic Transfer Function

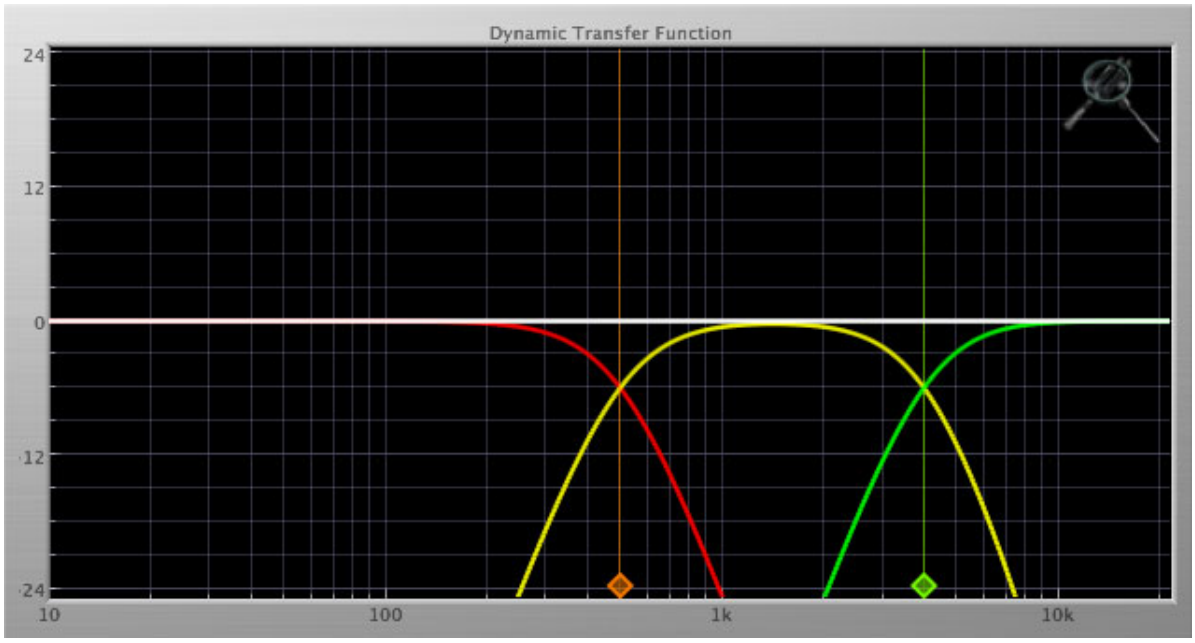


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If you right-click (Mac/Win) or Mac ^ (Control) click on the transfer function, you will see a menu to set the vertical dB scale for the display. The values are:

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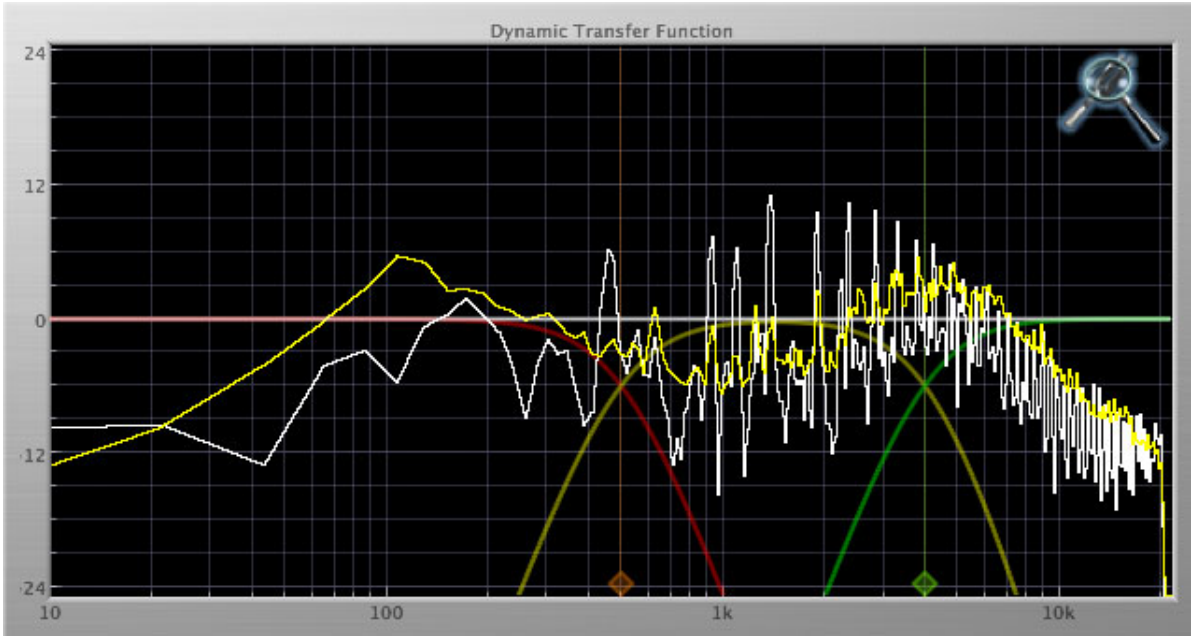


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These settings are stored for each transfer function window separately, and for each instance of Multiband Expander.

Dynamics Knee

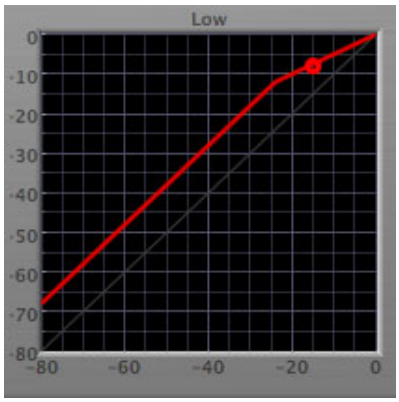


Figure 17.14: Dynamics Knee

Multiband Expander contains a Dynamics Knee diagram for each compressor processing section. The diagram provides feedback on the response of the associated dynamics processor. Both the horizontal and vertical axes are calibrated in dBFS. The horizontal axis corresponds to the input level and the vertical axis represents the output level. The heavy line shows the dynamic of the associated processing block. This means that if you sent in a sine wave at a given input level, the output level would be equal to the level shown on the graph. When the processor is working with real dynamic signals, the graph is a good approximation of the response when the attack is fast and the release is slow.

In most cases, however, the dynamic response of the processor will not match its static response. In order to represent this, we have included a “bouncing ball” meter for both the gate and the compressor. This metering is shown as a red circle that is overlaid on the knee diagram. The red circle is placed so its horizontal position is equal to the instantaneous input level and its vertical level is equal to the instantaneous output level. Examining this meter while you are adjusting the dynamics controls will provide you with a great deal of information about how the processor is operating and how the controls interact.

18. Processing

A Detailed Description

In this chapter we'll discuss what each processing block does and how the controls work.

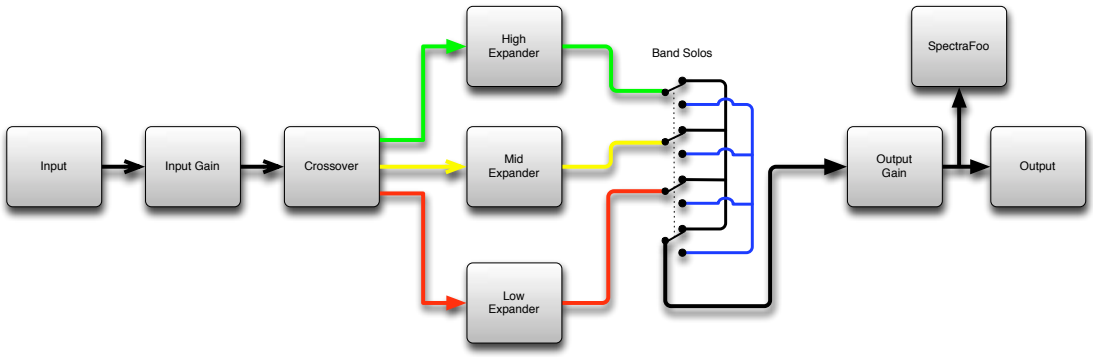


Figure 18.1: Multiband Expander Signal Flow

The block diagram above illustrates the overall structure of the processing system provided by Multiband Expander. The diagram does not indicate the various metering blocks.

Now lets examine the various processing blocks indicated in the diagram.

Input Conditioning

After the signal is routed to Multiband Expander it runs through an input gain block that provides input gain of up to +30 dB. You can use this gain to condition signals that are low in level.

This input gain may also be used to pad out signals by up to –30 dB. While you may find this attenuation useful to just bring down the level through the strip simply and quickly, you must realize that this gain is applied after the signal reaches Multiband Expander and will not pad out any clipping that occurs in the A/D converters or in a plug-in that is inserted before Multiband Expander.

The input gain is controlled by the “In Gain” knob.

Crossover

The crossover seperates the audio input into low, mid and high bands; each of these bands is then fed through a compressor section. There are two controls to set the crossover points:



Figure 18.2: Crossover Controls

The control marked “LXover” sets the frequency of the low to mid crossover, and the control marked “HXover” sets the frequency of the mid to high crossover.

You may also adjust the crossover points in the dynamic transfer function:

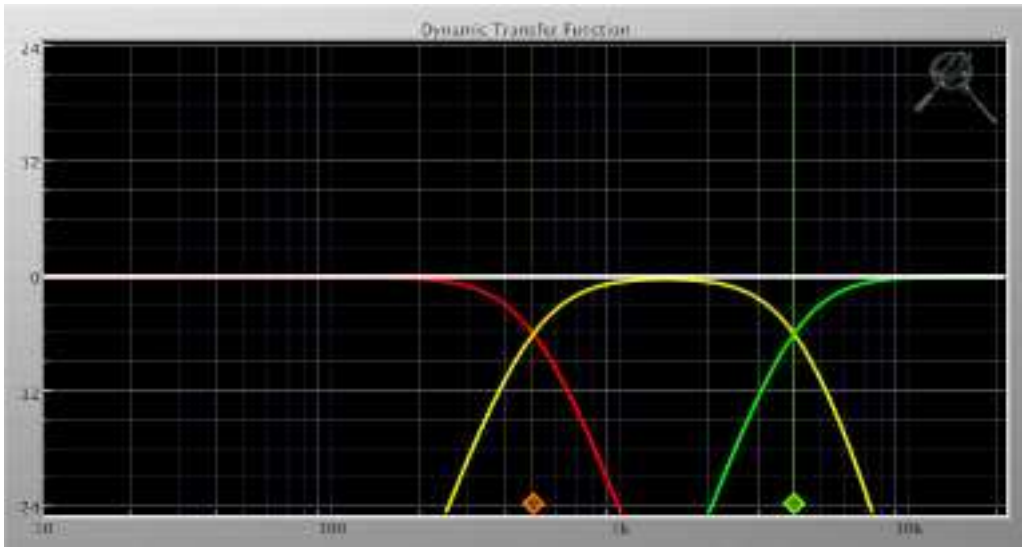


Figure 18.3: Dynamic Transfer Function

Simply grab one of the handles at the bottom of the display and drag to desired frequency. The orange handle adjusts the low/mid crossover point and the green handle adjusts the mid/high crossover point.

Expander



Figure 18.4: Expander (Low Frequency Shown)

Introduction

Multiband Expander contains three separate expanders, one for each crossover band. They are identical, so we will only describe their operation once.

Expander Enable

When this button is off, the expander section will not change the signal.

Band Solo Button

This button (the speaker icon next to the Enable button) allows you to monitor the selected expander's output. This will allow you to listen one or more bands of compression in isolation. When you are done listening to the soloed band(s), click this button again to hear Multiband Expander' normal output.

Threshold Control

The “Thresh” knob controls the level at which the expander begins to reduce the gain applied to the signal. When the detector level is below the threshold level, no gain reduction is applied. As the detector level increases above the threshold level, the gain is reduced as indicated by the knee diagram associated with the expander. The expander knee is soft. The ratio increases as the difference between the detector level and the threshold increases.

The expander threshold level is also indicated by the red bar above the gate input meter. You can adjust the threshold level using this indicator as well as by using the “Thresh” knob.

Attack Control

The “Attack” knob allows you to adjust how quickly the gain reduction is increases when the detector level goes above the threshold level. This control is calibrated in milliseconds and values range from 0 to 500 ms. The expander has an 8 sample look-ahead buffer that allows it to have an “instant attack” when you set the attack time to 0. Fast attack times will control the transients of impulsive sounds. Use longer attack times to let the transients through but control the sustains.

Release Control

The “Release” knob controls the release time of the expander. This knob is calibrated in milliseconds and can range from 5 ms to 5 sec. The release time controls how quickly the gain reduction returns to zero after the detector drops below the threshold value. For settings below 40 ms or so the expander releases pretty abruptly and may introduce unwanted artifacts into your audio, depending on the signal. In addition, be careful making the release time faster than the attack time.

Part VII. Precision DeEsser

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19. Introduction

The Precision DeEsser is a plug-in for digital audio workstations which provides a processor to tame excessive sibilance in vocal tracks.

Features include:

- Advanced process metering
- Scalable gain reduction meter
- Precision filter
- Flexible dynamics processor
- SpectraFoo™ spectrum analysis



Figure 19.1: Precision DeEsser's User Interface

20. Operation

The Precision DeEsser user interface uses a few different control elements to control all of the processing. These elements are:

Control Knob

Control Knobs are used to control the value of various continuous parameters of a process. Examples of these types of parameters include: Attack time, Release Time, Threshold, etc. There are two styles of encoders:



Figure 20.1: Swept Knob

The rings around these encoders sweep from a minimum to maximum value, from left to right. One exception is the threshold control, which sweeps from right to left.



Figure 20.2: Spread Knob

The ring around this encoder starts at 12 o'clock and spreads to both sides equally as the control is increased. This knob is used for the bandwidth control.

You can change the value of each knob in a number of different ways. Click and drag the knob to change the value continuously. Dragging up or to the right will increase the value, while dragging down or to the left will decrease the value. If you hold down the Mac ⌘ (Command) key or Windows Control key when you click, you will be able to adjust the value with finer precision. If you hold the Mac ⌥ (Option) key or Windows Alt key when you click, the knob will reset to its default value. You may also double-click a knob to reset it.

Click on the number (readout) of the knob to display a text entry field that allows you to type in a number directly. The pop-up will remain active until you dismiss it by clicking somewhere else or hitting the return, enter, tab, Mac ⌘. (Command + .), Windows Alt key or ESC keys. Hit return or enter to confirm the value and dismiss the pop-up. Hit the tab key to confirm the value and display an entry field for the next control. ⇧–tab (Shift + tab) will display the entry field for the previous control). Hit the Mac ⌘. (Command + .), Windows Control. (Control + .) or ESC (Escape) to dismiss the pop-up and cancel the change.

When you enter a number into the pop-up entry, you can use a couple of abbreviations: “k” multiplies the number by 1000 and “m” divides the number by 1000. So if you want to enter 16,500 Hz you can just type 16.5k.

Listen Control



Figure 20.3: Listen Control

This button selects what part of the audio signal you are monitoring:

- *DeEssed Signal*: The final output of the plug-in after processing
- *Esses*: The output of the compressor, without the non-processed audio
- *Detector Signal*: This is the post-filter, pre-compressor audio
- *Out-of-Band Signal*: The Detector signal subtracted from the input; this allows you to hear audio that is *not* being processed
- *Removed Material*: The Esses signal subtracted from the Detector signal; this allows you to hear only the audio that is being removed

Tooltip Control



Figure 20.4: Tooltip Control

This button toggles the tooltip display. When enabled, tooltips wil be shown when the mouse hovers over a control. When the tooltip display is disabled, you may still see tooltips by holding down the ? key and hovering over a control.

DeEsser Detector Level Meter

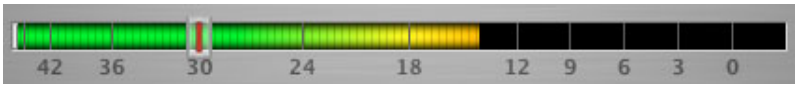


Figure 20.5: DeEsser Detector Level Meter

The Precision DeEsser provides a meter displaying the level of the detector (derived from the from the Ess-band) when the De-Esser is active. The processor threshold is indicated by the red threshold slider above the detector meter. This red bar can be manipulated directly with the mouse. While this meter should never clip (the signal would have to be exceedingly high), the top segment of the meter (above 0dB) is used as a clip indicator and is illuminated red if the input section of the processor detects an over. The clip light remains illuminated until you click on the meter. Mac ⌥ (Option)–click or Windows Alt-click the meter to reset the clip light.

Gain Reduction Meter

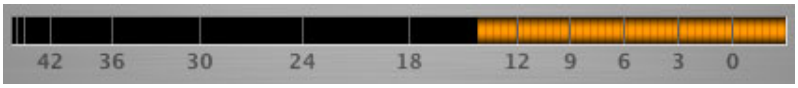


Figure 20.6: Gain Reduction Meter

The gain reduction meter, which has an orange bar and grows down from 0 dB, shows the amount of attenuation being applied by the dynamics processor at any given time. If you right-click (Mac/Win) or Mac ^ (Control) click on the meter, you may set the scale of the gain reduction meter to any of the following values:

- 54 dB
- 24 db
- 12 db
- 6 db
- 3 db

Ess Band Transfer Function

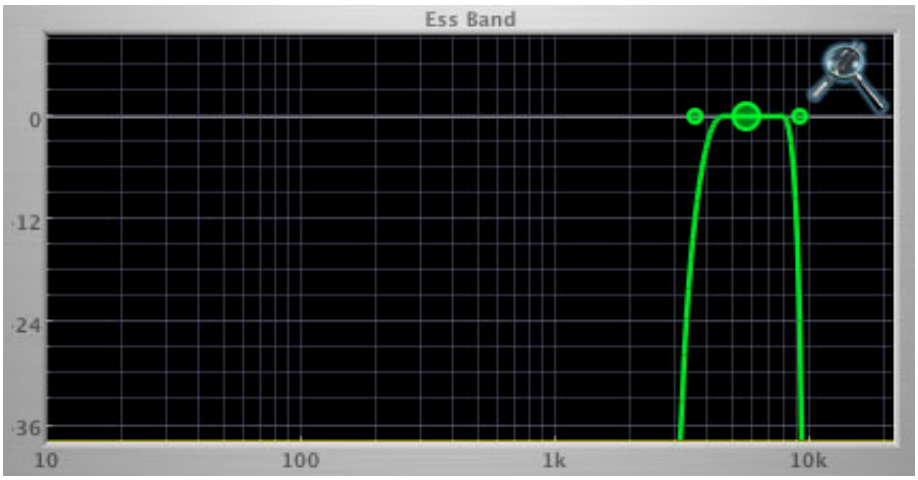


Figure 20.7: Ess Band Transfer Function

The ess band transfer function is a combination of a visual representation of how the de-esser is processing the signal and an intuitive controller for the associated filter. This display is sometimes called a “Cartesian Graph” by other manufacturers.

The horizontal axis provides frequency calibration in Hertz (Hz). The vertical axis provides level calibration in decibels (dBr). The heavy green line indicates the shape of the filter. The center frequency is represented by a large dot in the transfer function with two smaller dots flanking it.

Clicking on the large dot and dragging will allow you to adjust the center frequency. Mac ⌥ (Option)–click or Windows Alt the dot to adjust the bandwidth (dragging right increases the bandwidth, left decreases the bandwidth). Click and drag the smaller dots associated with a larger dot to adjust the filter bandwidth.

To dismiss the filter curve, click anywhere in the black area of the transfer function. This will deselect the filter point, and the only trace displayed will be the green master curve.

Spectragraph Analyzer

Clicking the SpectraFoo™ logo in the upper right hand corner of the transfer function will activate the spectragraph, showing the realtime frequency analysis of your signal:

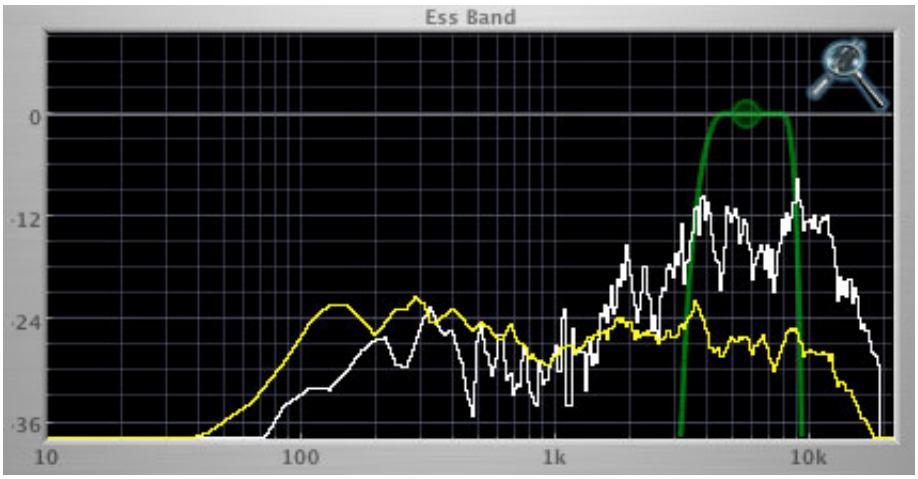


Figure 20.8: Spectragraph Display

The traces are:

- White: Instantaneous display
- Yellow: Average display

The *instantaneous* trace updates in real-time, allowing you to see the immediate peak level of your audio. The *average* trace displays the level as averaged over a short period, giving you a more general view.

The spectragraph analyses the signal currently being audition, as set by the "Listen To:" button. To disable the spectragraph entirely, click the active 'Foo icon.

If you right-click (Mac/Win) or Mac ^ (Control) click on the transfer function, you will see a menu to set options for the spectragraph:

- Show Instantaneous Trace: Toggles whether the spectragraph shows the instant response of your audio.
- Show Average Trace: Toggles whether the spectragraph shows the averaged response of your audio.

These settings are stored for each instance of the Precision DeEsser.

21. Processing

A Detailed Description

In this chapter we'll discuss how the controls work.

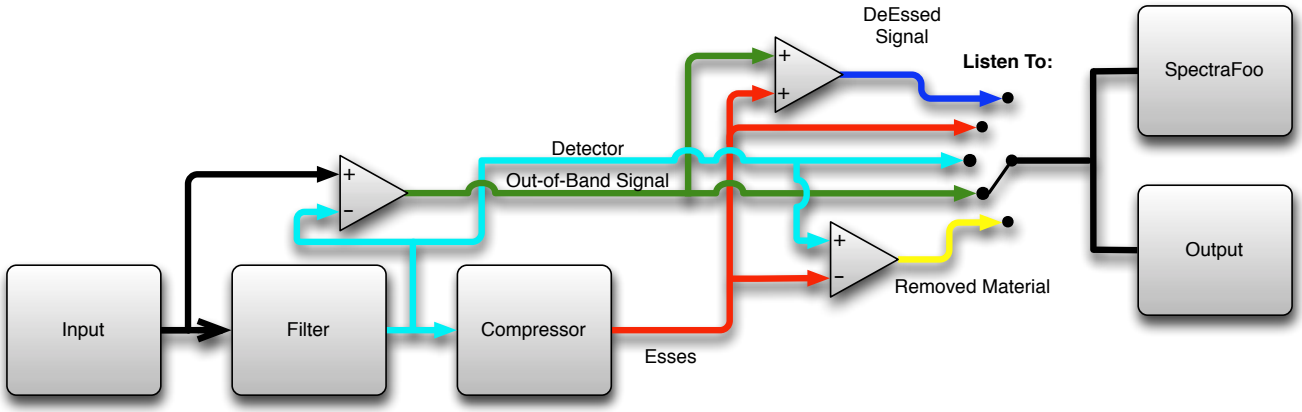


Figure 21.1: Signal Flow

The block diagram above illustrates the overall structure of the processing system provided by the Precision DeEsser. The diagram does not indicate the metering blocks.

Now lets examine the various processing blocks indicated in the diagram.

Ess Band Filter

When the signal is routed to the Precision DeEsser it runs through a filter block that allows you to define the frequency area to be processed.



Figure 21.2: Ess Band Filter Controls

The filter controls are:

- *Center*: Sets the center frequency of the ess band filter.
- *BW (Oct)*: Sets the bandwidth of the ess band filter. Higher values widen the filter.
- *Sharpness*: Sets the slope of the filter

To use the filter, set the Center parameter as close as possible to the undesired frequency. Use the BandWidth control to set the overall width of the filter; a narrow bandwidth will let less audio through to the compressor, while large bandwidths will process more overall. By using the Sharpness control you may shape the slope of the filter, to adjust the transition between the processed and non-processed audio.

Compressor

The next processing block is the compressor. The compressor is used to reduce the level of the audio within the filter boundary once it exceeds the threshold.



Figure 21.3: Compressor Controls

Threshold Control

The “Thresh” knob controls the level at which the de-esser begins to process audio. When the detector level is below the threshold level no processing takes place. When the detector level is above the threshold level, the gain is reduced at a ratio set by the Ratio control.

The threshold level is also indicated by the red bar above the input meter. You can adjust the threshold level using this indicator as well as by using the “Thresh” knob.

Ratio Control

The “Ratio” knob controls the ratio used to compute the gain reduction of the compressor.

Attack Control

The “Attack” knob allows you to adjust how quickly the gain reduction is decreased to 0 dB when the detector level goes below the threshold level. The maximum value is 100 milliseconds.

Release Control

The “Release” knob controls the release time of the compressor. This parameter is measured in milliseconds and can range from 10 ms to 1000 ms. The release time controls how quickly the compressor closes after the detector drops below the threshold value.

Part VIII. TransientControl

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22. Introduction

TransientControl is a plug-in for digital audio workstations which provides a unique dynamic shaping tool.



Figure 22.1: TransientControl's User Interface

TransientControl looks at two components of audio:

- Transient: The audio's “attack”. This is the pick of a guitar or bass, hit of a snare drum, etc.
- Sustain: This is the part of the audio around the transient.

TransientControl uses envelope detectors to separate what is transient and what is sustain. Once these elements are separated, TransientControl can manipulate them to boost or cut the desired section of audio.

23. Operation

The TransientControl user interface uses a few different control elements to control its processing. These elements are:

Control Knob



Figure 23.1: Control Knob

Control Knobs are used to control the value of various continuous parameters of a process. Examples of these types of parameters include: Transient, Sustain, Gain, etc. You can change the value of each knob in a number of different ways. Click and drag the knob to change the value continuously. Dragging up or to the right will increase the value, while dragging down or to the left will decrease the value. If you hold down the Mac ⌘ (Command) key or Windows Control key when you click, you will be able to adjust the value with finer precision. If you hold the Mac ⌥ (Option) key or Windows Alt key when you click, the knob will reset to its default value. You may also double-click a knob to reset it.

Click on the number (readout) of the knob to display a text entry field that allows you to type in a number directly. The pop-up will remain active until you dismiss it by clicking somewhere else or hitting the return, enter, tab, Mac ⌘. (Command + .), Windows Alt key or ESC keys. Hit return or enter to confirm the value and dismiss the pop-up. Hit the tab key to confirm the value and display an entry field for the next control. ⇧–tab (Shift + tab) will display the entry field for the previous control). Hit the Mac ⌘. (Command + .), Windows Control. (Control + .) or ESC (Escape) to dismiss the pop-up and cancel the change.

Output Meter



Figure 23.2: Output Meter

For the main output stage of TransientControl we have provided meters driven with SpectraFoo metering technology. These meters show, in addition to the peak metering provided for the input stages, RMS level and VU level. The peak level is represented by the floating colored bar, the RMS level by the solid colored bar and the VU level by the overlaid gray bar. Both the Peak and RMS level are represented with fast PPM ballistics. The VU meter shows IEEE standard 300 ms RMS average level. When TransientControl is on a mono insert there will be a single meter. When TransientControl is running in stereo mode the top meter shows the left channel output level and the bottom meter shows the right channel output level. The output section clip lights activate if there is an over in the output stage or in any of the processing section input stages. It is reset by clicking on the meter; Mac ⌥ (Option)–click or Windows Alt-click to reset the clip lights on all the meters.

UI Mode Button



Figure 23.3: UI Mode Button

This button switches TransientControl's user interface mode. There are three modes available:



Figure 23.4: Basic: Provides the Minimum Controls and Metering



Figure 23.5: Basic with Process Metering: Adds Process Metering



Figure 23.6: Advanced with Process Metering: Adds Access to the Advanced Envelope Controls

Tooltip Control



Figure 23.7: Tooltip Control

This button toggles the tooltip display. When enabled, tooltips wil be shown when the mouse hovers over a control. When the tooltip display is disabled, you may still see tooltips by holding down the **?** key and hovering over a control.

Process Meter

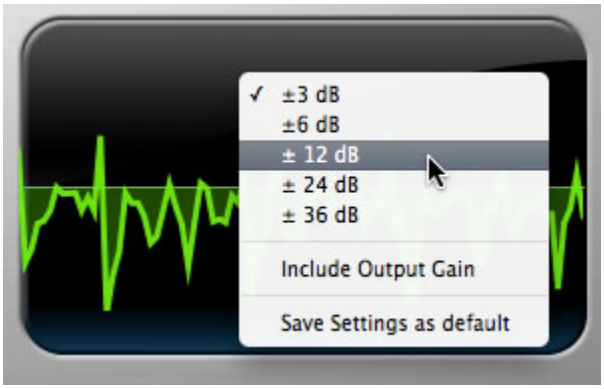


Figure 23.8: Process Meter with Settings Menu

The process meter shows how TransientControl is modifying the audio signal. Activity above the horizon of the meter shows the amount of gain increase from the *Transient* and *Sustain* adjustments, while activity below the horizon shows the amount of gain reduction. The scale of this display can be adjusted by clicking the process meter. This menu will let you configure whether the gain adjustment from the Gain control is factored into the meter, as well as allowing you to save your metering preferences as default.

Basic Controls

The Basic UI mode gives you access to the most often used controls:

- Transient: Controls the gain applied to the transient portion of the signal. Adjust this parameter to boost or cut the transient “spike” of your signal. For example, Transient boost can bring out the pick attack in a bass line.
- Sustain: Controls the gain applied to the sustain portion of the signal. Adjust this parameter to boost or cut the audio material around the transient “spike” of your signal. For example, Sustain boost can round out the sound of an acoustic guitar.
- Gain: Master output gain in dB. Use this to set the output level after setting the Transient and Sustain controls.

Advanced Controls

The Advanced UI mode gives you access to the controls used to fine tune the transient and sustain envelope detectors.

You will not usually need to adjust these parameters, but may find it necessary on challenging material. You can also change these settings to create special effects.

24. Processing

A Detailed Description

In this chapter we discuss what each processing block does and how the controls work.

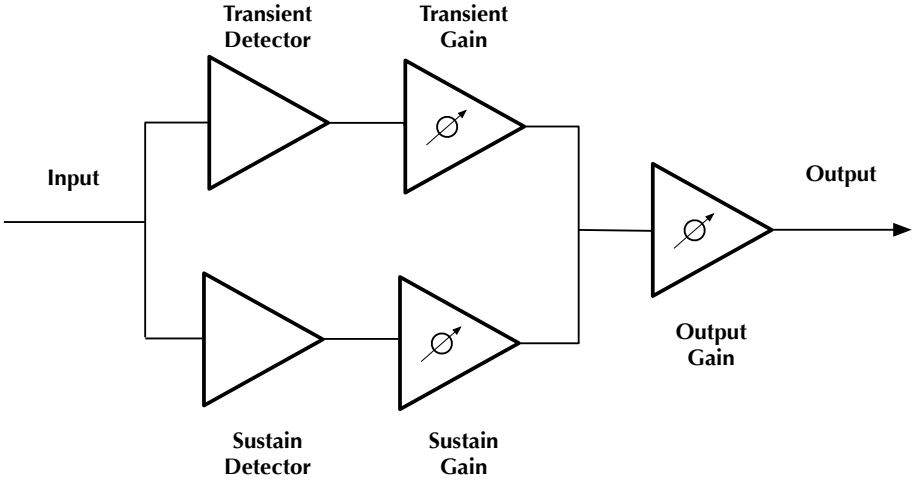


Figure 24.1: TransientControl Block Diagram

The block diagram above illustrates the overall structure of the processing system provided by TransientControl. This diagram does not indicate the various metering blocks.

Now lets examine the various processing blocks indicated in the diagram.

Transient Detector

The transient detector separates the transient component of the audio from the surrounding sustain. The detector envelope is tuned using the following controls, which are available in the Advanced UI view:

- Fast Attack: Sets the fast attack time of the transient detector, from 0 to 100ms.
- Slow Attack: Sets the slow attack of the transient detector, from 0 to 100ms.
- Release: Sets the release of the transient detector, from 0 to 1000ms.

The Fast Attack and Slow Attack controls define the threshold that the audio must exceed to be considered “transient”, while the Release control sets how long the envelope stays open.

You generally will not need to change these controls from the default values.

Transient Gain

This control allows you to boost or cut the level of the audio that falls within the transient detector's envelope. The gain range is ±300%

Sustain Detector

The sustain detector separates the sustain component of the audio from the transient “spike”. The detector envelope is tuned using the following controls, which are available in the Advanced UI view:

- Attack: Sets the attack of the sustain detector, from 0 to 100ms.
- Fast Release: Sets the fast release of the sustain detector, from 0 to 1000ms.
- Slow Release: Sets the slow release of the sustain detector, from 0 to 1000ms.

The Fast Release and Slow Release controls define the thresholds that the audio must be within to be considered “sustain”, while the Attack control sets how long the envelope stays open.

You generally will not need to change these controls from the default values.

Sustain Gain

This control allows you to boost or cut the level of the audio that falls within the sustain detector's envelope. The gain range is ±300%

Output Gain

This control allows you to boost or cut the output level after all processing has been applied. The gain range is ±24 dB

Part IX. Working with Hosts

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25. Pro Tools (Mac/Win)

Your Pro Tools software provides a standard interface for controlling various aspects of AAX plug-ins. While you should refer to your Pro Tools documentation for a complete description, we will summarize the most important points here.

If you wish to use a plug-in on multiple channels in your mix, you should Mac ⌥ (Option) or Windows Alt insert the plug-in on the desired channels and ensure that the plug-in is inserted on the same insert point on every channel (e.g. ensure that the plug-in is on insert "a" for every channel). This will allow you to take advantage of a number of time saving features provided by Pro Tools.

Plug-in Window

The illustration below shows the standard Pro Tools plug-in window.



Figure 25.1: Pro Tools Plug-in Window

If you have inserted your plug-in(s) as we suggested above you can click on the channel name pop-up in the upper left hand corner of the window (labeled "Audio 1" above) to switch from channel to channel.

The next pop-up in the window (labeled "b" above) allows you to switch to another insert on the same channel. You would use this to switch to another plug-in on the same channel.

The bypass button allows you to bypass the effects of the plug-in.

The Pro Tools editor/librarian button (the small, downward pointing triangle) provides access to a pop-up menu that allow you to manage presets and libraries of settings for the plug-in. Use this menu to save libraries or open groups of libraries. See your Pro Tools documentation for more information.

The preset library pop-up menu (labeled "factory default" above) shows the active preset name (in italics if the current settings do not match the library). Click this pop-up to select from the available presets.

The "Compare" button indicates when the controls have changed for the current preset settings. Click this button to toggle between your current settings and the preset settings.



Figure 25.2: Compare Button

Clicking the "Automation" button causes Pro Tools to display the plug-in automation configuration dialog box:

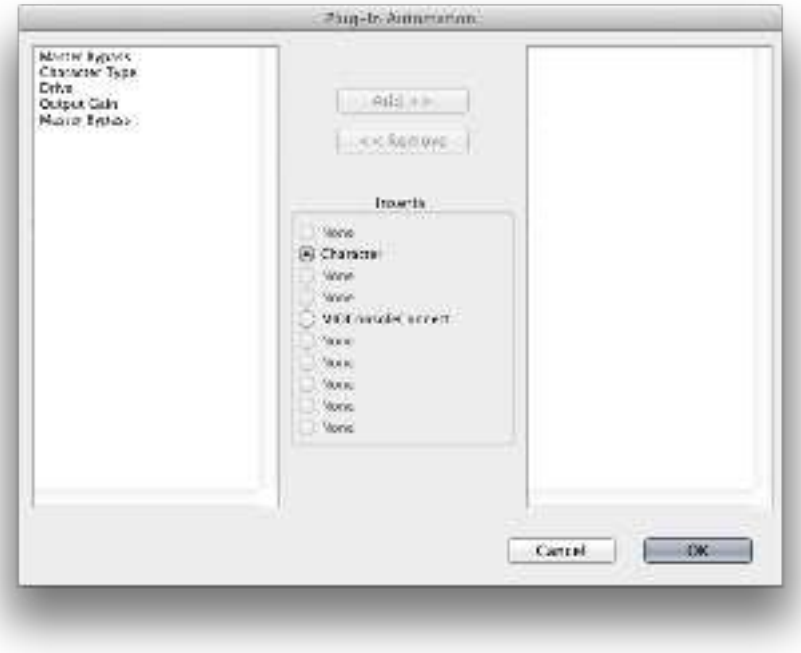


Figure 25.3: Automation Window, Showing Character's Parameters

This dialog box allows you to enable any or all of the processing parameters for automation. When a parameter is enabled for automation you will be able to record and play-back automated parameter changes directly from your Pro Tools session. If the channel that the plug-in is inserted on has automation enabled Character will highlight the controls associated with the automated parameters:

- Off: No color
- Read: Green
- Touch, Latch, Write: Red
- Controlled via control surface: Blue

Key Commands

The following key commands are used to when clicking on controls:

Table 25.1. Pro Tools Key Commands

Command	Mac Key Sequence	Windows Key Sequence
Display Automation Dialog	⌥⌘ (Option + Command)–click	Alt + Control–click
Show Automation Breakpoint	^⌘ (Control + Command)–click	Control + Windows–click
Set Parameter to Default Value	⌥ (Option)–click or double–click	Alt-click or double-click

26. AU Hosts (Mac)

The Production Bundle is compatible with any Core Audio compatible host. Support for features like sidechains differ between hosts; please check your host's documentation for more info. As an example, we'll look at using the Production Bundle in Logic.

Logic

Logic provides a standard interface for controlling various aspects of AU plug-ins. While you should refer to your Logic documentation for a complete description, we will summarize the most important points here.

If you wish to use a plug-in on multiple channels in your mix, you should click and drag the selection marquee over the desired channels in the Mixer, and insert the plug-in on any one of them; this will insert the plug-in at the same insert point on every channel.

Plug-in Window

The illustration below shows the standard Logic plug-in window.

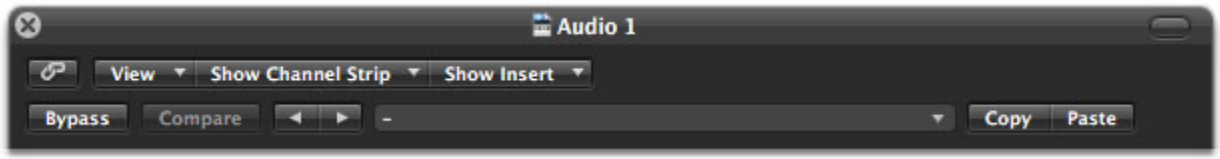


Figure 26.1: Logic's Plug-in Window

If you have inserted the plug-in as we suggested above you can click on the “Show Channel Strip” pop-up to switch between instances of the plug-in on different channels.

The “Show Insert” pop-up allows you to switch to another insert on the same channel. You would use this to switch to another plug-in on the same channel.

When the Link button (the button with the chain icon) is on, a single plug-in window is used to display all plug-ins. Turn this off if you would like to have multiple plug-in windows open at once.

The View button is used to toggle between the generic AU user interface for the plug-in and the standard view provided by Metric Halo.

The Bypass button allows you to bypass the effects of the plug-in. The effects of all the processing sections within the plug-in are removed from the audio chain when the plug-in is bypassed.

The Compare button allows you to toggle between the current settings and the settings as they were before the last paramenter change. By using the Compare button you may “A/B” changes in settings.

The left/right arrows move backward and forward between presets.

The Logic preset menu (the pop-up menu with the small downward pointing triangle next to the left/right arrows) allows you to manage presets and libraries of settings for the plug-ins. Use this menu to save libraries or open groups of libraries. See your Logic documentation for more information.

The Copy and Paste buttons allow you to copy settings from one instance of a plug-in and paste them into the same plug-in on other channels without creating a preset.

The sidechain input pop-up menu allows you to select from any mono input or bus in your system and feed it to the internal sidechain bus within plug-ins that have sidechain support. You then use the sidechain routing buttons within the plug-in UI to assign the sidechain bus to the dynamics detectors. This menu is only present when a sidechain-enabled plug-in is viewed.

Part X. Appendices

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A. Key Commands

There are several key commands used as modifiers combined with mouse actions:

Table A.1. Tooltip Control

Command	Mac Key Sequence	Windows Key Sequence
Show tooltips	Hold ? down	Hold ? down

Table A.2. Control Knob Modifiers

Command	Mac Key Sequence	Windows Key Sequence
Fine control	⌘ (Command)-click and drag	Control-click and drag
Reset to default value	⌥ (Option)-click or double-click	Alt-click or double-click

Table A.3. Numeric Field Modifiers

Command	Mac Key Sequence	Windows Key Sequence
Confirm & dismiss numeric pop-up	return, enter	return, enter
Confirm & move to next entry	tab	tab
Confirm & move to previous entry	⇧–tab (Shift + tab)	⇧–tab (Shift + tab)
Dismiss numeric pop-up & cancel change	⌘. (Command + .), ESC	Control. (Control + .), ESC

Table A.4. Meters

Command	Mac Key Sequence	Windows Key Sequence
Reset Clip	⌥ (Option)–click the meter	Alt-click the meter

Table A.5. EQ Transfer Functions

Command	Mac Key Sequence	Windows Key Sequence
Toggle band enable	⌘ (Command)–click or double-click frequency dot	Control-click or double-click frequency dot
Adjust bandwidth (click then drag)	⌥ (Option)–click frequency dot	Alt-click frequency dot
Change filter type	⌘⌥ (Command + Option)–click frequency dot	Control+Alt-click frequency dot
Access EQ TF settings	^ (Control) or right-click graph	Right-click graph

Table A.6. Pro Tools Key Commands

Command	Mac Key Sequence	Windows Key Sequence
Display Automation Dialog	⌥⌘ (Option + Command)–click	Alt + Control–click
Show Automation Breakpoint	^⌘ (Control + Command)–click	Control + Windows–click
Set Parameter to Default Value	⌥ (Option)–click or double–click	Alt-click or double-click

B. Service and Support

Metric Halo takes great pride in the reputation for customer service and support that we have built. If you have any problems, questions, or suggestions please get in touch with us at:

- http://mhsecure.com/support
- support@mhsecure.com
- (727) 725-9555

Please keep us informed about your successes and projects. We love to hear from you!

C. Changelog

Please note that this changelog incorporates changes for all plug-ins across all supported formats.

1.0.5:

- Fix alignment issue with some UI elements in ChannelStrip
- [AU] Fix issue in some hosts where parameter updates may be lost
- Fix for potential crash on deinstantiation in Multiband Plugins
- [AU] Fix for crash in some hosts (specifically FCPX) due to initialization on a thread
- [AU] Fix meter reset for MultibandCompressor
- [AU] Fix meter reset for MultibandExpander
- [AU] Fix potential crash in HaloVerb
- [AU] Fix meter reset for Character
- Fix meter allocation for MultibandExpander
- Fix analysis buffer allocation for MultibandExpander
- Fix analysis buffer allocation for MultibandCompressor
- Fix analysis buffer allocation for De-Esser
- [AAX] Add support for PT11 and 64-bit build
- [AAX-Win] Implement full optimization for host code (decreases CPU usage)
- [AAX-Win] Implement 64-bit Installers
- Sign Binaries for PT 10.3.x / PT 11
- Fix auto-suffixing of parameter readouts to deal with negative numbers
- [TransientControl] Fix (extend) range of the sustain parameter
- Fix locking for threaded plotter of crossover functions to avoid potential race condition and crash
- [Mac] Fix problem with signing 32-bit binaries (led to corrupted PT 10.3.x plugins)
- Fix Gain Reduction meters for PT reported meters (so that PT11 and control surfaces render them properly)

1.0.4:

- Fixed potential problem with licensing code when plugin scanner opens and closes plugin very quickly
- Moved drawing of HaloVerb impulse response onto background thread for responsiveness
- Moved drawing of Multiband dynamic EQ response onto background thread for responsiveness
- Added caching for background image of plugin window to reduce CPU used for drawing static image
- Fixed incorrect interpretation of wet/dry parameter when computing HaloVerb impulse response display
- Optimized computing HaloVerb impulse response display
- Optimized redraw of EQ response curve
- Fixed problem with incorrectly showing that preset was changed (when it wasn't) via Compare button
- Deferred redraw of UI until host sends parameter changed message -- fixes PT UI pauses when changing certain parameters
- Fixed problem with parameter notification that caused recording of automation for ChannelStrip to not function
- Added work-around to fix problems with multi-parameter touch automation recording in Logic (works-around Logic bug)

1.0.3:

- Soft Interpolation of band Bypass in ChannelStrip EQ
- Fix slight transparency on some controls
- Fixed problem with tool-tip tracking
- Fixed problem with phantom mouse clicks after dragging beyond UI boundary
- Fixed problem with silent output from CS2/CS3 on some hosts with disconnected sidechain input
- Fixed problem with compressor gain state on instantiation
- ChannelStrip: removed recall of Bypass from preset state (to match standard PT behavior)
- Add support for Mac OS 10.5
- Add support to cancel text entry with ⌘. (Command + .) [Control. (Control + .) on Win]
- Fixed interpolation to support bit-clean bypass
- Fixed noise problem with LF high-pass filters
- Fix problem with tooltips appearing even if window is covered by another window or is hidden
- Added a preference to control auto-enable of bands to the Transfer Function popup menu in Channel-Strip 3
- Fixed interpolation in ChannelStrip:
  - Stereo EQ bands
  - Compressor/Limiter threshold
  - Stereo Gate
- Fixed interpolation in Multiband Dynamics:
  - Compressor/Limiter threshold
- Knee control in ChannelStrip 3 is hidden when not in "MIO" character mode
- Added version number reporting and update notification
- Initial release for Windows AAX
- Initial release for Macintosh AU
- Initial release of ChannelStrip 3 for GarageBand

1.0.2:

- Fixed issue with grunge when DSP is filled with MH Precision De-esser
- Further optimized CS3, Precision De-esser, and MH MultibandDynamics, leading to an increase in instance counts
- Fixed bit-cleanliness on bypassed CS3 blocks -- so now CS3 with phase invert nulls with unprocessed audio

1.0.1:

- Substantial optimization of the processing code, especially for HDX
- Accurate Cycle Counts for HDX
- Enhanced control surface page table layouts
- Fix for some corner case bugs that apparently can cause a DSP crash on heavily loaded systems
- Additional interpolation of various parameters in the plugins to provide glitch free parameter changes
- Fixed a conflict between CoreGraphics and DAE that can lead to DAE errors (DSP + Native), CPU Spiking or CPU overloads (Native)
- Fixed a filter stability issue for high session sample rates
- Fixed an issue where the average trace in the analyzer view can get stuck
- Reduce the size on disk and in memory of the plugins
- Fixed some missing control surface metering support and clip detection
- Fixed some small graphic anomalies
- Fix for detector for classic compressor in CS3 when Side-Chain filter is enabled

- Signed installer for Mountain Lion compatibility

1.0: Initial release for Macintosh AAX